NCUR 2024 Proceedings

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ABOUT NCUR

The National Conference on Undergraduate Research (NCUR) is dedicated to promoting undergraduate research, scholarship and creative activity in all fields of study by sponsoring an annual conference for students. Unlike meetings of academic professional organizations, this gathering of student scholars welcomes presenters from all institutions of higher learning and from all disciplines. Overall, this conference offers a unique environment for the celebration and promotion of undergraduate student achievement; provides models of exemplary research, scholarship, and creative activity; and offers student career readiness development.

History of NCUR

The idea for a national conference open to all undergraduates was conceived and implemented at the University of North Carolina at Asheville in 1987. The first conference drew more than 400 participants from institutions across the country.

The Council on Undergraduate Research (CUR) and the National Conferences on Undergraduate Research (NCUR) historically existed as two separate organizations, but on October 1, 2010, the two officially joined. To commemorate this occasion, CUR and NCUR held a number of special events, including a reception, congressional briefing, and book release.

Attending a Professional Research Symposium

NCUR is the largest symposium of its kind in the world, bringing together nearly 4,000 undergraduate students each year from all fields and disciplines. The symposium is organized just like a professional meeting of scholarly societies. In this case, the audience is composed of other students, faculty mentors, and administrators. This is your opportunity to share with your peers the expertise you have gained over the course of your research experience. You can also learn what your colleagues have discovered through their projects. This is your chance to see the vast array of research taking place in all fields and disciplines, and meet students from other campuses who are doing similar research. We encourage you to be an active participant in the conference. Use this event as an opportunity to teach and learn. Most NCURs also include a graduate school and/or career fair, providing you with opportunities to meet with recruiters and consider next steps in your education and career path.

NCUR for Faculty and Administrators

NCUR is a great opportunity for students, faculty, and administrators—for students to present their research to peers and faculty from around the world; for faculty to connect with colleagues across disciplines; and for administrators to meet students, faculty, and undergraduate research program directors.

Student presentations are welcome in all fields and disciplines from the creative and performing arts to the biomedical, engineering, and social science fields. NCUR provides a wonderful opportunity for your students to meet peers and faculty working in similar research fields at institutions across the globe, to learn about the conduct of research and scholarship in a wide range of fields, to learn about advanced degree and employment opportunities at the graduate school fair, and to develop presentation skills. All student abstracts and applications are reviewed by faculty members.

NCUR Statement on Diversity and Inclusion

The Council on Undergraduate Research (CUR) is strongly committed to the wide expression of all forms and topics of undergraduate research, by all members of the undergraduate research community, and views with great concern any actions or policies that affect that commitment to inclusivity.

For questions or additional information about NCUR, please email NCUR@CUR.org. For information about upcoming NCUR occurences, please visit CUR.org/NCUR.

Obsa Abate

UAE - Zayed University

Discipline: Mathematics and Computer Science

Authors:
#1 Obsa Abate

Abstract Name: Comparative Analysis of Large Language Models Essay Assessment Outcomes

Essay grading and feedback provision are fundamental components of the educational assessment process. One of the most significant challenges of manual essay assessment is the immense time and effort it demands which often leads to inconsistencies and delays. Moreover, the inherent complexity of language and the subjective nature of some grading criteria continue to pose obstacles to conformity. This research examines the effectiveness of three advanced large language models (LLMs) - Mistral-7B-Instruct, Llama-2-13b, and Llama-2-13b-finetuned - in the automation of essay assessment. The study compares the performance of these models on a dataset of 1,500 argumentative essays from Kaggle based on six essential proficiency criteria including cohesion, syntax, vocabulary, phraseology, grammar, and conventions. It employs four statistical metrics for evaluation: Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and Mean Absolute Percentage Error (MAPE). Findings reveal significant variability in model performance across different assessment criteria. Mistral-7B-Instruct consistently outperformed the Llama models across most categories. The Llama-2-13B-finetuned model demonstrated notable improvements over its base model in several criteria which shows the potential of fine-tuning base models for specific tasks like essay assessment. The results' implications are significant for both educational and technological sectors as they can leverage these advancements to enhance the efficiency of large-scale essay evaluations. Future work could focus on expanding the scope of the analysis by fine-tuning a broader range of transformer models to better understand how various architectures influence performance in automated essay assessment.

Joshua Abbas

MI - Hope College

Discipline: Health and Human Services

Authors:
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#3 Stephanie Johnson

Abstract Name: State Laws in Reporting of Pregnant and Lactating Parent Cannabis Use

The increased legalization and use of medicinal and recreational cannabis have raised concerns about its impact on pregnant and lactating individuals. Postnatal care providers are pivotal in guiding care during pregnancy and lactation. However, their care is confined by both federal and state law. Discrepancies in cannabis regulation at the State and Federal level can complicate the guidance of postnatal care providers and may affect patient outcomes. This study aims to describe state laws in reporting birth-parent cannabis use during pregnancy and lactation. Categorical and descriptive data were obtained from publicly available state laws on the Internet or personal communication with Child and Protective Services (CPS) and/or Health and Human Services (HHS) representatives from all 50 states of the United States of America. Cannabis is fully legalized in most states (n=23, 46%), with 10 states continuing to have laws making cannabis use illegal. Over half of states (n= 27) have no reporting requirements when cannabis is consumed during pregnancy, and

no states have specific reporting laws during lactation. Most states have a majority Republican party affiliation (n= 22). The percentage of the state's population with Medicaid was equal across states. The median years since the last cannabis legislation was 5 years (Q1: 2, Q3: 7). There were no significant relationships between required reporting and legalization status, political affiliation, percent population with Medicaid, or years since the last legislation. Limitations include inconsistent publicly available information, state reporting policies, and legal terminology and no laws about cannabis use during lactation. The findings from this analysis pave the way for a broader investigation centered on postnatal care provider knowledge, attitudes, and practices when caring for patients using cannabis during lactation. These insights can shape evidence-based policies and practices within postnatal care, aiming to enhance patient care and outcomes.

Samaa Abdelhamid

EGY - The American University in Cairo

Discipline: Social Sciences

Authors:
#1 Samaa Abdelhamid

Abstract Name: The Politicization of Pre-university Education in Egypt

Education has played a pivotal role in preparing the next generations for the job market by providing students with knowledge and skills. Although President Abdel-Fatah Al-Sisi declared in 2019 that the government established a national project to reform the educational system, Egypt ranks 133rd in the quality of education globally in 2022. The thesis examines how the Egyptian educational system operates from Nasser's to El-Sisi's regimes and the reasons for the low quality of education. It combines historical discourse with political analysis about the conditions of education, leading to a massive discussion of the current situation of the educational system. The thesis provides scholars interested in education and politics with a clear vision of education conditions in Egypt to understand why pre-university education in public schools does not improve. The thesis provides a scope of information using primary data, such as an analysis of educational textbooks, focus group, and in-depth interview, as well as secondary data using previous research by different scholars concerning the topic. The primary outcome is that the regime controls the curriculum to maintain discipline in the authoritarian regime by imposing specific agendas for pupils to study. The curriculum does not match students' needs or interests, but they do not have other choices because they cannot afford the fees of private or international schools. Therefore, educational decision-makers need to reform the educational system to give more space for students to foster their individuality.

Sandra Abdelllah

VA - Virginia Wesleyan University

Discipline: Natural and Physical Sciences

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Abstract Name: Revolutionizing Pharmaceutical Analysis: Amisulpride Quantification via Innovative Paper Analytical Devices

Pioneering a groundbreaking approach to quantify Amisulpride is a critical pursuit in pharmaceutical development given its precise targeting of D2 and D3 dopamine receptors. Harnessing the innovation of custom-designed barrier-type Paper Analytical Devices (PADs), our study achieves a milestone by producing

the first-ever application of PADs for the high-precision analysis of Amisulpride.. In comparison to conventional methods, our approach not only enhances accuracy and precision but also addresses paramount concerns in pharmaceutical development. PADs emerge as a low-cost, flexible, and replicable platform, revolutionizing the landscape of drug analysis. Their adaptability allows for cost-effective techniques in pharmaceutical quality control, laying the foundation for entrepreneurial opportunities in the realm of pharmaceutical research and development. Two distinct spectrophotometric methods, generating a pink chromagen and an orange chromagen, are explored on the PADs. Initial results underscore the unparalleled sensitivity of PADs, particularly evident in the calibration curve for the pink chromagen method. The linear dynamic range of the PAD calibration curve accommodates even lower concentrations of Amisulpride, a critical advantage for pharmaceutical formulations. Significantly, this study demonstrates comparable accuracy and precision between in-solution data and PAD data, reinforcing the reliability of this innovative approach. Beyond the immediate application, our research envisions a radical shift in pharmaceutical analysis. PADs not only offer a low-toxicity alternative but also preclude a new era of entrepreneurship, providing an accessible platform for researchers and developers to contribute to pharmaceutical advancements. This groundbreaking research not only fills a crucial gap in Amisulpride quantification but also positions PADs as a transformative technology for pharmaceutical development. Our work promises to unlock cost-effective, scalable, and innovative methods for drug analysis, fostering a future where entrepreneurial endeavors can thrive in the realm of pharmaceutical research and development

Emily Abdelnour

FL - University of Central Florida

Discipline: Natural and Physical Sciences

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Abstract Name: Disassembly of Cholera Toxin by Protein Disulfide Isomerase

Cholera toxin (CT) is a protein designed to cause life-threatening diarrhea. CT is classified as an AB-type protein toxin which contains multiple subunits. CTA1 is the catalytic subunit which is linked to CTA2 by a single disulfide bridge. CTB is the cell-binding pentamer. When the disulfide bond between CTA1 and CTA2 is cleaved, CTA1 remains associated with CTA2 and CTB. Protein disulfide isomerase (PDI) will recognize CTA1 and bind to it, causing PDI to unfold and expand its size. This results in CTA1 detaching from the CT holotoxin, which is required for the activation of cholera. Once CTA1 detaches, it increases cAMP levels in the host cell. The result of this signal leads to the release of chloride ions which causes the body to have diarrhea. The purpose of this project was to determine which domain(s) of PDI is necessary for the disassembly of CT.PDI has four domains and an x linker, organized as abb'xa'. Individual domains of PDI were produced with an epitope tag and purified. To verify the purification, a sample of each protein was used for SDS-PAGE. After verification, ELISA-based disassembly assays were performed to determine which specific domains of PDI disassemble CT. The results suggest that the a domain of PDI can disassemble CT. Experiments using Q3R present evidence that the b' domain is responsible for the regulation of the a domain. The results of this project can be implemented into further studies of therapeutic treatment to cure patients with this disease.

Rana Abdelshahed

MN - University of Minnesota - Twin Cities

Discipline: Engineering and Architecture

Authors:
#1 Rana Abdelshahed

Abstract Name: Motile Tracheal Model for Awake Fiberoptic Intubation Simulator

Severe effects such as brain damage and death can result from inadequate management of difficult airways. Due to difficult airways, anesthesiologists face problems in ventilating the patient with a facemask and/or inducing general anesthesia which is required before surgical interventions. In such cases, awake fiberoptic intubation is considered the golden standard treatment. It is an oxygen delivery where the tracheal tube is placed while the patient is awake and given a numbing agent for the airway to prevent discomfort. One of the main challenges that persist when intubating while the patient is awake is coughing, followed by movement and reflexes within the body. This may cause the anesthesiologist to hit the sides of their windpipe, leading to possible complications for the patient. In cases where this procedure is necessary, it is life-saving, and an anesthesiologist must know how to do it. This project aims to create a device that mimics the upper airway which includes realistic movement of vocal cords to mimic a coughing patient. This will be accomplished using the motors modulated by the Arduino software written in the C++ programming language. The main feature of this solution that separates it from pre-existing devices is its motile function. The vocal cords in this device will move as they do in awake patients. This movement will be tuned in cadence with typical vocal cord movement in patients via a motor modulated by Arduino with C++ programming.The development of this device would not only improve the training of future medical professionals but also the care of patients. With the current training devices, non-moving manikins, it is very difficult to go from inserting a bronchoscope on a still manikin to a person who is moving. This device will practice that missing aspect which is a need for the medical industry.

Muhammad Ali Abdullah

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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#3 Erik Roberson

Abstract Name: Using FIJI and the 3D Slicer image computing platform to measure microglial lipofuscinosis in a mouse model of frontotemporal dementia

Heterozygous loss of function mutations in progranulin (GRN) causes frontotemporal dementia with TDP43 pathology, lipofuscinosis and neuroinflammatory changes. Progranulin homozygous knockout mice recapitulate several neuropathological features of FTD caused by progranulin mutations, including lipofuscinosis and microgliosis. Brightfield microscopy of brain sections immunolabeled with IBA1, a microglial marker, indicates that microgliosis develops at around 6 months of age in this mouse model. We have developed a novel method combining high-resolution confocal microscopy and a Python-based script to segment and characterize microglial morphology that suggest microglial morphological changes in the progranulin knockout mice occur earlier than 6 months. We imaged 25-micron Z-stacks of the stratum radiatum/lacunosum layer of the hippocampus from IBA1-labeled sections of wild-type and progranulin knockout mice at 3-5 months, 5-7 months and 18-22 months of age. We pre-processed the Z-stacks using FIJI and then used 3D Slicer, an open-source 3D image analysis software, to segment and measure the properties of isolated microglia. Using this method we were able to determine that progranulin-deficient microglia adopt

a reactive non-ramified phenotype as early as 3-5 months of age, which progressively gets worse with age. Interestingly, progranulin-deficient microglia adopt a dystrophic, shrunken and more fragmented appearance by 18-22 months of age, suggesting that progranulin deficiency has ramifications for microglial function both early and late in the disease course. We hope this method is useful for multiple models of neuroinflammation.

Ali Abedi

ME - University of Maine

Discipline:

Authors:
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Abstract Name: Experiential Programs Innovation Central at the University of Maine (EPIC)

Experiential Programs Innovation Central (EPIC) at the University of Maine provides a unique approach to igniting and sustaining the research flame among students. We define research broadly to be inclusive of scholarly and creative activities, and bring the power of interdisciplinary collaboration to the forefront of students' minds. Early College and first-year students from a variety of disciplines participate in a semester-long course to learn what research is and how it is done, including defining a question or formulating a problem, strategizing solutions and communicating findings. In this program, students tour various research centers, spend time in teams working on real-world problems, and are supported beyond the one semester training to continue their research to experience an authentic research process all the way through presenting at an annual symposium. EPIC is also developing additional strategies to support students as they continue their research beyond the semester in applied settings such as fellowships and internships. This presentation will discuss various real-world project examples that bring students together and will highlight how these efforts can be sustained within various institutional models.

Janna Abou-Rahma

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Janna Abou-Rahma

Abstract Name: Mechanism of Action of Antifungal Peptoids

Due to the rise of drug resistant strains of fungal pathogens such as Cryptococcus neoformans and Candida albicans, there has been a need to identify new antifungal agents. In comparison to naturally produced antifungal peptides, antifungal peptoids, sequence-specific oligo-N-substituted glycines, mainly differ in structure, which prevents protease recognition giving higher bioavailability. Previous studies have shown that peptoids are effective fungicides. RMG8-8 and RMG9-11, two peptoids recently discovered in the Bicker Lab, have proven to be effective antifungal agents against C. neoformans and C. albicans, respectively. Reported here will be studies to determine the mechanism of action and other vital therapeutic properties of RMG8-8 and RMG9-11 using various biochemical and microbiological assays. Preliminary results of critical micelle concentration, the minimum concentration of a compound needed to form micelles, testing indicate that RMG8-8 as well as RMG9-11 do not exist as micelles at their minimum inhibitory concentrations, but rather function unimolecularly. Using a PAMPA assay, it was found that RMG8-8 is likely unable to penetrate

the blood brain barrier (BBB). However, RMG9-11 demonstrated good permeability, indicating that it may be able to penetrate the BBB to treat dangerous neurological infections of fungi. Through a cytoplasmic membrane depolarization assay of RMG9-11 against C. albicans, it was discovered that the peptoid was able to depolarize the cell membrane in a concentration dependent manner. In future work, assays will be conducted to further understand the mechanism of action of both peptoid compounds to address the rising concern of drug resistant strains of fungal pathogens.

Asher Abraham

VA - Virginia Commonwealth University

Discipline: Interdisciplinary Studies

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Abstract Name: Integrating Hybrid Neural Networks with Neuroimaging in Identifying Novel Biomarkers for Amyotrophic Lateral Sclerosis (ALS)

Current literature lacks notable diagnostic methods for the detection of sporadic Amyotrophic Lateral Sclerosis (sALS) and, as such, leads to substantial diagnostic delays, which can detrimentally affect an individual due to the absence of timely treatment. While conventional testing may not be effective, in recent years, neural networks have had an increasing impact on the diagnosis of neurodegenerative diseases. In particular, the combination of two or more neural networks, a hybrid neural network (HNN), has shown distinct advantages over just a single neural network in architecture for disease diagnosis, and spiking neural networks (SNNs) and artificial neural networks (ANNs) were shown to have high performance individually. However, an HNN with an SNN and ANN specifically has yet to have significant research for use in the diagnosis of sALS. This study focused on the utilization of ANNs and SNNs to find out how data-image analysis using an HNN, specifically an HRN model, could help with identifying biomarkers of sALS to understand how HNNs could be used in diagnosis methods as a potential alternative in the diagnosis of neurodegenerative disorders. Through a meta-analysis study, it was found that the utilization of an ANN-SNN hybrid in an HNN utilizing hybrid units and MRI imaging focused on the ADNI dataset could provide greater performance than currently used methodologies in analyzing for biomarkers in sALS progression. The identification of additional biomarkers has the potential to expedite the creation of novel therapeutics and shorten the time for diagnosis, providing a stronger foundation for decelerating sALS progression.

Shelly Anne Abu

CA - University of California - Merced

Discipline: Humanities

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Abstract Name: Gateway to Merced: Filipina/x/o American Community

As early as 1908, the city of Merced in California has been known as “Gateway to Yosemite", a term coined as its tourism slogan. The phrase is still prominent on official signage around town. The Gateway to Merced project aims to shift the narrative of Merced’s reputation as being another rest stop or college town to instead acknowledging and celebrating Merced County’s inclusive history of underrepresented communities. This

project is a community collaboration of collected oral histories that uplifts and preserves underrepresented groups. In this research, the focus is on gathering the history and lived experience of the Filipinx American Community in Merced County. The collection is through guided interviews of audio and video recordings. Conducting these guided interviews aims to facilitate open-ended discussion with community members that will be transcribed. These transcriptions will be analyzed to examine the ways of how the community has experienced the complex process of assimilation, challenges faced in navigating cultural identity, and if presence of a university affects intergenerational dynamics. The study offers insights into looking at the diverse experiences and struggles that are faced by the community. With active community participation, the outcomes of this research will promote inclusivity, understanding, and cultural pride. Ultimately, this study's results empower and preserve culturally significant stories in Merced County while contributing to a more positive and comprehensive understanding of the region's history.

Anna Ackerman

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Sybil Gotsch
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Abstract Name: Determining the Impact of Valley Fog on Forest Function in Central Appalachia

When atmospheric water (i.e., fog or low-lying clouds) moves across a forested habitat, it is intercepted by leaf surfaces and condenses serving as a water source to the leaf directly (i.e., foliar water uptake), or to the forest floor. Research has been conducted in several cloud forests on this interaction, where fog supplements tree growth in place of typical water uptake from the roots during times of stress. However, this connection between foliar water uptake and forest function has not been studied in Central Appalachia, despite morning fog being common throughout the growing season. This research will improve our understanding of feedback between microclimate and tree productivity in Central Appalachian forests. The results will also inform modeling efforts aimed at understanding how average changes in climate parameters or extreme events can influence forest productivity. The proposed research is a continuation of activities that began in Robinson Forest in Breathitt County, Kentucky, focusing on the Little Millseat Watershed at different slope positions (i.e., valley, mid-slope, ridge top) and aspects (i.e., north versus south facing). At each position, microclimate stations measured air temperature, relative humidity, leaf wetness, and solar radiation, and trail cameras detected fog visually. Internal sap flow sensors were installed in the canopies of chosen mature trees (i.e., tulip poplar, A. beech). The following questions were investigated: How variable is the duration of valley fog in Central Appalachia? How do diurnal fluctuations of valley fog in Central Appalachian forests affect the water relations and productivity of trees? The expected results include increased tree productivity during foggy periods, and a potential increase in foliar water uptake during precipitation events. This will determine if the chosen trees are dependent on these atmospheric inputs of water to buffer stress caused by high summer temperatures and possible drought.

Deborah Acosta-Sanchez

TX - The University of Texas at San Antonio

Discipline: Social Sciences

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Abstract Name: Music in our Lives: Understanding its Impact in Everyday Life

This study aims to understand the impact listening to music may have on individuals. Guided through the questions of, what emotional impact does music have on people and does music have positive effects on well-being, this study takes a deeper look at what it means to listen to music. This qualitative study was done through the use of ethnographic observations and interviews. Participants consisted of a convenience sampling of college students and older family adults, to compare any differences in demographics. A set of questions guided interviews, but participants were also encouraged to treat interviews in a casual conversational setting, which allowed them to reflect on perspectives they hadn't given much thought to before. As the study continued iterative steps were taken due to new themes appearing as interviews and observations progressed. Results varied; it was found that for most individuals listening to music does have an overall positive effect on both well-being and people's emotions. However, it was also found that for most participants music has a way of bringing nostalgia to listeners thus leading most individuals to give special meanings to their music, regardless of demographic background.

Cora Adam

MI - Hope College

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: An Analysis of Homocysteine and Homocysteic Acid in Bipolar Disorder

Homocysteine (HCY) is involved in methionine metabolism in the body. This chemical is also associated with the progression of neurodegenerative disorders such as bipolar disorder, schizophrenia, and Alzheimer's disease, as reported in several papers. When HCY reaches high concentrations in the body, it is believed to be converted into homocysteic acid (HCA), which contributes to cell neurotoxicity. Following analysis of our cell and media samples using liquid chromatography/mass spec (LC/MS) and high performance liquid chromatography (HPLC) with electrochemical detection (EC), we found abundances of HCY, and nitro-HCY. Other LCMS and HPLC data collected from the rat samples yielded high concentrations of what we believe to be homocysteine sulfinic acid and low concentrations of HCY. The oxidized forms of HCY, nitro-HCY, and homocysteine sulfinic acid have the potential to be either intermediates in the HCY to HCA transformation or simply alternative oxidized forms of HCY. We will continue to investigate the relationship between bipolar disorder and the presence of these compounds.

Sajda Adam

PA - Drexel University

Discipline: Social Sciences

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Abstract Name: Assessing Real-World Medication Adherence in People Living with HIV in the Era of One-Pill Regimens: The Role of Cognition, Self-Report, and Performance-Based Assessments

Medication adherence is critical for health in people living with HIV (PWH). There is an ongoing need to determine the best ways to identify people at risk of adherence problems, as newer one-pill-a-day regimens may involve different cognitive demands than previous complex regimens. This study investigates the relationships among neuropsychological functioning, medication management performance, self-reported adherence, and viral load in people living with HIV. We hypothesize that cognitive impairment will negatively influence medication management and virologic control, and that performance-based adherence measures will better predict virologic control than self-report. Participants were 70 HIV+ adults (ages 30-77, 79% Black) receiving cART (combined retroviral therapy). 67% had undetectable HIV RNA. 87% were prescribed one-pill-a-day regimens. Participants completed neuropsychological assessments, the Medication Management Test-Revised (MMT-R), the AIDS Clinical Trails Group Adherence Questionnaire, and blood sample collection. Pearson correlations examined cognitive domains in relation to MMT-R performance, and cognition, MMT-R, and self-reported adherence in relation to viral load. Most cognitive domains, particularly verbal memory (r=.38, p=.001) and executive function (r=.36, p=.002), were positively associated with MMT-R. Working memory was significantly associated with log viral load (r=-.26, p=.050). One aspect of MMT-R, which involved filling a pillbox (r =-.242, p=.069), showed a trend for being associated with log viral load. Self-reported adherence was not associated with log viral load (r=-.131, p=.335). In sum, multiple cognitive domains were related to better MMT-R performance, but only working memory was associated with viral load. The pillbox domain of the MMT-R showed a trend for being a predictor for real-world virologic control and provided a more objective measure of adherence than self-report. In the era of one-pill-a-day regimens, simple adherence assessments (e.g., filling a pillbox) appear to be more important than assessing other aspects of adherence (e.g., arithmetic) that were more relevant during the era of more complex regimens.

Isabella Adamo

VA - Virginia Tech

Discipline: Natural and Physical Sciences

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Abstract Name: Potamogeton crispus Interrelationships with Ecosystem Metabolism: An Aquatic Plant Survey of Lake Menomin

Lake Menomin has been experiencing declining water quality due to high levels of nitrogen and phosphorus. In addition to its hyper-eutrophic status, there is also a restricted aquatic species known as Potamogeton

crispus present throughout the water body. This exotic plant is equipped with aggressive traits like early spring emergence, low light tolerance, and high resilience. Coupled with its preference for eutrophic waters, P. crispus can outcompete native aquatic vegetation, forming dense monocultures. We conducted a survey of present macrophytes and ecosystem metabolism across six fishing docks and one open-water site, to determine the frequency of occurrence of P. crispus. Plant biomass, dissolved oxygen, light, temperature, and water quality data were recorded to examine a possible additional effect of the invasive within the altered ecosystem. No correlation was found between P. crispus and gross primary productivity, or native abundance. However, there was a higher abundance of native species than hypothesized, suggesting high native diversity is likely able to compete with invasive species. Our findings indicate a lake-wide macrophyte survey is necessary to fully understand ecosystem composition and metabolism; furthermore, how these processes fluctuate as eutrophic conditions increase.

Cydney Adams

IL - Eastern Illinois University

Discipline: Social Sciences

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#1 Cydney Adams

Abstract Name: Public School Per Pupil Expenditure and Crime Rates

How is educational funding implemented at the local level to affect crime rates in various cities? The school to prison pipeline is prevalent in discussions surrounding crime and incarceration rates in modern day America. Past research has suggested that the level of education an inmate has impacts their likelihood of facing incarceration, as well as recidivism rates, with the higher degree received, the less likely someone is to face additional prison time. Furthermore, the addition of Student Resource Officers into schools in recent years has suggested that a zero tolerance policy in the classroom links to rising crime rates in the area. I aim to address how state educational expenditures in schools can affect crime rates in three cities– Boston Massachusetts, Portland Oregon and El Paso Texas, looking specifically at violent crime and property crime over a 10 year time period. The three selected cities will allow us to examine funding on a broad level to better apply state and local funding to school districts in the future. My research suggests that higher per pupil expenditure in public school districts reduces both violent and property crime rates in the United States at large, which is translated to the above municipal governments and their school districts. I suggest where cities see success based on where funds are allocated, and how improvement can continue to drive down city wide crime rates.

Juliet Adams

TX - Texas Woman's University

Discipline: Social Sciences

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Abstract Name: Sticking to the Plan: An Analysis of Coping Styles and Treatment Perceptions

This project intends to synthesize two research studies to address our research question: How do various coping strategies correlate with behavior, benefit, and burden distinctions in treatment perceptions?Low

adherence to treatment plans is prevalent in caregivers of children with disabilities and people with Type II diabetes (T2D). Just as individuals with T2D are responsible for adherence to their treatment plans, primary caregivers of children with disabilities are also largely responsible for ensuring adherence to their child's treatment plan. Previous studies indicate that coping techniques and treatment perceptions significantly influence treatment adherence in both populations. More specifically, treatment perceptions of one's adherence are important as they provide insight into cognitive aspects of treatment adherence; these can be defined into three distinctions: benefit, burden, and behavior. This project aims to bridge a gap in existing research by comparing how these different dimensions of treatment perceptions relate to various coping mechanisms.Study 1 recruited 300 individuals with T2D and administered the survey virtually. Participants reported their use of various coping strategies, as well as their perceived adherence and attitudes regarding their treatment plan. Study 2, targeting 500 primary caregivers of children with disabilities, will employ similar tools for a comparative analysis.Results from Study 1 reveal that each coping strategy is associated with at least one dimension of treatment perception. Active, professional support, positive growth, and emotional support strategies show positive correlations with benefit and behavior perceptions and negative correlations with burden perceptions; avoidant and self-blame strategies are linked to negative behavior perceptions and positive burden perceptions. Although data collection for Study 2 is ongoing, similar patterns are expected. Ultimately, the synthesis of these studies will provide insights into the relationship between treatment perceptions and coping strategies across varied populations with implications for targeted applications for treatment adherence improvement.

Alyssa Addison

CO - University of Northern Colorado

Discipline: Health and Human Services

Authors:
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Abstract Name: Menstruation, Products, and Education in Jails

Incarceration leaves individuals with incredibly few rights, however incarcerated individuals should still be entitled to medical needs, no matter their incarceration location or length of sentence. In 2023, there were about 76,000 women incarcerated in jails across the United States (Kajstura & Sawyer, 2023). These women have unique health needs, one of which is menstruation. Individuals who menstruate need to have access to medical supplies to adequately care for themselves, for their both their physical needs and mental health. Since inmates do not have extensive autonomy, advocating for their right to a minimum of health rights is at the upmost important. Lack of access to menstruation products could be considered inhumane treatment of the incarcerated. The goal of this study was to evaluate if Colorado jails provide adequate amounts and 'good quality' menstrual products and if these jails provide education about menstruation and menstruation-related care. There is currently no definition of 'good quality' menstruation products which was another important factor identified within this research. A survey was distributed to 4 different jail sites, and a total of 136 incarcerated women along with another 21 individuals from the general public completed the survey. The survey results found that 57.4% of participants indicated a desire for menstruation related education, 47.8% of participants indicated that they did not have adequate access to menstruation products, and 48.5% of participants indicated that they did not believe the quality of products were satisfactory or of 'good quality'. This research is breaking barriers as prior to this study, there was no published literature regarding menstruation in jails.

Rebecca Adejumo

OH - Capital University

Discipline: Natural and Physical Sciences

Authors:
#1 Rebecca Adejumo

Abstract Name: Comparison and Identification of Fungi in Glaciated and Non-glaciated Areas of Ohio

Of the estimated 1.5 to 5.1 million species of eukaryotic organisms on the planet, fungi are the second largest group. Despite this, only a small portion, roughly 100,000, are described and known to science, and many of these are very difficult to identify based on visual assessment alone. Thus, there are many unidentified fungal species that could be beneficial or detrimental to humans and other organisms. Fungi can inhabit and survive in many different environments; for instance, they can be found in both glaciated and non-glaciated ecosystems of the Midwestern US. The objective of this research was to identify and compare fungi species present in Ohio. Two 75-acre properties with similar ecosystems (forest, grasslands, stream, wetland) were selected for comparison; one is in the glaciated part of the state, and one is in the non-glaciated part. Although the ecosystems are similar, differences in soils and tree species exist due to the glacial patterns of the past. Permission to obtain samples was obtained for both properties. A total of 95 samples from the non-glaciated property were photographed in-situ and collected; samples were stored in the freezer pending DNA analysis. A total of 108 samples were obtained from the glaciated property for similar analysis. DNA was extracted from each sample, amplified through PCR, and analyzed for species identification through the International Barcode of Life (IBOL) database. Surprisingly, more than 90% of species identified existed in both glaciated and non-glaciated soil, and all major North American taxa of fungi were found in these samples. Additional work from this study will include an educational field guide for each of these two properties (both are educational sites used by both students and the public) for use in the identification of local fungi.

Rebecca Adejumo

OH - Capital University

Discipline: Interdisciplinary Studies

Authors:
#1 Rebecca Adejumo

Abstract Name: Analysis of the Portrayal of Science at the Creation Museum (Petersburg, KY).

Anti-science rhetoric is not new and generally comes from a lack of understanding of science and its theories or a desire to promote another way of thinking. To determine the extent of such rhetoric being used at the Creation Museum in Petersburg, KY, a day was spent analyzing each exhibit from start to finish. The museum is the product of a group of “Young Earth Creationists”; this religious philosophy begins with the assumption that the world is 12,000 years old (rather than billions) and that God created the universe, the world, and all life forms in six 24-hour days (rather than evolving over time). As opposed to the glowing views of the showcased creationists, scientists are depicted as anti-God and untrustworthy. Scientific theories (such as evolution) and methods (such as radiometric dating) are dismissed by showing singular examples that do not fit the theories well. For instance, it is stated that death (and therefore the presence of carnivores, omnivores, most fungi, and viruses) did not exist initially and is not part of God’s plan; yet, there is no explanation for their presence today. Visitors with any amount of science background are left with a lot of unanswered questions throughout. Analysis of the creationist and scientific accounts of more than forty hypotheses, theories, and Biblical references are ongoing, with the goal of constructing a comparative educational poster that includes similarities and differences in understanding of creation, evolution, age of the earth, catastrophic events, mutations, death, and other relevant topics.

Miriam Adhanom

CA - California State University - Long Beach

Discipline: Visual and Performing Arts

Authors:
#1 Miriam Adhanom

Abstract Name: “My Country, The Country of Heroes”: Resistance, Resilience, and Music During the Eritrean Struggle for Independence

In 1991, Eritrea was finally recognized as an independent nation after decades of Western colonization, intervention, and a thirty-year long war for independence. Music played an integral part in shaping the revolution. It strengthened Eritrean revolutionaries, fostered a fledgling sense of national identity across the diaspora, and united the fighters across sociolinguistic divides. This paper examines the music of the revolution, with particular emphasis on its lyrical content, instrumentation, and sociopolitical impact. The text presents a sampling of popular songs recorded over the span of the war: “My Country, The Country of Heroes” (1958), “Meley” (1972), and “Yohana” (1991). The methodology for this work draws from musicological analysis, published sources, and an interview conducted with Aron Kibreab, a prominent Eritrean singer who resides in the United States.

Shreyas Adicherla

VA - George Mason University

Discipline: Social Sciences

Authors:
#1 Shreyas Adicherla

Abstract Name: The Art of the Regime Change: Navigating the Product of Cultural Effects of Revolution in Modern-day Mongolia

Mongolia is a present-day nation that was built upon many different regime changes over the past century. Throughout these vast changes in political structure, there has been one unending constant: Mongolian societal and cultural norms. Nation-states are built on traditions and cultural norms that define the societal fabric of a particular nation. Mongolia throughout its recent regime change history has undertaken a socialist and communist socioeconomic political structure for the majority of its post-feudal era. Its adherence to socialist principles was likened to its geopolitical standing as China and Russia were also going through socialist revolutions during this period, but the present-day democratic state of Mongolia is reverting to electing and sustaining support for socialist leaders. The fundamental economic problems that Mongolia has faced in the twenty-first century along with corruption sentences for many founding leaders of democratic Mongolia have played a major role in this shift. However, there are innate cultural practices that draw the communal nature of Mongolian society to socialist tendencies. Culture and political landscape are inextricably connected with the Buddhist Sangha, a major bedrock of the community driving socialist change and revolution. The Buddhist Sangha was later detached from the government due to a move to secularize, but the innate Buddhist ideals have proliferated within the government to create a unique Mongolian political structure. Secularization in this case isn’t a case of removing culture, rather it allows Mongolia to create social change and allows access to freedoms while also holding onto cultural norms that have been established for centuries before. This push for modernization in the past decade has allowed Mongolia to disassociate itself from being answerable to the free market and has allowed it to be first responsible to its people allowing for the most sustainable cultural growth.

Russell Adzedu

QAT - Georgetown University in Qatar

Discipline: Humanities

Authors:
#1 Russell Adzedu
#2 Ishmael Bonsu-Nyame
Ishmael Bonsu-Nyame

Abstract Name: SHIFTING NARRATIVES: EXPLORING GENERATIONAL CHANGES IN GHANAIAN LITERARY DEPICTIONS OF MENTAL ILLNESS

Ghana's storytelling tradition, once rooted in oral literature, has undergone a profound shift. The prominence of print and digital literature in recent years has reshaped the entire landscape (Osa, 1985). This resurgence of literature, particularly in the form of contemporary novels or "storybooks," has made fiction more accessible, particularly to children across the nation (Ghana Book Development Council, 2021). This shift has not been limited merely to the medium of dissemination, but also in its portrayal of health conditions such as mental illnesses. This is pertinent as media, including various literary forms, have played a major role in the perception of the stigma surrounding mental illness in Ghana. Drawing upon the historical context of mental illness portrayals in Ghana, this paper undertakes a comparative analysis of the changing depiction of mental illnesses within the Ghanaian literary scene. By examining the evolution of these portrayals across generations, the paper argues that there has been a discernible generational shift in Ghanaian literary representations of mental illness. This paper uses labeling theory and content analysis to analyze various forms of recorded oral tradition. These analyses will illustrate how these literary forms have presented mental illness and mentally ill people in Ghana, bearing in mind that literature not only entertains but echoes and informs the opinion of society (Dei, 2013). Subsequently, these same measures are also taken into account when analyzing some of the most popular Ghanaian contemporary novels of the past few decades and their portrayal of mental illness. These will be key in determining the presence of a discernible shift within these portrayals. Hopefully, the results from this research will spark some discourse on the lingering effects of stigmatization of mental illness in Ghana, and hopefully steer the government and individuals to enact changes that will move the country forward.

Fatima Aftab

NY - Brooklyn College

Discipline: Natural and Physical Sciences

Authors:
#1 Fatima Aftab

Abstract Name: In vitro evaluation of Platinum-Gold Compounds as potential chemotherapeutics and targeted agents for ovarian cancer and study their interactions with DNA and DNA Quadruplexes.

Cancer chemotherapy is limited by intrinsic and acquired resistance of tumors to treatment, and lack of selectivity that leads to off-site toxicity and serious side effects. Despite multiple advances in cancer targeted therapies, Platinum(II)-based drugs such as FDA-approved cisplatin, carboplatin, and oxaliplatin are widely used as chemotherapeutics. However, these drugs are limited by lack of selectivity and appearance of resistance. Therefore, to improve the pharmacological profile of these drugs, a Platinum IV core based on

carboplatin and linked to a Gold (I) moiety will be biologically evaluated. Pt (IV) compounds can improve stability and bioavailability of platinum drugs due to its octahedral geometry, which allows for the attachment of two extra ligands in the axial position that can then be selectively released after reduction. The solubility, activity, and selectivity of the Pt(IV) compounds may be improved by choosing moieties with well-known anticancer effects and/or targeting vectors, such as Gold (Au) moieties. Therefore, our modified drug Pt (IV) - Au (I) will be evaluated in vitro as a potential chemotherapeutic and targeted agent for ovarian cancer since we hypothesize that the presence of two different biologically active metallodrugs (Pt IV and Au I) on the same molecule may improve the pharmacological profile due to synergistic or cooperative effects and thus warrant further preclinical studies with selected/optimized compounds. To investigate its anticancer properties various biological assays such as the cell-viability, anti-angiogenesis, anti-migratory, and cell-death assay will be performed. G-quadruplex structures have been identified in biologically significant genomic loci, notably in telomeres and thus they play a pivotal role in cancer progression and development, with their drug-induced stabilization emerging as a potential novel anticancer strategy. To assess the stabilization and binding capabilities, in vitro spectroscopic techniques such as the FRET DNA Melting Assay, UV-vis spectroscopy and Circular Dichroism will be performed.

Deeya Agarwal

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Deeya Agarwal
#2 Jai Satrawada
Jai Satrawada

Abstract Name: Predicting Commercial Apps Success Using AI/Machine Learning Techniques

In today’s world, designing successful applications is challenging due to the large variety of existing apps that users can choose from to address all sorts of customer needs. To minimize the shortcomings of these applications, it is important for app designers to know what attributes can help their apps stand out. To do so, we analyzed a dataset from kaggle consisting of 9660 apps from the Google Play Store using IBM Watson, a data-analytics processor, to create multiple machine learning models based on this data. The models used features like category, size, price, and content rating of the apps to predict their ratings after its release, which are used as a measure of success. Various aspects of the models were analyzed such as F1 score, accuracy, precision, and recall. We predicted that the most significant factor is the category, which determined the type and functionality of the app. Our reasoning behind this was “if nobody was interested in a type of app, nobody would download it.” We implemented the Snap Random Forest Classifier and XGBClassifier, which are both supervised learning models, with enhancements such as HPO-1, HPO-2, and FE. The XGBClassifier with all 3 enhancements was the most accurate (69%, 68%, & 67% respectively), while the Snap Random Forest Classifier pipelines were less accurate. The overall accuracy of the experiment was up to 69% correct using the highest performing classifier, and the ROC Curve had a result of 65-100%. Finally, the confusion matrix shows that the model most accurately predicted ratings of 4 and 5. The results demonstrate that the app’s category and content rating had the biggest impact when predicting the rating, similar to our hypothesis. In conclusion, by implementing the XGBClassifier with enhancements, we can effectively predict app success based on app categories and content ratings.

Dhruv Aggarwal

TX - The University of Texas at Austin

Discipline: Social Sciences

Authors:
#1 Dhruv Aggarwal
#2 Kenji J Nishimura
#3 Michael R Drew

Abstract Name: Investigating the neural circuitry of hyperarousal using a novel mouse model of stress-induced fear sensitization

Pavlovian fear conditioning is the process by which a neutral environment becomes associated with an aversive event, resulting in conditioned fear responses to the previously innocuous stimuli. Dysregulation of this process is believed to contribute to the development of trauma-related disorders, particularly post-traumatic stress disorder (PTSD). Despite extensive pre-clinical investigation in rodent models, current therapeutic strategies for PTSD have limited efficacy. A potential reason is the insufficient understanding of how a single stressful incident can broadly sensitize fear behavior in response to situations unrelated to the original trauma. This phenomenon, termed fear sensitization, may underlie PTSD symptoms of hyperarousal and reactivity in which patients exhibit disproportionate reactions to mild, non-associated threats. The purpose is to develop and characterize a mouse model of fear sensitization that focuses on non-associative fear learning, which does not require the formation or retrieval of an associative fear memory resulting from stress exposure. This will facilitate investigation into the neural consequences of heightened fear sensitivity in specific brain regions, and potential therapeutic interventions for symptoms that may be resistant to Pavlovian frameworks. Our model involves placing mice in various contexts, each distinguished by unique visual and olfactory cues. Additionally, we utilize the mouse's freezing behavior as an index of an enhanced fear response. The mice are divided into two groups: a Stress group, subjected to four footshocks, and a No Stress group, which receives no shocks. Subsequent exposure to a tone, a harmless and novel stimulus, gives rise to an exaggerated fear reaction of the Stress group which is a significant distinction. The immediate early gene, c-Fos, has enabled us to identify brain regions hyperactive during periods of stress and sensitization, like the paraventricular thalamus. Overall, these findings illuminate the neurological basis and circuitry of stress-enhanced fear learning, and insights into the mechanism of PTSD.

Rishit Agrawal

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Rishit Agrawal

Abstract Name: Demonstration of Multimodal Sensing in Characterizing an Exoskeleton Device for Leg Muscle Rehabilitation

Leg muscle rehabilitation is mostly required for elderly patients. At San Jose State University, an automated exoskeleton device was designed for aiding such patients. This study delves into the integration and sophisticated utilization of multiple sensors, including EMG sensors, rotary encoders, inclinometers (accelerometer-like sensors), and pressure sensors. Electromyography (EMG) sensors are pivotal in detecting and processing muscle impulses, enabling precise control of the exoskeleton's movements. The MyoWare EMG sensors employed were calibrated to allow for automatic filtration of the baseline muscle activity to capture a range of 0 to 450mV. Moreover, optimizing the placement of these sensors at varying lateral distances has enhanced signal strength and reliability, essential for accurate muscle activity detection. For this purpose, multiple pairs of EMG sensors with variable separation were mounted on the leg and optimum position and separation was determined. Additionally, the introduction of a WitMotion WT901C inclinometer provided critical insights into limb orientation and movement dynamics. This sensor was used to further characterize the orientation and movement of the knee brace. Signswise Optical 360-step rotary encoders

were calibrated and utilized to offer precise measurements of knee-joint angles and rotational velocities. Results indicate measurements of 18.355 deg/s for extension and 19.321 deg/s for contraction. A software program was developed to utilize a time-interval-tracker for time of operation measurements, with a reported average time varying from 1.773-1.578 seconds as pressure increases from 30-60 psi. The addition of pressure sensors allows for the assessment of interaction forces between the patient and the device, crucial for tailored adjustments and comfort during rehabilitation exercises. Such feedback minimizes the risk of injury during rehabilitation exercises. The current presentation will include the details on the leg muscle exoskeleton device along with the performance of each sensor mounted on it for its characterization.

Siya Agrawal

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Siya Agrawal
#2 Lauren M. Schiebelhut
#3 Michael Dawson

Abstract Name: Testing for Genetic Associations with Sex in the Sunflower Sea Star

The sunflower sea star (Pycnopodia helianthoides) is a keystone species along the West Coast of North America that contributes towards the health of marine ecosystems. Sea star wasting of the spongy limb tissues of the species has been prevalent, leading to a rapid decline in population density and reproduction. Current literature regarding sex-specific single-nucleotide polymorphisms (SNPs) in the species is lacking, but genetic associations with sex have been documented in other echinoderms. Determining genetic associations with sex could provide insight into potential relationships between genes, sex, and differential vulnerability to disease due to sex. Using whole genome sequencing (WGS) of 19 female and 16 male Pycnopodia samples, we tested for genetic associations with sex. Results of this study may provide insight on sex ratios of the sunflower sea star in the wild and exploring whether sex ratios changed after mass mortality due to wasting and other stressors. This could aid in captive breeding and conservation efforts of the critically endangered species.

Nicole Agre

MN - Hamline University

Discipline: Interdisciplinary Studies

Authors:
#1 Nicole Agre

Abstract Name: DNA transfer via blood with varying substrates, pressures, and times

There is a pressing need for research that enables forensic scientists to better understand what facilitates DNA transfer because of the concern of false convictions due to indirect transfer. In this study, the effects of pressure, duration of contact, and substrate were examined to see how they influenced the amount of DNA transferred. Others have investigated these variables, but this study utilized new variations that more closely resembled crime scenes, including heavier pressures and a semi-porous substrate. Blood was transferred from glass to another substrate using a varying pressure and a varying time. The samples were dried completely, and DNA was extracted using forensic-grade DNA extraction kits. Of the three factors investigated, the

substrate variable was the only one that demonstrated significant differences between the substrates in the amount of DNA recovered; semi-porous magazine returned quantitations of DNA larger than the evaluated porous substrate cotton. As a result, the ink was evaluated to determine whether that background was artificially inflating the data through interference. Ethanol was added to magazine pieces to recover only the ink portion of the substrate. When quantitated, the samples indicated DNA concentrations even though no DNA extraction had been conducted. The results from this study indicate that the recovery of DNA from surfaces with ink needs to to account for background information, which is often difficult with the heterogeneity of ink used on a page. Namely, if forensic scientists cannot obtain an accurate DNA quantitation, the sample could be overdiluted which could cause further issues in the DNA workflow such as allelic dropout. Therefore, there is a significant need for further research into inks and the effect on DNA quantitation using spectrophotometry techniques.

Tayahna Rae Agtarap

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Tayahna Rae Agtarap
#2 Amanda Fisher

Abstract Name: Understanding the relationship between pollen to ovule ratios and pollination methods in Justicia (Acanthaceae)

Justicia (Acanthaceae) are flowering plants with diverse floral morphology that vary across species with various corolla colors and corolla tubes ranging from short and wide to long and narrow. The flowers have two anthers and usually two thecae in each anther, but are often displaced along the filament, different sizes, and may have hooks or other extensions of the filament. Flower morphology and pollinator groups have co-evolved, and flower morphology in the genus is correlated to pollinator group to ensure reproductive success. This diversity of floral morphology and pollinators makes Justicia a useful study system for the evolution of reproductive biology. We studied the relationship between pollen to ovule ratios and pollination methods across seven Justicia species to test why different species may produce varying quantities of pollen and have heteromorphic anthers. We counted total pollen grains in each anther sac and number of ovules to consider the ratio of pollen to ovules as the reproductive potential of the flower. We found that pollen to ovule ratios in these species ranged from 203:4 to 21670:4. Justicia betonica, a bee-pollinated, obligate outcrosser, has a pollen to ovule ratio higher than hummingbird-pollinated, facultative outcrossers, J. californica, J. candicans, and hummingbird-pollinated J. sonorae. Both bee and hummingbird-pollinated species have higher pollen to ovule ratios than lepidopteran-pollinated J. petiolaris, J. lythroides, and J. longii. The differences in pollen to ovule ratios between species pollinated by different animal groups suggests there may be differences in pollination efficiency in the pollinator groups. Some species exhibited large variability in pollen production between inner and outer thecae, while others had very little. Our study will aid in understanding potential relationships between pollen production and animal pollination methods.

Kandice Chanel Agudo

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Kandice Chanel Agudo
#2 Mike Ghedotti

Abstract Name: When Two Worlds Col-Light: Chemical Confirmation of Bioluminescence in Antarctic Krill

Deep sea species are the most common organisms to exhibit bioluminescence in the marine ecosystem. However, not all bioluminescent species reside solely in the deep sea as organisms like Euphausia superba (Antarctic Krill) appear to exhibit bioluminescence as opposed to their Pacific Krill counterparts. It is not confirmed if these krill are in fact, bioluminescent. Typically, histological techniques are employed to identify the presence of bioluminescent cells in various locations within this species. However, chemical reactions are also used to confirm this bioluminescence by determining the presence of luciferin (substrate) and luciferase (enzyme) within the tissue, both of which are necessary to produce light, and reacting the tissue samples with adenosine triphosphate to confirm visual light production. The confirmation of this bioluminescence in the form of a flash of light during the reaction suggests that the organ is, in fact, intrinsically bioluminescent and the organ does contain the photophores required for exhibiting this phenomenon. The chemical techniques used will assert that the mechanisms used for light production are functioning properly within the organism. Not much is known about bioluminescence within marine organisms and to be able to shed light on this species may help to bring more awareness to the global efforts to take care of our oceans in order to save these rarities.

Kandice Chanel Agudo

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Kandice Chanel Agudo
#2 Avery Cobb
#3 Nicholas Kallan
Avery Cobb

Abstract Name: Exploring the Stereospecificity of the Bromination of Substituted beta-Methylstyrene Derivatives

Reaction stereospecificity is incredibly important in fields such as medicinal and synthetic chemistry. Normally, bromination reactions are stereospecific, but with trans-beta-methylstyrene, a mixture of stereoisomers forms. By varying the R-groups on the reactant, a different reaction outcome may occur which can restore diastereoselectivity as we believe that the electronic nature of the substituents can influence the selectivity in a predictable way. By attaching these different R-groups with various electronic natures and positions (ortho vs. meta. vs. para) we predict that we can improve selectivity in these brominations. Using Suzuki coupling to generate the o-nitro-substituted-trans-beta-methylstyrene, a bromination with this reactant who has a strongly electron withdrawing group (o-nitro) is expected to result in a completely selective reaction for the product, anti-dibromide as compared to the minor product syn-dibromide.

Ayes Aguiar

ME - University of Maine at Farmington

Discipline: Natural and Physical Sciences

Authors:
#1 Ayers Aguiar
#2 Grace Parrott

#3 Ethan Kalin
#4 Nicole Hayes

Abstract Name: Trends in Anatoxin-a and Microcystin Concentrations in Two Eutrophic Lakes: The Role of Habitat and Season

Cyanobacterial Harmful Algal Blooms (cHABS) are an overabundance of cyanobacteria and are most prevalent in waterbodies that have high levels of nutrient pollution and biological productivity which are referred to as eutrophic. Anatoxin and microcystin are two types of toxins produced by cyanobacteria (cyanotoxins) that have been found in waterbodies globally and pose serious challenges to human and ecological health, while predicting their presence spatially and temporally remains a difficulty. This project explored anatoxin and microcystin levels in the water column near the benthic zone at the bottom of the lake (near-bottom) and in the pelagic zone near the surface (near-surface). Differential habitat preference for the water column (pelagic) or lake-bottom substrate (benthic) and differential toxin production by various cyanobacterial taxa suggest that toxin levels will differ across lake depths. We sampled near-surface and near-bottom lake depths in June and July for eight locations across two eutrophic lakes in west-central Wisconsin. Total biomass and cyanobacterial biomass were quantified with fluorometric analysis of the photopigments chlorophyll-a and phycocyanin from water samples. Anatoxin and microcystin concentrations were determined using ELISA immunoassays. We observed a seasonal increase in near-surface biomass during June and July which correlated with an increase in microcystin and phycocyanin levels that were significantly greater in near-surface samples than near-bottom samples according to independent t-tests (p<0.05). Although we did not identify significant relationships between anatoxin levels and season, sampling depth, or microcystin levels, elevated anatoxin detections at near-surface depth are suggestive of anatoxin production by pelagic cyanobacteria near the surface of these lakes. While toxin levels were typically higher at near-surface depth where a surface cHAB bloom was observed, relationships between toxin levels across the seasons and at different waterbody depths need to be further elucidated.

Hephzibah Agunbiade

TN - Fisk University

Discipline: Mathematics and Computer Science

Authors:
#1 Hephzibah Agunbiade
#2 Elijah Asemota
#3 Sanjukta Hota

Abstract Name: Modeling COVID-19: Pandemic and Endemic Analysis with Mitigation

The Coronavirus Disease of 2019 is a disease caused by the SARS-CoV2 virus [2]. During 2020, the disease spread to many countries in the world and led to a worldwide pandemic. The SIR epidemic model [1], which is a simple nonlinear differential equation model, has been used to analyze quantitatively the spread and control of different infectious diseases and predict their future outcomes. In this project, we considered an SIR model for COVID 19 implementing a mitigation factor which covers the effect of vaccination and public health measures. In the first part of the project, we considered a closed system and derived explicit solutions to the model variables using the Lambert W function and derived a formula that determines the maximum infected populations over the course of the pandemic. We analyzed and validated our solutions using Python and matplotlib and recent COVID-19 data from Shelby and Davidson counties in Tennessee. In the second part of the project, we conducted endemic analysis of COVID-19 by including new arrivals and reinfection factor into the SIR system. We derived the endemic equilibrium point providing the long-term solutions of S, I, and R, and a formula to compute the reduction in population occurred through the course of COVID-19.

Emmanuel Agyekum

IL - North Central College

Discipline: Engineering and Architecture

Authors:
#1 Emmanuel Agyekum

Abstract Name: Magnetic Innovations: Redesigning a Magnetometer Circuit Board

In collaboration with Fermilab for the renowned Muon G-2 experiment, this research at North Central College involved the design and development of a magnetometer circuit board for the G-2 experiment. The project, guided by professor Dr. Paul Bloom, who works closely with Fermi lab, aimed to overcome the limitations of the existing circuit board, which was restricted by proprietary software and vendor dependence, and plagued with design issues like inadequate strain relief on input and output connectors, and ultimately contribute to the data collection for the g-2 experiment as it is a critical instrument for the experiment.Addressing these limitations, the project shifted to open-source software, broadening manufacturing options and augmenting board functionality. The redesigned board features a sophisticated 3-axis Hall sensor system. Each channel, with a dedicated constant current source for the Hall sensor, ensures refined signal conditioning before digitization. This enhancement not only overcomes the original design's shortcomings but also extends its applicational reach.Key challenges in this redesign included interpreting intricate circuit diagrams, mastering layout software, analyzing data files, and refining soldering techniques. These barriers were essential in the development and iterative testing of the prototype, ensuring its efficacy and reliability.The implications of this redesign are vast. The circuit board's versatility allows for its application in significant particle physics experiments, akin to "Muon g-2," and in advanced optical instruments like MOKE Microscopes.In conclusion, this research underscores the necessity and impact of redesigning the magnetometer circuit board. It not only enhances its functionality and availability but also demonstrates the substantial contributions of undergraduate research in evolving experimental physics tools, particularly in settings with limited resources. thereby contributing to the scientific community.

Adaeze Ahanotu

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 Adaeze Ahanotu
#2 Laura Hanson
#3 DiAnna Hynds

Abstract Name: Contribution of Infection with Cytomegalovirus (CMV) to the Production of Alzheimer’s Disease-associated Beta Amyloid in Rat Neurons

Neurological disorders like Alzheimer's disease are a pressing global health concern. We are investigating the intricate relationship between cytomegalovirus (CMV) infection in neurons and production of pathological markers of Alzheimer’s disease, particularly how CMV influences the production of beta-amyloid, a hallmark feature of Alzheimer's disease. In this context, our central hypothesis posits that primary neurons exposed to CMV exhibit an elevated rate of beta-amyloid production, unraveling a potential link between viral infections and Alzheimer's pathology. Simultaneously, we assess how CMV infection may lead to increased production of beta-amyloid using western blotting, enzyme-linked immunosorbant assays (ELISAs), and immunocytochemical analysis of B35 cells infected with mouse CMV (MCMV). Concurrently, we are exploring the regulatory role of cholesterol in Alzheimer's disease using pharmacological tools (statins) to

decrease cholesterol production with and without MCMV infection. Our preliminary data indicates that MCMV infection decreases the levels of amyloid precursor protein concomitant with an increase in the production of the 1-42 beta-amyloid fragment by western blotting and ELISAs, respectively. This multifaceted approach, spanning diverse experimental techniques and temporal dimensions, enables a comprehensive understanding of the interplay between CMV, beta-amyloid production, and the preventive potential of statins in Alzheimer's disease. In future experimentation, we plan to confirm the results obtained using B35 cells in primary cultures of rat cortical neurons. The study shed light on the specific effects of cholesterol and statins on cultural rat neurons, providing a solid foundation for developing interventions that can potentially mitigate or prevent the progression of Alzheimer's disease.

Eshel Ahmad

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
#1 Eshel Ahmad

Abstract Name: The Effect of Anxiety on the Brain

Anxiety disorders are mental illnesses that cause feelings of fear and worry. The criteria for an anxiety diagnosis, according to DSM-5 criteria, is excessive worrying lasting for a period of at least 6 months, along with experiencing associated symptoms like fatigue and brain fog. Almost a third of U.S adults experience an anxiety disorder at some point in their lives. It, like many other mental conditions, have physical effects on the mind such as weakened connections between parts of the brain and altered neurocircuitry. Microglia are immune cells in the brain that are essential to investigate because of the role they play in anxiety. Multiple studies conducted on rats and mice have found that these cells are activated when anxious behaviors such as obsessive grooming behaviors, hair pulling, and elevated heart rates are displayed. Optogenetics is a groundbreaking tool that has been used in many studies researching anxiety. It utilizes light to control the activity of neurons, as well as microglia. Through a literature overview, I provide an analysis of the current research on findings of optogenetics investigations into how anxiety disorders and microglia impact the structure of neurocircuitry in the brain. Investigations into the neurocircuitry of the hippocampus, lateral septum, and amygdala are vital to understanding how anxiety works in the brain. These specific regions contain cells that have been found to be activated during anxiety and as a result, these parts of the brain are directly involved in anxiety. During chronic anxiety, certain parts of the brain can undergo physical changes in addition to altered functions.

Shazila Ahmed

UAE - Zayed University

Discipline: Business and Entrepreneurship

Authors:
#1 Shanzila Ahmed
#2 Md Sohazur Islam Sozib
Md Sohazur Islam Sozib

Abstract Name: Bridging Financial Gaps: Enhancing Expat Workers’ Financial Inclusion in the United Arab Emirates

This research aimed to uncover the challenges expat workers face in accessing financial services and evaluated potential Fintech (Financial Technology) solutions to these challenges. Many Low-wage workers in the United Arab Emirates (UAE) do not have access to traditional bank accounts due to the minimum income threshold, resulting in lower financial accessibility. As such, completing international remittance are logistically challenging and often come with higher costs, which is a significant issue for low-wage workers. This research utilized semi-structured individual interviews with expat workers, bankers, fintech experts, and entrepreneurs as the main data collection tools. It also used secondary research to understand the UAE's financial inclusion policies. The study aimed to identify the barriers to financial accessibility and utilization of financial services. The investigation revealed key issues such as a lack of financial literacy, stringent regulations, and limited banking options tailored to expats' needs, all hindering their full financial participation in the UAE economy. This study's findings highlight the critical need for innovative, inclusive financial frameworks tailored to the diverse expat workforce in the UAE. It underscores the urgency of integrating advanced technological tools and policy reforms to ensure comprehensive financial participation and security for expats. The research reveals the complex interplay of factors contributing to financial exclusion in the UAE. The findings suggest that addressing these challenges is essential for enhancing the expat community's welfare and ensuring the UAE's socio-economic stability. This research paves the way for policy reforms and the introduction of tailored financial products and educational programs to bridge the existing financial gaps. By cultivating a more inclusive financial environment, this study promotes sustainable economic practices, benefiting the expat community, and contributing globally by setting a precedence for expat-centric financial inclusion strategies.

Mahad Ahmed

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

Authors:
#1 Mahad Ahmed
#2 David McDougal
#3 Arline Narez
#4 Victoria Fuentes

Abstract Name: Recurrent ethanol treatment does not produce a cumulative effect on plasma leptin levels in rats

Background: Hypoleptinemia is a potent orexigenic signal. Chronic ethanol (EtOH) consumption is associated with weight gain in humans, and acute ethanol treatment leads to reductions in leptin concentrations in both fasted humans and rats. The objective of this study was to determine whether short-term recurrent ethanol treatment has a cumulative effect on plasma leptin levels in rats, and whether treatment in the fed or fasted state influences the leptin lowering effect of EtOH. Methods: Two separate groups of male Sprague Dawley rats were exposed to either oral or intravenous (IV) treatment with EtOH (2g/kg via oral gavage or 0.067 g/kg/min IV for 30 min; n=7/group) on three consecutive days. Each rat served as its own control and received saline treatment either 7 d prior to or 7 d following exposure to EtOH. The oral group was fasted 12-14 h (overnight) prior to treatment, while the IV group was not fasted. Plasma leptin and EtOH levels were measured each day at baseline and 3 h following EtOH treatment. Data are expressed as mean + SEM. A two-way repeated measures ANOVA was used to test for differences in plasma leptin and EtOH levels due to treatment (saline vs. EtOH) or day (cumulative effect of treatment).Conclusion: Although we were able to replicate previous work indicating reduced leptin levels following acute EtOH treatment in fasted rats, our results do not support a cumulative leptin-lowering effect of recurrent EtOH treatment. Furthermore, IV EtOH treatment in the fed state did not have any impact on leptin levels. This suggests that the leptin-lowering effects of EtOH may either require the fasted state or may require ingestion and exposure of the GI system to EtOH.

Hafsa Ahmed

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Hafsa Ahmed
#2 Betsy Martinez-Vaz

Abstract Name: A Study of the Antimicrobial Properties of Black Cumin (Nigella Sativa) and its Associated Bacteria

The emergence of multi-drug resistant bacteria has led to a shortage of effective antibiotics and a potential public health crisis worldwide. Black cumin (Sativa nigella) is an annual flowering herb that has been used medicinally in many cultures and contains the active antimicrobial ingredient Thymoquinone. We investigated the presence of antibiotic producing bacteria associated with Black cumin plants and examined their antimicrobial activity. We hypothesized that the bacteria associated with the rhizosphere (soil attached to roots) of these plants had antimicrobial activity against safe ESKAPE relatives. Bacteria were extracted by mixing different parts of the plants (roots, leaves and roots plus soil) with 1X PBS buffer and vigorous shaking for 10 minutes. Aliquots of each extraction were serially diluted and plated on different growth media including ½ strength Tryptic Soy Agar, Starch-M agar, and Potato Dextrose Agar. After 24-48 hours of incubation, bacterial colonies were counted and analyzed for physical morphology distinctiveness. A set of distinctive isolates were tested for antimicrobial activity against safe relatives of ESKAPE pathogens. Antibiotic production was detected by the appearance of clear inhibition zones around microbial isolates when grown on plates containing ESKAPE relatives. The phyllosphere and roots had the largest microbial burden. A total of 33 antibiotic-producing isolates with activity against the following ESKAPE relatives were found; S. epidermidis, B. subtilis, E. coli, A. bayli. 56.6% of these isolates were associated with the rhizosphere of the plant. Eight antibiotic producers were selected for detailed characterization. 16S rRNA identification analyses, these isolates belong to the following genera: Entrobacter, Psudemonus, Stenotrophmans, and Exigroubacterium. Future studies will focus on genome sequence analyses to identify the antimicrobials produced by these bacteria and examine the genes and proteins involved in their biosynthesis.

Akrem Ahmed

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Akrem Ahmed

Abstract Name: Enhancing Continuous User Authentication

As the world increasingly relies on the internet for exchanging and storing sensitive data, the demand for a highly secure system becomes paramount. Traditional authentication methods, like PINs and passwords, are insufficient due to susceptibility to breaches and difficult usability. In response, there's a rising interest in biometrics, specifically in touch dynamics, as a means of continuous user authentication, especially for mobile and computer devices. This approach is interesting because it encapsulates both user-friendliness while also ensuring strong security. It actively monitors various aspects of how the user interacts with the device, such as their typing patterns, swiping gestures, or touch pressure. By analyzing this diverse range of actions, the system builds a fairly accurate profile of the user’s unique patterns. For example, when a person swipes around their phone, the system considers multiple factors like touch coordinates, duration of the

swipes, and touch pressures. By evaluating these broad user's behaviour, the system is able to create an authentic profile. The system then uses this profile to verify the user's identity over time. Essentially, this system does not rely on one source of data for verification but rather stores a wide spectrum of features and uses those behaviours to make the authentication process efficient.

Tonga Ahokovi

HI - University of Hawaii at Manoa

Discipline: Business and Entrepreneurship

Authors:
#1 Tonga Ahokovi

Abstract Name: Evaluating the Efficacy of Vacancy Taxation: Evidence from Washington D.C. Using Synthetic Difference-in-Differences

Vacancy taxation is increasingly viewed by policymakers as a potential solution to the challenges of affordable housing scarcity and urban revitalization. Despite this growing interest, there remains a significant gap in the empirical research evaluating the policy's effectiveness. This paper leverages a major reform of a vacant property tax in Washington, D.C. as a natural experiment to explore its impact on vacancies, home prices, and rents. Using a synthetic difference-in-differences design, I find that the policy led to a substantial decline in vacancies and concurrently increased the number of occupancies. However, I also find mixed evidence that suggests the policy increased home prices and rents.

Jackson Ailstock

IN - Franklin College

Discipline: Humanities

Authors:
#1 Jackson Ailstock

Abstract Name: Dictator or Savior: Indiana Governor Oliver P. Morton

Oliver P. Morton served as the Indiana Governor from 1861-1867. During his tenure, he guided Indian through the American Civil War. To some, he was known as the "soldiers' friend" due to his constant support of service members and routinely visiting them while stationed in camps in Indiana and Kentucky. To others, he was known as a "state dictator." This research project argues that Morton did everything in his power to help the Union and President Abraham Lincoln during the war, including abusing his political power against rival Indiana Democrats. He worked with General Ambrose Burnside to keep Democrat state legislators of out the statehouse and arrest anyone who publicly spoke out against the war. There have been several historians who have examined Indiana's political history and Oliver Morton's wartime actions and legacies, including James Fuller and William Foulke. These historians, however, overlooked the collaborative relationship between Morton and Lincoln from 1860-1865. To address this gap in scholarship, I analyzed both Lincoln and Morton's collections of private correspondence including countless letters between the two leaders. I also examined executive actions, proclamations, newsletters, and additional letters from politicians and Hoosiers throughout the state. This research illustrates that Morton developed positive relationships with fellow Union Party state legislatures to secure support for the Union. As his tenure progressed, he increasingly abused his political power against his opposition, all in the name of supporting the Union and President Lincoln. After 150 years, we can see that Morton's actions could be justified to save the Union.

Today, when we hear politicians breaking rules and threatening political opponents, we should ask questions. Why are the politicians willing to take these actions and what are the costs? How should we respond when politicians go too far and threaten the very foundations of the Union?

Giulia Aimale

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Giulia A. Aimale
#2 Haley R. Simpson
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#4 Sofia Galeano
#5 Ashley N. Fricks-Gleason

Abstract Name: The role of neurotrophic factors in the ability of exercise to facilitate extinction of methamphetamine conditioned place preference and attenuation of drug-primed reinstatement

About 12.3 million Americans have reported using methamphetamine (METH) at one point in their lives. METH is a highly addictive psychostimulant that can negatively impact an individual's brain structure and function. Lowered dopamine (DA) levels, particularly in the striatum, have been recorded in those who suffer from METH addiction, as well as in rodent METH addiction models. These long-lasting effects on the brain can provoke behavioral changes such as reduced memory function, impaired decision making and executive functions, ultimately driving patients to struggle with addiction recovery and treatments. It is reported that 61% of METH users relapse within the first year of seeking treatments. Conditioned place preference (CPP) is a paradigm used to simulate addiction and recovery patterns in rats. Rats are given the option to choose between two different chambers; one chamber is paired with METH administration while the other is paired with saline administration. Over time, rats develop a preference for the METH paired chamber. Using this technique, we can study the cues and stress triggers that cause drug seeking behaviors leading to relapse. After voluntarily exercising, rats no longer show a preference for the METH chamber, indicating decreased motivational power of the drug paired cues. Although exercise has shown to reduce the rats' preference for the METH chamber, there have been no studies to date that examine the mechanisms underlying the change in behavior. Using a brain staining technique, immunohistochemistry, we investigated the role that neurotrophic factors such as brain-derived neurotrophic factor (BDNF) play in the relationship between exercise and METH-cue memory. These results may suggest exercise as a valid non-pharmacological treatment for patients recovering from a METH addiction, reducing the drug crisis.

Callie Aitken

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
#1 Callie Aitken

Abstract Name: The Frontier Nursing Service: Community Based Care for Modern Healthcare

At a time when rural areas lacked access to healthcare, the Frontier Nursing Service (FNS), founded in 1925 by Mary Breckinridge, aimed to provide healthcare and medical services in the Appalachian region of

Eastern Kentucky. Breckinridge brought trained midwives into the state and nurses rode horseback to provide care for mothers and children in remote areas that lacked roads, indoor plumbing, and basic services. The Dorothy Annabelle Caldwell Frontier Nursing scrapbook, 1930s, at the University of Kentucky Libraries Special Collections Research Center, will be used to explore the community-based care of the Frontier Nursing Service and why such methods were successful during the Great Depression. Dorothy Caldwell, the author of the scrapbook, was a courier for the service, and her photos capture everyday life of those in Eastern Kentucky who were served by the FNS. In an area that is known for not trusting outsiders, the caregivers from the service successfully integrated themselves into Appalachian communities and earned the trust of the people they served. Included in the scrapbook are photos of nurses providing care to those in the community, children playing, and daily Appalachian life. Research methods will utilize this scrapbook and additional accounts of other FNS nurses and couriers, FNS literature, and quantitative data surrounding healthcare at the time to gain insight as to how the service impacted healthcare in Eastern Kentucky. Quantitative data will include historical and modern statistics from Eastern Kentucky to delve into the impact FNS had on the region. This data will play a key role in shaping solutions for current healthcare gaps in Eastern Kentucky.

Adriana Ajpop

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

Authors:
#1 Stephen Heller

Abstract Name: Chemoselective Acylation of the Least Nucleophilic Spot on Complex Molecules

To achieve more effective and greener syntheses, new and selective synthetic methods are needed. For instance, reliable chemoselective acylation at the least nucleophilic site of a complex molecule would streamline synthesis by removing the need for protecting group strategies. 1,8-diazabicyclo(5.4.0)undec-7-ene, or DBU, has been shown to be an effective catalyst for chemoselective acylation; however, reversible acylations end up yielding thermodynamic products that typically reflect acylation of the most nucleophilic available site.In this project, we sought to develop a general chemoselective acylation of indoles, even in the presence of alcohols. Previous research has shown that indole acylation is reversible and that DBU catalyzes acyl transfer to afford esters. Two potential solutions to overcome this limitation were studied: altering the organocatalyst and acyl electrophile such that indole acylation is irreversible, or using an in-situ protecting group strategy that did not add additional synthetic steps.In the first study, different nitrogen-containing organocatalysts were tested twice: once for favorable acylation at a weak nucleophilic site and once for unfavorable acylation at a strong nucleophilic site. Once catalyst candidates that only performed acylation at weak nucleophilic sites were identified, reaction conditions were varied and the acyl donor was structurally modified for more favorable acyl donation in attempt to increase the acylation rate. We also tested the ability of 1-trimethylsilylimidazole to selectively inhibit acyl migration without the need for separate protection and deprotection steps.Catalyst and electrophile screening, NMR analysis of dynamic acyl transfers, and an optimized protocol for chemoselective indole acylations in the presence of much more nucleophilic groups such as alcohols will be discussed.

Noor Akour

OK - University of Central Oklahoma

Discipline: Interdisciplinary Studies

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#3 Melville Vaughn
#4 Mohammed Hossan
Afia Asif

Abstract Name: Analysis of Cell Functions on Tantalum Coated Polycaprolactone Samples

Polycaprolactone (PCL) has become a promising bioresorbable biomaterials for biomedical implants. However, the poor visibility under angiogram or x-ray images limits its potential use in endovascular devices such as coronary stents and flow diverters for aneurysm treatment. Our research explores the possible use of Tantalum powder as a thin coating radiopaque material on PCL samples to develop PCL-based bioresorbable flow diverters for treating brain aneurysms. This poster presents the effect of Tantalum coatings on the viability and cell functions of human umbilical vein endothelial cells (HUVEC) on PCL samples. Medical grade PCL samples of 10 mm by 10 mm by 1 mm were designed and 3D printed. Tantalum coating paste with four different concentrations was made by pouring finely grained Tantalum powder into the PCL-acetone solution and mixing them using a sonicator. PCL samples were coated with Tantalum paste using a paintbrush and dried. The X-ray visibility of the Tantalum coating was tested using a hand-held X-ray machine, and pick intensities of each sample were recorded using ImageJ software. The coated samples were sterilized under UV lights for cell culture. HUVECs were cultured on the Tantalum-coated PCL squares for 36 hours and stained the cells with fluorescent markers after cell fixing. The images of stained cells were taken under a fluorescent microscope with appropriate filters and analyzed using ImageJ software. Cell viability, proliferation, and adhesions were quantified and compared among the samples with concentrations of Tantalum coatings. The results show that the higher the concentration of the Tantalum, the better the X-ray visibility. However, the cell performance were not impacted up to a certain concentration of the Tantalum. The overall results showed great promise for the potential use of Tantalum as a radiopaque coating materials for the endovascular biomedical device.

Zoha Alam

VT - Norwich University

Discipline: Natural and Physical Sciences

Authors:
#1 Zoha Alam

Abstract Name: Investigating Endoreduplication in Plants

In contrast, plants employ endoreduplication widely across a variety of organs where it is hypothesized to be advantageous for intercellular transport and increased metabolic activity, though this work is confined to a limited number of taxa. In this study, we attempt to broaden our understanding of the phylogenetic distribution of endoreduplication in plants by improving methods for its detection. We planted over 20 different species for this project in the greenhouse, collected samples from different locations of each plant, extracted and stained the nuclear DNA from each sample, and analyzed it under a flow cytometer to assess the presence, absence, and extent of endoreduplication. We found variation in endoreduplication across species and tissue types, however the amount of samples we found it in were limited. This work will increase our knowledge of plant physiology and open up future research into organogenesis.

David Alatorre

MA - Bridgewater State University

Discipline: Social Sciences

Authors:
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Alexandra Schloesser

Abstract Name: Qualitative and Quantitative Analyses of a Life Course Framework to Prevent Victimization Recurrence Among Traumatized Homeless Women

The present study has undertaken an examination of the effects of services rendered by a transitional shelter that accommodates individuals of both genders. Specifically, the study aimed to ascertain whether these services have yielded discernible improvements in the circumstances of homeless women. Additionally, the study sought to determine whether certain subgroups of homeless women derive greater benefits from the services provided in comparison to others. The study employed a life-course theory to elucidate whether homeless women who have received assistance from the shelter have acquired the skills to effectively navigate and cope with adverse life circumstances, thereby mitigating the risk of experiencing further victimization. Both qualitative and quantitative analyses were used in a mixed-methods approach. The data has been drawn from three in-depth interviews and from secondary data obtained from Ozanam Manor. The data collected by Ozanam Manor has been analyzed within the study, encompassing past and present-day data provided by the survey participants. The study applied a qualitative approach that employed a naturalistic perspective to examine the experiences of homeless women within their own living environments. The primary objective was to gain insight into the adverse life events recounted by participants subjected to victimization.

David Alatorre

MA - Bridgewater State University

Discipline: Social Sciences

Authors:
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Abstract Name: Qualitative and Quantitative Analyses of a Life Course Framework to Prevent Victimization Recurrence Among Traumatized Homeless Women

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Vishnupriya Alavala

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

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#1 Vishnupriya Alavala
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#5 Russell Hunter
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Abstract Name: Neurodevelopmental Vulnerability to Gestational Ozone Exposure

About 99% of the global population resides in areas with substandard air quality according to the World Health Organization. Ozone is a reactive air pollutant that forms radicals and other reactive oxygen species that can induce cellular damage. Ozone adversely affects neonatal and maternal outcomes including fetal birth weight and risk of pre-eclampsia with air pollution increasing the risk for behavioral and cognitive outcomes, such as autism and attention deficit/hyperactivity disorders. Yet, little is known about ozone's

impact on fetal neurodevelopment.To investigate effects on fetal brains, pregnant Sprague-Dawley rats were exposed to 0.3 ppm of ozone via whole-body inhalation at either gestational day (GD) 10 or GD20 while controls received filtered air only. Brains were collected at term (GD21). GD10 is shortly after placentation with neuronal migration and circuit initiation ensuing. GD20 exposure allowed subtraction of acute-phase effects. Discovery neuroproteomics was performed as an unbiased view into cellular processes altered by ozone. Significant responses were interrogated through enrichment, network, and predictive effects analyses. Subsequent molecular assays targeted markers of altered protein processes with antibodies.Key impacts indicated with GD10 ozone were increased apoptosis (z-score = 2.541, p = 0.0018) and decreased neuritogenesis (z-score = -2.494, p-value = 0.00128), both essential in neurodevelopment. In follow-up, antibodies were used to target selected markers of these processes, including cytochrome C and caspase 3 to confirm apoptosis dynamics among different cell types and Git1 and Mapt (axons), Map2 (dendrites), and Snap25 (synaptic impacts) to assess altered neuritogenesis and circuit formation.In conclusion, ozone exposure early in fetal neurodevelopment appears to decrease neurite formation and increase cell death, impacting critical periods of circuit development that can contribute to childhood behavioral and cognitive outcomes. Ongoing studies will affirm these findings and assess altered synaptic balance.

Theresa Alberth

IL - Elmhurst University

Discipline: Natural and Physical Sciences

Authors:
#1 Theresa Alberth
#2 Kai Klink
#3 Ian Morris
#4 Andrew Kirkpatrick
#5 Shannon Nicley
#6 Jonas Becker

Abstract Name: Quantum emitters in hexagonal boron nitride for quantum information processing applications

Defects in hexagonal boron nitride (hBN) have attracted wide interest as quantum sensors and single photon sources. Due to its ultra-wide bandgap, hBN has been found to host a variety of optically active point defects. We focus on the negatively charged boron vacancy (VB-) within hBN as it has been shown to be an especially sensitive quantum sensor. Although these defects provide promising results for quantum sensing, current non-deterministic fabrication methods preclude their use in large structured arrays or photonic devices. Ultrafast laser fabrication has been demonstrated to deterministically create single defects with high spatial precision and yield within the solid state. Here, we present confocal fluorescence spectroscopy and optically detected magnetic resonance (ODMR) of VB- ensembles in helium ion-irradiated hBN as well as spectroscopy of laser written arrays of VB- in multilayer hBN. We detect broadband emission between 700nm and 1000nm, indicating the presence of the VB- defect. Measured ODMR contrast of these defects reaches a maximum contrast of 13.4% at an optimized microwave power of 22dBm. These results are comparable and, in some cases, exceed the ODMR values observed by other researchers. These results will help further optimize the deterministic fabrication of VB- defects with desired properties for applications in future quantum sensing technologies.

Eissa Albinali

CA - California Institute of Technology

Discipline: Natural and Physical Sciences

Authors:
#1 Eissa Albinali
#2 Delaney Sullivan
#3 Lior Pachter

Abstract Name: De Novo Mutation Discovery in Mouse Models and Human Patient Samples of Non-Hodgkin's Lymphoma

Cancer is a disease driven by genomic anomalies; however, discovering genetic aberrations in cancer from sequencing data remains a challenge because of the high degree of divergence from reference genomes. This study investigated how the RNA-Seq programs klue and kallisto can be used to extract cancer-unique sequences of non-Hodgkin's lymphoma in the EμSRα-tTA/TetO-MYC mouse tumor model and a human patient with B-cell follicular lymphoma from the Texas Cancer Research Biobank. The goal was to perform de novo discovery of mutations present in cancer samples from sequencing data. We used klue and kallisto to identify sequences that were present in sequencing data from tumor tissue but were not present in normal control tissue or in the reference genome. The tumor-unique sequences were then analyzed using BLAST. Additionally, using BLAT, we could identify whether the mutations in protein-coding genes were synonymous or nonsynonymous. In many of the cancer-unique sequences extracted, an amino acid change was observed. We discovered thousands of cancer-unique sequences. In one case in the human patient sample, we discovered a nonsynonymous oncogene, SPI1. The sequencing reads showed both the "normal variant" as well as the mutated SPI1:H268P; suggesting a heterozygous mutation. Using this procedure, we developed an approach to extract sequences from sequencing data that are unique to non-Hodgkin's lymphoma cancer tissue in mice and humans. However, we were only able to characterize point mutations because they were the most abundant and easiest to validate using BLAST and BLAT. Work in characterizing other mutation types in the cancer-unique sequences is ongoing.

Ayden Albright

MI - Hope College

Discipline: Humanities

Authors:
#1 Ayden Albright

Abstract Name: Justice Denied: The Supreme Court's Role in the American Empire's subjugation of Puerto Rico

This paper deals with the role that the Supreme Court has played in allowing an American empire to rule over the territory of Puerto Rico. The United States has expanded into territory that was native to foreign populations from its conception, but with the expansion of overseas territories, the United States government had to come face to face with the consequences of its empire. However, instead of punishing the government or restricting it from being able to wield imperial power, the United States Supreme Court allowed and sustained a renegade Congress. The consequences of the Court's decisions in the insular cases, especially Downes V Bidwell, echo throughout the 20th century into today, creating two classes of Americans, those fully protected by the constitution, and those who are not. This division was recently reaffirmed in the 2022 case United States vs. Vaello Madero.

Nicolas Alejandro Garcia

CA - Stanford University

Discipline: Business and Entrepreneurship

Authors:
#1 Nicolas Alejandro Garcia
#2 Ciaran Phibbs

Abstract Name: The Effect of COVID-19 on the Experience Levels of Registered Nurses on Veterans Affairs Inpatient Units.

Importance: Registered Nurses (RNs) compose more than 30% of hospital workforce and the Veterans Health Administration (VHA) is the largest employer of nurses in the US. While RNs were strongly affected by the COVID-19 pandemic, little is know about how it impacted inpatient RN experience levels, which is known to influence patient outcomes.Objective: Determine how COVID-19 affected the experience levels of RNs in the VHA.Design: Panel study using 351 acute care units from 108 VHA medical centers and CDC data from January 2018 to December 2021 on RN turnover, depature, and experience / tenure.Exposure: Differential pandemic exposure across VHA.Outcomes: Monthly average unit tenure in days taken and monthly unique RN unit departures.Results: The panel included 351 acute care units (mean RN count 28.5 [SD 11.1]). Units were divided into 5 types with Critical Care having the highest average unit tenure / experience level (5.9 [2.5] years vs. 4.7 [2.2] for the whole sample) and percent of RN departures that left the VA (43.4 [45.8] percent vs full sample 38.4 [44.8]). Critical Care had the highest experience level lost (323.7 [126.8] days, p < 0.05 vs. full sample 66.2 [43.7]) when COVID-19 severity was high. This experience loss seemed related to Critical Care's increased incidence rates of regular (4.536 [2.343] IRR, p < 0.01 vs full sample 1.624 [0.433], p < 0.1) and experienced departures (3.868 [1.714] IRR, p < 0.01 vs full sample 1.723 [0.832]) when COVID-19 severity was high.Conclusion: The strongest relationships between COVID-19 exposure levels and RN unit experience level & depatures existed among units worse affected by the pandemic: Critical Care units. The VHA should investigate how these losses affected patient outcomes and ways to retain RNs.

Hannah Alex

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Hannah Alex
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#3 Susan Sereika
#4 Susan Wesmiller

Abstract Name: The Association of GDF15 and Treatment-Induced Nausea in Women with Breast Cancer

Background: GDF15 gene, a growth-differentiation factor with stress-related metabolic signatures, is associated with the GFRAL receptor localized in the brainstem to feed behaviors related to nausea. Recent work has shown a strong association with variants of the GDF15 gene and pregnancy-induced nausea. The purpose of this study was to determine the association of GDF15 and nausea experienced by women with breast cancer during treatment. Methodology: This study utilized a cross-sectional design, measuring nausea experienced three months following surgery–when adjuvant therapy usually begins. All data were collected as part of a larger, longitudinal study designed to precisely phenotype symptoms experienced by women with breast cancer for one full year. Informed consent was obtained at the time of surgery. Nausea was measured with the Patient-Reported Outcomes Measurement Information System Gastrointestinal Scale (PROMIS®GI). Data collection occurred by telephone or by email, with study participants completing the PROMIS®GI online. DNA was collected using the DNA Genotek® saliva kits. Genotyping was conducted

with Illumina Infinium Global Diversity Array. Results: The sample included 284 women with an average age of 60 years (range 26-88). The sample was 88% white yet represented diverse backgrounds for rural/urban and neighborhood deprivation status. Single-factor variance analysis (ANOVA) was conducted over calibrated nausea (T-scores) versus three variants: rs8101804, rs1059369, and rs1227731. The variant rs1059369 was significantly (F=2.996, p<0.05) associated with nausea occurring three months after surgery–when adjuvant therapy usually begins. Conclusions: Personalized health care is our goal, as we work to determine potential predictors for those women who continue to experience nausea during treatment. The metabolic signature of GDF15 may present a potential genetic marker for identifying trends in nausea to determine earlier interventions.

Adisson Alexander

VA - Liberty University

Discipline: Humanities

Authors:
#1 Adisson Alexander
#2 Dr. David Snead

Abstract Name: U.S. Army's Reaction to the Liberation of Concentration Camps: Attempts to Handle the Crises of Displaced Persons from April to October 1945.

On April 4th, 1945, the United States Army was tasked with something its soldiers never received training for. As the Allies advanced into Nazi-occupied territory, they began uncovering the horrors of the realities of Hitler’s regime. There was no blueprint available for what to do when stumbling across concentration camps. What happened once the soldiers got to the sight of the camps? How do you clean and care for the survivors, and who should be cared for first? After the survivors have received care where are they to go? These are all just the beginning of questions that the United States Army faced as they came across the first subcamp, Ohrdruf. Only days later would the Army realize that Ohrdruf was just a glimpse of what was discovered at the main camp, Buchenwald. The typical American soldier’s job now consisted of caring for the victims in ways such as delousing the survivors and providing medical care, food and temporary housing. As the summer of 1945 goes on, another question arises as to what will happen to the displaced persons in the camps. April to October 1945 is a window of time that until recently, has been overlooked in the overall historiography of the Holocaust. This is the key to understanding how the United States handled the displaced persons crises. There are memoirs, diaries, letters and interviews of American generals, G.I.s, medics, etc., at the researcher’s disposal to follow the soldier’s efforts from the start of liberation leading up to the displaced persons crises. Utilizing these accounts helps in the attempt to assess the U.S. Army’s efforts in liberating. The narrative of the Holocaust does not just stop at the end of the Second World War. The consequences of the Nazi regime would haunt the world for decades to follow.

Karla Alexandre

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Matthew Wanat

Abstract Name: The Effect of Stress on Pavlovian Conditioning

The purpose of this study is to identify how a single stressful experience affects Pavlovian learning. Prior research demonstrates that a single exposure to stress produces a long-lasting increase in Pavlovian conditioned responding, and this increase involves the midbrain dopamine system. However, the stress-related signals mediating this increase remain unknown. Stress promotes the release of corticotropin-releasing factor (CRF) into the ventral tegmental area (VTA), a key dopamine-producing nucleus in the brain. Dopamine neurons in the ventral tegmental area (VTA) have been shown to mediate reward intake, memory, and learning. Additionally, it is unclear whether sex or the estrous cycle may influence Pavlovian conditioning, as sex- and estrous-differences have been identified in stress responses. I hypothesize that CRF receptors in the VTA are required for stress to enhance conditioned responding. To test this hypothesis, I will inject a CRF receptor antagonist (alpha-helical CRF) or a vehicle control into the VTA prior to stress in male and female rats. I will then determine how these intra-VTA injections prior to stress subsequently affects conditioned responding across Pavlovian training sessions.

Julieth Gabriela Alfonso Rueda

COL - EAFIT University

Discipline: Business and Entrepreneurship

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Nathalia Cuello Reino

Abstract Name: USE OF SYSTEMIC THINKING TO MITIGATE THE RISKS OF EARLY-STAGE ENTREPRENEURS

Despite the growth of corporate sustainability, the business sector continues to have negative impacts on the environment and communities. In academic institutions and entrepreneurship support centers, there is a lack of methodological tools considering complex variables from social and environmental perspectives, hindering the application of systemic thinking in business creation.The research addresses the central question: How can we encourage the use of systemic thinking to mitigate risks for budding entrepreneurs?The Flourishing Business Canvas (FBMC) emerges as a solution to this situation. FBMC is a collaborative visual tool for designing business models suitable for the 21st century, focusing on interdependencies between businesses, society, the environment, and the economy.To address this, the FBMC model was employed and complemented with a validation process through the design of co-learning workshops, initially targeting research seedbed members. Additionally, a booklet with characters was created for easy dissemination, and methodological tools were integrated into the workshops to promote systemic thinking among young entrepreneurs.In essence, our seedbed has used a qualitative approach to analyze the impact of workshops on business models for two groups initially, targeting high school students and another group of four budding entrepreneurs. From these two exercises, it was highlighted that a comparison revealed the achievement of each participant in integrating essential elements into their presentations, such as recognizing stakeholders, environmental variables, and key concepts to validate their models from financial, technical, and market perspectives.In conclusion, the research underscores the importance of FBMC and systemic thinking in shaping early-stage entrepreneurs, demonstrating the effectiveness of workshops in enhancing business models and considering key aspects for their comprehensive viability.

Zainab Alhussainy

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Discipline: Humanities

Authors:
#1 Zainab Alhussainy

Abstract Name: The Unheard Voices of Al-Intifadah Al-Shabaaniyah: An Exploration of the 1991 Uprising and America's Betrayal Through the Testimonies of Iraqi Participants Residing in America

This thesis delves into the often-overlooked 1991 uprising in Iraq, a significant early instance of resistance against Middle Eastern dictatorship. Rooted in the experiences shared within Michigan's Iraqi community. Focusing on southern Iraq, the thesis investigates the catalysts and mechanisms that enabled oppressed individuals under Saddam Hussein's Ba'athist regime to unite and rebel. Through extensive oral history methodologies, this research engages with diverse survivors—mothers, youth, and children—across various southern Iraqi cities. Their narratives unveil the hardships endured before, during, and after the rebellion.Remarkably, despite oppressive conditions and violent impediments, the southern Iraqi populace achieved a formidable mass uprising. This accomplishment, however, was overshadowed by the conspicuous absence of support from the United States. This lack of intervention facilitated the dictatorship's prolonged grasp for twelve more years, leading to grievous loss of innocent lives, human rights violations, and civilians confronting Saddam's brutal rule unaided. The aftermath of Saddam's retaliatory assault resulted in an estimated 30,000 to 60,000 civilian casualties in the South. The survivors of this tumultuous event carry lasting scars—PTSD, depression, and anxiety—echoing the trauma they endured.This thesis endeavors to illuminate this uprising's significance by amplifying the voices of its survivors. By listening to these accounts, it seeks to provide a comprehensive perspective on the events, shedding light on a pivotal historical moment that profoundly impacted the lives of those involved.

Mushtaq Ali

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Mushtaq Ali

Abstract Name: Determining the impact of stress related on plant root microbial community dynamics

Interest in space exploration has been rising over the past decades. Growing plants healthily in space is a necessity of space missions due to its importance for astronaut's life. Plants provide nutrients to the space crew and help refresh the air through oxygen production. Furthermore, they provide crucial psychological support to astronauts during long space missions, which makes them essential for Mars and Moon missions. Plants are exposed to stresses in space that are not present on Earth, like microgravity and space radiation. Plant-associated microbiome has gained attention due to its potential for improving stress mitigation in plants, providing nutrient and growth benefits. Although the importance of microbial communities for plant health is well-studied, the impact of space-related stresses on plant-associated microbes has not been investigated. In this project, we explore the plant-root microbe interactions under space-associated stresses. Brachypodium distachyon and Setatia viridis plants, inoculated with a bacterial synthetic community, will be grown in lunar regolith, a mimicry of lunar soil. Plants will then be evaluated for their growth. Furthermore, bacterial growth in the lunar regolith will also be assessed. We expect our outcomes to create a genetic roadmap of how space-related stresses affect plants and their root microbiome.

Shazab Ali

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
#1 Shazab Ali

Abstract Name: Chest X-ray Interpretation with Visual Question Answering in Medical Diagnostic

In medical diagnostics, this project aims to revolutionize chest X-ray interpretation usingmedical visual question answering. The goal is to streamline radiological evaluations, providingquicker and more consistent results for patients. Traditional methods relying on individualradiologists may lead to inconsistencies and delays. Our solution integrates object detection,Natural Language Processing (NLP), and stacked attention networks, enabling users to upload achest X-ray, pose related questions, and receive accurate predicted answers.Our image preprocessing pipeline resizes input images and questions before passing themthrough an attention layer. This attention mechanism allows the network to dynamically focus onspecific regions of the image, simulating a radiologist's attention to particular areas in an X-ray.Leveraging a dataset of 329 chest X-rays, we meticulously organized resulting question-answerpairs, question IDs, answer types, X-ray image locations, and annotations into a structured JSONfile.Our system, integrating object detection, stacked attention networks, and a diverse dataset, hasshown promising results. We observed adaptability in question answering and enhanced accuracywith the inclusion of a stacked attention network. In the future, we plan to address potentialbiases and improve performance, we plan to add a new dataset for brain tumors. Additionally,we'll apply bias mitigation techniques to account for abnormal images in both chest and brainX-ray datasets. This approach aligns with our commitment to developing a powerful andadaptable system for medical image interpretation.Integrating AI into radiology addresses the variability in human interpretations, evidenced bystudies showing disagreement among experienced radiologists. Built on a diverse dataset, oursystem aims to reduce discrepancies and enhance diagnostic accuracy. This research underscoresthe potential of combining computer vision and NLP to transform medical diagnostics, withongoing efforts to provide healthcare providers and patients with more reliable and expediteddiagnoses in the medical field.

Srida Aliminati

CA - San Jose State University

Discipline: Interdisciplinary Studies

Authors:
#1 Srida Aliminati
Karthik Hari

Abstract Name: Comparative study of the impact of Nitrogen and Oxygen on Argon vs. Helium plasma

Dielectric Barrier Discharge (DBD) plasma is a well known non-intrusive method for healing and sterilizing wounds. The plasma jet consists of a working gas like helium or argon, that is ionized when high voltages are applied, which may vary from 5-10 kV (10-40 kHz). Once the plasma jet exits the torch, it entrains surrounding air to generate reactive oxygen and nitrogen species (RONS) essential for rapid wound healing. Identifying and quantifying RONs in the plasma will assist us to optimize the wound healing and wound sterilization process. This research takes an emission spectrum from an emitting plasma jet and uses emission spectroscopy (HR4000CG-UV-NIR) to analyze oxygen and nitrogen emission lines. When adding Nitrogen and Oxygen to Argon plasma, there were visible differences in the emission spectrum. In the case of 0.1% nitrogen addition, lines from N2+ SPS appeared in the spectrum whereas no new emission lines resulted as 0.1% oxygen was added. It was found that N2+ SPS lines intensity was heavily dependent on the applied voltages that varied from 7 kV to 13 kV. Particularly N337 and N357 N2+ SPS lines were monitored that increased in intensity by almost 700% as the applied voltage was increased by 86%. Preliminary corresponding study for the helium plasma is under progress and new results are being analyzed. Further

investigation will provide a thorough comparison of the impacts of nitrogen and oxygen additions in both helium and nitrogen plasmas. Final presentation will include comprehensive results from this research.

Zaima Aline

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
#1 Zaima Aline
#2 Dustin Grie Grief
#3 Shannon P. Fortin Ensign

Abstract Name: CDKN2A/B Homozygous Deletion in IDH-Mutant Glioma Promotes Vascular Formation in Vitro

Isocitrate dehydrogenase (IDH)-mutant gliomas comprise an incurable group of grade 2-4 brain tumors with limited treatment options to date. Though IDH-mutant gliomas have a better prognosis than their IDH-wildtype counterpart, as tumors evolve to grade 4 designation the survivability is particularly discouraging at only 3-5 years, and moreover IDH-mutant tumors most commonly present in young adults. A hallmark of molecular evolution to grade 4 IDH-mutant glioma is acquisition of the homozygous deletion (HD) of CDKN2A/B, which encodes the cell cycle regulators p14ARF, p15INK4B, and p16INK4A. However, little is known about the deregulated biologic pathways that occur coincident with CDKN2A/B HD and there are no molecularly targeted therapies for these tumors to date. We therefore sought to investigate the functional impact of CDKN2A/B HD by generating tet-inducible re-expression vectors for p14, p15, and p16 in grade 4 IDH-mutant PDX models. From a cohort of 42 image-guided intratumor biopsy specimens representing 13 IDH-mutant patient tumors we identified several candidate genes/pathways differentially expressed across CDKN2A/B status including regulators of embryonic development, extracellular matrix organization and regulation of vascular processes. Using our IDH-mutant glioma PDX lines we then investigated the functional role of p14, p15, and p16 in models of angiogenesis. While conditioned media (CM) from the cell lines did not impact endothelial cell proliferation, we found CM from lines with re-expression of p14, p15 or p16 effectively hindered the formation of capillary like structures compared to parental lines. Overall, these data support a role for enhanced angiogenesis in the progression of IDH-mutant gliomas to aggressive grade 4 tumors and support further study of these pathways for novel therapeutic target identification.

Mustafa Alithawi

MI - Wayne State University

Discipline: Social Sciences

Authors:
#1 Mustafa Alithawi

Abstract Name: Exploring the "Gymcel" Phenomenon: Social Media Narratives and Identity Formation within the Manosphere

This study investigates the “Gymcel” subculture within the manosphere, focusing on societal and media influences that may contribute to its emergence. “Gymcels” are characterized as incels (involuntary celibates) with an obsessive focus on bodybuilding, potentially leading to extreme measures such as steroid use. This study contributes to the broader field of social identity and subculture studies by specifically focusing on the

“Gymcel” phenomenon, an area that remains underexplored in academic discourse. By analyzing narratives on social media platforms, including Reddit, Instagram, TikTok, and YouTube, this research aims to uncover the societal pressures and factors influencing “Gymcel” identity formation. Employing Collective Identity in Online Groups Theory, the study will explore shared practices, values, and beliefs within the “Gymcel” community. This study expects that factors such as social isolation, body image concerns, cultural influences, and mental health challenges play significant roles in shaping the “Gymcel” identity. This research seeks a deeper understanding of this subculture and its implications for social identity and behavior in the digital age.

Aisha Aljaedy

EGY - The American University in Cairo

Discipline: Social Sciences

Authors:
#1 Aisha Aljaedy

Abstract Name: The Nightlife in Cairo: Who protects, who is protected, and who is entertained?

After an exchange semester in Paris, four female students at the American University in Cairo decided to go out to a nightclub to have a good time, meet some friends of both genders and compare this space to the one they had in Europe, away from family restrictions. After contacting the destination venue to make a reservation, they learned the conditions for entering the place: the number of females in the group must be greater than the males, the Facebook accounts of all attendees must be sent, any type of head covering is not allowed unless it is a turban, and everyone must pay the minimum charge at the gate. Cairo is a diverse, cosmopolitan city that attracts tourists from all over the world and is inhabited by thirty million people of diverse nationalities and backgrounds. One of the most important features of Cairo recognized in popular culture and common knowledge is the bustling nightlife that appears in cinema, television and advertisements to encourage tourists to visit Cairo to enjoy music, belly dancing and good service. During the last ten years, after the unstable political and economic conditions that Egypt went through and capitalism completely tightening its grip on the lifestyle, the rules of entertainment in nightlife changed and became restricted to a specific class with certain restrictions. If one seeks to have a good time, one must follow a series of rules that spaces have come to impose for “protection.” Through fieldwork and emerging as a participant-observer in these spaces, this paper seeks to investigate the alleged meaning of protection. An attempt will be made to answer the question: Who are the people to be protected in Cairo's nightlife? Who is responsible for this protection? Are the protections being promoted merely a pun on class and gender biases?

Abigail Alleman

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Abigail Alleman

Abstract Name: Life and Works of Abram Games: The Official War Poster Artist of World War II

Abram Games is a British designer that made over 100 posters for the War Office’s Public Relations Department during World War II. His posters relied heavily on the use of clever imagery, rather than words. His philosophy is one of simplicity, to make a simple design well enough to reflect the maximal meaning of the message a poster may be conveying. His expertise shines brightest in his war poster designs. His careful

selection and precise execution of imagery was instrumental in his design success. His typographical choices were simple and minimalistic. This allowed imagery to guide the eye within his design. As in his thinking, if there is interest within the poster themselves, that will naturally draw out interest for the written message. Games was very successful in drawing out the emotion of his audiences and inspired both criticism and patriotism through his work. A few of his posters were taken out of circulation due to controversial messages or choices in imagery. His skill and expertise in design is still very admirable within those posters, even if they were not approved to be sent out to the public. Posters weren't the only thing he succeeded in. Games' skills in logotype, typography, and product design are also seen with high regard, and he stands as influential within the world of design, both then and now. His methods and designs are still admired by many in the present day. He paved the way for future designers, not only through his work, but also within his teaching, writing, and mentorship. Toward the end of his career, technological advancements grew. He encouraged young designers to remember the basics of traditional poster design. He also encouraged them to move forward, make mistakes, and learn how to transform their work into digital media.

Sadie Allen

NC - University of North Carolina at Wilmington

Discipline: Health and Human Services

Authors:
#1 Sadie Allen
#2 Joshua Bond
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Joshua Bond
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Abstract Name: BODPOD GS: Derivation of Body Fat Correction-Equations

Background: The value of information collected by an instrument and/or equipment is dependent upon its degree of validity. Practitioners, researchers, and clinicians should verify the accuracy of instruments and equipment prior to disseminating information to their clientele. Purpose: To derive a body fat correction-equation that will provide results equivalent to the applied Gold Standard obtained from the BOD POD GS. Methods: Two hundred females and 134 males (Age = 21.8±6.8 and 22.5±8.0 years), underwent percent body fat (%BF) assessments via four methods (BODPOD GS, Hand-Hand BIA, Foot-Foot BIA1, and Foot-Foot BIA2) in a randomized sequence to mitigate sequence bias. Pearson correlation determined interrelationships, paired sample t-tests assessed mean differences, and linear regression facilitated equation derivation. Sex-specific analyses were conducted for all procedures. Results: Mean BODPOD GS %BF values were 22.6±6.9 for females and 14.9±6.3 for males. Systematic underestimated values for Hand-Hand BIA, Foot-Foot BIA1, and Foot-Foot BIA2 were -3.0, -2.2, and -1.2 for females, and -2.1, -2.9, and -0.2 for males, with all mean %BF significantly different from BODPOD GS except for males using Foot-Foot BIA2 (14.7±5.0; p=0.68). Correlations ranged from 0.73 to 0.75 for females and 0.52 to 0.66 for males. Female correction-equations to estimate BODPOD %BF were a) -2.556 + (1.246*Hand-Hand BIA), b) 1.542 + (1.03*Foot-Foot BIA1), c) 4.156 + (0.878*Foot-Foot BIA2). Male correction-equations to estimate BODPOD %BF: a) 2.02 + (1.0*Hand-Hand BIA), b) 3.670 + (0.935*Foot-Foot BIA1), and c) 5.784 + (0.62*Foot-Foot BIA2). Conclusions: The investigation revealed moderate to moderately high correlations and statistically significant mean differences. Except for Foot-Foot BIA2 for males, all other body composition equipment systematically underestimated the BODPOD GS. Practitioners, researchers, and clinicians can use these correction-equations in the field to derive equivalent percent body fat values to the BODPOD GS.

Madison Allen

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Madison Allen

Abstract Name: Dignified Community Resource Center Design for the Homeless, Hungry, Impoverished, and In-Need

Food and housing insecurity are growing pandemics in the United States. Annual reports show that homelessness has increased each year across major American cities. In 2021, the number of Americans considered to be “in poverty” was 37.9 million, or 11.6 percent of the entire population in the country. More than 1 in 10 people are below the poverty line and struggle to access core necessities for living, including food, clothing, and shelter. With the added burden of inflation and the increasing food and housing costs, the need for community support continues to grow.Case studies and survey data provide additional evidence for this growing need for community support, what users of resource centers need most, and what existing facilities may lack. Principles of wellness and theoretical precedents, including color psychology and Abraham Maslow’s Hierarchy of Needs, also inform this project's design approach.The purpose of this project is to apply principles of wellness and hospitality design to create an elevated, enriching community resource center for the homeless, hungry, impoverished, and in-need. This center provides access to food, hygiene facilities, mental health services, community engagement events, and skill-building opportunities. One of the primary design goals is to avoid the othering effect of utilitarian design. Instead, this design aims to provide access to more than just necessities. It should also create an inspiring, dignified experience that can more effectively empower users on their path towards self-sufficiency.For the growing financially vulnerable population, lacking secure and consistent access to life’s fundamental requirements injures hope and spirit. This research project will determine how to overcome these challenges through effective community support, services, resources, connection, and dignified design.

Hannah Allen

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Hannah Allen
#2 Mary Foley
#3 Dave Weisrock

Abstract Name: Investigating the Effects of Pregnancy on the Freshwater Mussel Lasmigona costata's Gut and Gill Microbiomes

North American freshwater mussels (family Unionidae) have a direct role in improving water quality. They filter microorganisms (plankton, protists, and bacteria) and particle detritus from water. The gut microbiome is the community of microbes within the gastrointestinal tract, and it performs critical functions for a host’s metabolic and digestive capabilities. Gut microbiomes can vary within and between species as a result of many factors, including the environment in which they live, the food they eat, and the host’s physiology. Pregnancy is characterized by maternal adaptations that are necessary to create a hospitable environment for development. Microbiota varies throughout life, from infancy to old age, in reaction to external stressors and changing physiological states. However, relatively little is known about the gut microbiome and how it works in mussels. I anticipate exploring more into this by comparing pregnant and nonpregnant between of a species of mussel to see if the eubiosis varies. A microbiome includes bacteria, archaea, and microscopic eukaryotic organisms (e.g., fungi and protists) living together in a community. Environmental factors like pH, temperature, and available resources select for specific microbial members; therefore, microbiome

community composition can change across a host's body and its species' range. In humans, this includes a change in the microbiome community of the gut and vagina; however, little is known about maternal changes in the microbiome of the ecologically important freshwater mussels. Here we investigate the bacterial community of the mussel species Lasmigona costata across two locations within the Licking River system, looking at both the gill and gut microbiome of gravid and non-gravid mussels. We plan to further explore this area by incorporating more mussel species in the future.

Tessa Allen

AL - Auburn University

Discipline: Natural and Physical Sciences

Authors:
#1 Tessa Allen
#2 Faith Boyer
#3 Elizabeth Holtbold-Schwartz

Abstract Name: Determining the role of gut microbiota in the production of ROS by Periplaneta Americana hemocytes

The impact of the gut microbiota on the development and function of the host immune system has been assessed in mammalian systems using germ-free and gnotobiotic animals, primarily mice. However, this relationship remains incompletely defined in insects. The American cockroach (Periplaneta americana) has a relatively complex gut microbiome compared to other insects and is an excellent model for such studies. With the recent development and optimization of germ-free protocols for the American cockroach, this system now provides a unique opportunity to investigate the interaction of the gut microbiome and the innate immune system. Insect immune cells, called hemocytes, have been characterized primarily through microscopy, leaving a knowledge gap regarding the specific functions and relative abundance of different hemocyte subsets. To first address this knowledge gap and better characterize the immune cells of the cockroach, we have employed flow cytometry and functional assays. With these approaches, we can isolate and identify hemocyte subsets based on lectin-binding capabilities and their specific functions (I.e., production of reactive oxygen species). Our studies demonstrate that a subset of granular hemocytes from conventional cockroaches produce ROS when stimulated with LPS with activity peaking within one hour of stimulation. We will additionally utilize cell sorting and microscopy to gain a fuller understanding of hemocyte morphology and individual functionality. These studies will serve as foundational knowledge for future studies, providing the necessary baseline immunological characterization in conventional P. americana for comparison to germ-free P. americana. This comparison will provide unique insight into the role of the gut microbiome in host immunological development and function.

Nyawa Allieu

NE - University of Nebraska-Lincoln

Discipline: Engineering and Architecture

Authors:
#1 Nyawa Allieu
#2 Dr. Chun-Hsing (Jun) Ho

Abstract Name: Understanding Engineering Undergraduate Students' Engagement with Research

This study delves into the exposure and interaction of undergraduate engineering students with research opportunities to show its impact on their academic development and future careers. Undergraduate research holds value by providing opportunities to students for hands-on-application, innovation, critical thinking, problem solving, personal growth and many more skills. Despite this, there is a void in the amount of research undergraduate students participate in while in school and this study aims to determine what causes this gap.Through a mixed-method approach consisting of surveys and interviews of undergraduate engineering students, this study assesses their current landscape when dealing with research at their local university. Findings show different patterns of engagement which were influenced by things such as program structures, institutional support, personal circumstances and motivations, along with internal perceived relevance towards career goals. Therefore, this research utilizes the experiences of a diverse group of engineering students, guaranteed by including multiple grade levels in the university, along with various areas of study in the University's College of Engineering.The research also finds there is an emphasis on the role of Professors in guiding motivation towards personal research along with a lack of knowledge fueling a decline of participation in undergraduate research programs for majors where the curriculum didn't encourage students to do so. Supportive environments, mentorship programs, and clear marketing of accessible research opportunities were the biggest roadblocks to engineering students when pursuing opportunities in Engineering research. Thus, recommendations arising from the results of this research include integration of research opportunities into the undergraduate curriculum, development of mentorship programs to facilitate student engagement in research, and increased promotion of collaborative research projects between faculty and undergraduates through faculty members and University Staff.

Ahmed Alnassari

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Khadijah Alnassari
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#5 Ying Gao
#6 Mengliang Zhang
#7 Roderick Moore
Zaynab Alnassari
Khadijah Alnassari

Abstract Name: Optimization of a Rapid and Efficient Method for Ginsenoside Extraction Abstract

American ginseng (Panax quinquefolius L.) is one of the most commonly used medicinal herbs worldwide. The ever-expanding market for and research into the benefits of American ginseng has perpetuated the necessity for more practical and efficient extraction methods. Common methods require extensive processing times and the unfortunate degradation of heat-sensitive ginsenosides (saponins). This study's goal is to develop a more efficient extraction method with decreased processing times which will also allow for the increased procurement of saponins and rarer ginsenosides. Traditional and novel methods such as Codex Standard Method, Japanese Pharmacopeia (17th Edition), United States Pharmacopoeia (40th Edition), European Pharmacopoeia (9.0 Edition), Chinese Pharmacopoeia (2015 Edition), and Ultrasound-Assisted Extraction were tested and compared using American ginseng roots. Ultrasound-assisted extraction with direct sonication using a probe horn was further tested by using varying parameters (sonication times including 15 min, 30 min, 45 min, 60 min, or 120 min and solvents including N-Butanol, Methanol, or 10% Methanol). After completing extractions, High-Performance Liquid Chromatography (HPLC) was used to analyze 11 different ginsenosides (Rg1, Re, F11, Rg2, Rb1, Rb2, Rb3, Rc, Rd, Rg3, and Rh2) in the samples. The sonication method had the highest extraction rates for ginsenosides F11, Rb1, Rb2, Rb3, Rc, Rg2, Rg3, Rh2, and overall, but the United States Method had higher extraction rates for targeted Re, Rd with

equivalent results in the extraction of Rg1. Our study demonstrated that the optimized ultrasound-assisted extraction method allowed for a higher total ginsenoside extraction rate while the United States Method had higher contents for targeted ginsenosides, Re, and Rd.

Gabriel Alpay

CA - Chapman University

Discipline: Natural and Physical Sciences

Authors:
#1 Joshua Fisher

Abstract Name: Optimizing Nutrient Uptake: Understanding Cost Functions of the FUN Model through Innovative Cost Parameter Analysis

This study explores the cost functions of the FUN model, which aims to optimize the amount of carbon used when plants acquire their necessary nutrients from the soil to maximize nitrogen and phosphorus uptake while minimizing the carbon cost, more specifically, the complex relationship of cost parameters belonging to the cost of nitrogen and phosphorus uptake functions by Arbuscular Mycorrhizal and Ectomycorrhizal fungi with the goal of understanding nutrient cycling better. As a part of the methodology, this study presents three dimensions of sensitivity analysis done to the cost parameters; additionally, this study also examines outcome variations by graphing observed versus modeled data using linear regressions. When analyzing the cost of resorption of leaf phosphorus, increasing the kR cost parameter decreased the R2 value, while the model for nitrogen remained stable in the first dimension. Holding one cost parameter constant while changing the other in the second dimension increased the model's sensitivity to changes in both phosphorus and nitrogen. Switching the cost parameter being held in the third dimension yielded similar findings, highlighting the model's sensitivity to changes. The observed versus modeled graphs showed some exciting results; as the 'kR' value increased, the model's predictions became lower than actual values, with a larger residual spread; this caused an unexpected pattern and introduced uncertainty in the predictions, with a more negative bias and increased RMSE. This study aligns with and builds upon previous research in the field, emphasizing the need to perform sensitivity analysis further to enhance predictive accuracy.

Manal Alshamrani

MA - Boston University

Discipline: Engineering and Architecture

Authors:
#1 Manal Alshamrani

Abstract Name: A Longitudinal Study of Hemopexin in Patients with Left Ventricular Assist Devices

Heart failure remains a global health challenge, with 26 million people diagnosed with terminal heart failure, where 90% of adults face a daunting prognosis within 10 years. Left Ventricular Assist Devices (LVADs) have emerged as life-saving interventions, addressing the scarcity of donor hearts by providing continuous blood circulation. However, the clinical benefits come at the cost of poorly understood complications, such as bleeding, thrombosis, infections, and pump malfunction, attributed to changes in hemodynamics and increased fluid shear stress.This longitudinal study focuses on the potential of hemopexin (HPX) as a predictive biomarker for adverse events in LVAD patients. HPX, a scavenging protein responsible for mitigating the effects of hemolysis, has shown significant variations in levels pre- and post-LVAD

implantation. Blood samples were collected from a cohort of 34 patients at baseline, discharge, 1 month, and 3 months post-discharge, utilizing a commercial Enzyme-Linked Immunosorbent Assay (ELISA) for quantitative HPX measurement.Analysis revealed that, on average, HPX concentrations were lower than reported normal values, with a notable drop at 1 month post-discharge. While no statistically significant difference in HPX levels was observed between patients with and without complications in this interim study, a trend of increased HPX concentrations was noted in patients experiencing clinical events. This study, powered for 250 patients, suggests the need for continued research to enhance statistical power and delve into potential associations between HPX levels and patients' CBC data, exploring correlations with red blood cell count, hemoglobin, and hematocrit.By expanding the cohort and conducting separate analyses for different LVAD types, our study aims to unravel the intricate relationship between HPX dynamics and LVAD-induced complications. Understanding the underlying mechanisms of HPX changes could pave the way for developing diagnostic tools and therapeutic interventions, ultimately improving outcomes for LVAD patients worldwide.

Richard Altamirano

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Richard Altamirano
#2 Gregory Holk

Abstract Name: Silica Replacement and Engulfment in Limestone; Currant Gap Detachment fault, Nye County, Nevada

Silicification in and adjacent to faults commonly appears as quartz veins and as replacement for carbonates and/or other lithologies. Petrographic data from rocks along the Miocene-Pliocene Currant Gap Detachment (CGD) raise the possibility that a significant portion of silicification begins as isolated quartz crystals that nucleate and grow in primary pore spaces of carbonate. Such crystals may later form veins along zones of weakness and/or enhanced primary permeability. Thin section investigation of partially silicified carbonate rocks in and adjacent to the CGD reveals extensive networks of quartz veins surrounded by carbonate and isolated euhedral quartz crystals. The isolated quartz crystals ($\leq$ 0.5 mm) have cores of often densely-packed primary (5 μm up to 30 μm) carbonate grains, called “matrix cores” because the carbonate grains are similar to those of the matrix surrounding the quartz. In addition, some veins also contain (25 μm up to 300 μm) euhedral quartz crystals with matrix cores. Acid dissolution of limestone yielded a residue of isolated euhedral quartz and intact quartz micro-vein networks. Scanning Electron Microscopy (SEM) reveals cavities in the crystal surfaces that are similar in size (5 μm up to 30 μm) to the grains of carbonate seen in the matrix cores. This indicates that the cavities seen in the SEM imaging resulted from quartz grains that did not completely grow around the carbonate grains, allowing for the acid to take effect on the partially covered grains. Angular to sub-rounded cavities occur both in isolated quartz crystals and in those found in the aforementioned intact micro-vein networks. These observations show that isolated quartz grains and quartz grains in at least some veins share the same origin: they nucleated in pore spaces surrounded by primary calcite grains, and eventually grew to engulf those grains. Such crystals did not originate in fluid-filled fractures.

Aarya Aluri

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Aarya Aluri
#2 Jennifer Marwitz

Abstract Name: Relationship Between Hypertension and Measures of Depression at 10 Years After Traumatic Brain Injury

Research Objectives To examine the association between hypertension and a measure of depression at 10 years post-traumatic brain injury (TBI) and observe how hypertension in individuals with TBI may affect the chances of developing depression. Design Longitudinal study with analysis at 10 years post-injury. Setting Traumatic Brain Injury Model System (TBIMS) data collected from University of Alabama at Birmingham (UAB). Participants 142 participants with moderate to severe TBI who received inpatient rehabilitation following acute care at UAB with baseline, Year 1 and Year 10 data collection time points. Interventions Not applicable. Main Outcome Measures The National Health and Nutrition Examination Survey(NHANES) item related to hypertension was collected regarding if and when hypertension was diagnosed. The PHQ-9, a questionnaire assessing incidence and severity of depression was administered to participants at follow-up. Additionally, covariates such as age at time of injury and overall household income were collected from participants or their family members. Results Sixty-three patients reported having a diagnosis of hypertension prior to injury. At 10-year post-injury follow-up, the relationship between hypertension and the PHQ-9 score was significant ($p=0.020$) while accounting for the covariates of age and income (ANCOVA, one-way analysis of covariance; $F=5.565$). The mean PHQ-9 score for patients who reported having hypertension was 5.67 ($SD=5.691$) (indicating mild depression) whereas the mean PHQ-9 score for patients who did not have hypertension was 4.16 ($SD=4.584$) (indicating minimal depression). Conclusions The relationship between hypertension and depression was statistically significant at 10 years post-injury. Patients who had a diagnosis of hypertension pre-injury were more likely to score higher on the PHQ-9, even after controlling for age and household income.

Maria Alvarado

IL - North Central College

Discipline: Natural and Physical Sciences

Authors:
#1 Maria Alvarado
#2 Matthew Winburn
#3 Chin Li Cheung

Abstract Name: Plasma-assisted Destruction of Polystyrene Nanoplastics

Microplastics have been found in an estimated 30% to 90% of water sources and have a range of potential health effects whose full impact is still unknown. These microplastics enter our water systems in a variety of ways. It is postulated that these particles serve as sorbents for organic contaminants and pathogenic biofilms, which pose a risk to drinking water quality. These microplastic particles may further degrade by means of chemical such as natural oxidants to yield nanoplastic particles. Due to their sizes, they may cross the blood brain barrier. Literature reports that advanced oxidation processes (AOPs) can serve as effective methods for the decomposition of various organic contaminants, but research in the degradation of nanoplastics is limited. AOPs are an area of interest because reactive oxygen species (ROS) from these processes have high oxidizing power to breakdown organic materials. This work focuses on reporting our use of a falling-film plasma reactor to destroy polystyrene nanoplastics in water (98% removal), which has proven to be an effective method. Furthermore, this work aims to reveal the kinetics of nanoplastic particle degradation and characterize major reaction products through the course of the remediation process.

Selene Alvarado Martinez

CA - San Diego State University

Discipline:

Authors:
#1 Selene Alvarado Martinez
Victoria Esparza
Daisy Lopez

Abstract Name: Exploring flavors of edible ants: A path to sustainable gastronomy and consumer acceptance

Edible insects are gaining popularity as a sustainable protein source, owing to their low environmental impact and high nutritional value. However, solely emphasizing the environmental and health advantages might be insufficient to encourage widespread acceptance. Investigating the flavor profiles of edible insects holds the potential to shift marketing strategies towards hedonic-focused campaigns that will be more successful in boosting consumer acceptance. Certain insects are already considered delicacies. For instance, Formicine ants are utilized as a sour flavoring agent in some cultures, and chicatana ants are highly favored in Mexican cuisine. To explore the flavor profiles of these edible ants, the volatiles of black ants (Lasius niger) and chicatana ants (Atta mexicana) were analyzed using headspace solid-phase microextraction and gas chromatography-olfactometry-mass spectrometry. Our study revealed distinctive odor profiles for different ant species. Black ants were characterized by a pungent, acidic, and vinegary smell primarily due to their high formic acid content, a secretion from their venom glands. Additionally, numerous Dufour gland alkanes such as tridecane, undecane, and pentadecane, known to act as alarm pheromones, were detected in black ants. In contrast, chicatana ants exhibited nutty, roasty, woody, and fatty notes. Unlike black ants, chicatana ants did not contain formic acid. Instead, they had alarm pheromone 4-methyl-3-heptanone and trail pheromone 2,5-dimethylpyrazine. The fatty aroma of chicatana ants was probably attributed to their abundant presence of aldehydes such as hexanal, octanal, and nonanal. Understanding these flavor profiles is essential for creating appealing insect-based products that can overcome disgust-based aversions associated with insect consumption.

Diana Alvarez

IL - Northern Illinois University

Discipline: Health and Human Services

Authors:
#1 Diana Alvarez
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Abstract Name: Exploring the Impact of Parental Mobile Device Usage on the Early Language Environment

The purpose of this study is to measure the prevalence of mobile device usage of parents of young children and to explore the impact of mobile device usage on the quality of the child’s home language environment. This will require collecting data from both child and parent. We know that the more a child is exposed to an environment rich with language, the more a child's brain develops. This is because environments rich with language promote more conversational turns, which are non-cry sounds made by the child after being spoken to, which will then lead to more brain development. Conversational turns will be measured through the usage of recorded vest that will be worn by the child throughout their daily activities, which will record langauge

sounds spoken to the child and by the child. The data collected from the recorder vest will then be processed into daily data charts which are ready for analysis. On the parents' side, mobile device usage will be measured through data collected from weekly diaries. These diaries will be completed once a week for four weeks and will include questions surrounding the amount of time a parent is engaging with their mobile device. Screenshots of mobile device usage data will also be collected through the weekly diary. Through analyzing the correlation between the number of conversational turns between the child and caregiver and the prevalence of mobile device usage, we aim to see understand the relationship between these variables. We hypothesize that higher levels of mobile device usage will corerspond to a lower quality and quantity of conversational turns.

Evan Alvarez

VA - Virginia Tech

Discipline: Social Sciences

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Abstract Name: Naturalistic Observations of Interpersonal Gratitude: Relative impact of modeling vs. diffusion of responsibility

This naturalistic study has been comparing the differential behavioral influence of two notable psychological science theories—observational learning and diffusion of responsibility. Observational learning predicts individuals will take cues from the actions of others and model relevant behavior observed. In contrast, diffusion of responsibility predicts that people will be less likely to take responsibility for the welfare of another person if others are available to actively care. This field study has been observing expressions of interpersonal gratitude between drivers and passengers on campus buses. For three semesters, undergraduate researchers have been recording whether passengers thank bus drivers as they exit the bus and note whether such a "Thank you" is influenced by the drivers exhibiting a prosocial comment (e.g., by saying "Have a nice day!"). Our researchers have been recording other relevant variables, including the number of passengers exiting at the same time, passenger position within the group who verbalizes gratitude, the weather, the temperature, the day of the week, and the time. A behavioral analysis is ongoing and comparing the impact of observational learning vs. diffusion of responsibility. To date our observations have indicated that a kind remark from the driver significantly increases expressions of gratitude from exiting passengers. While 68.8% of 5,347 passengers followed a driver's kind remarks with a "Thank You," those passengers exiting after a passenger expresses gratitude were less likely to express gratitude, supporting diffusion of responsibility over modeling or observational learning. When the driver does not verbally express prosocial behavior, only 31% of passengers will thank them. However, when the bus driver expressed a prosocial remark to a group size of two departing passengers and the first passenger did not offer a positive reply, the second passenger expressed gratitude on 57.1% of the 28 occasions. Naturalistic behavioral observations are ongoing and additional findings will be reported.

Nicholas Alvarez

CA - California State University - Long Beach

Discipline: Interdisciplinary Studies

Authors:
#1 Nicholas Alvarez
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#4 Brooke Diaz

Abstract Name: The Relationship between Acculturative Stress and Depressive Symptoms

Higher levels of acculturative stress are associated with higher depressive symptoms. The pressures for acculturation (to take on the norms and culture of the receiving society) and enculturation (to take the norms and culture of native culture) may become chronic stressors and increase the risk of depressive symptomatology. This study adds to this literature by examining the effects of acculturation and enculturation on depressive symptoms and investigating differences by race/ethnicity and gender.Participants (22.4 ± 4.5 years; 70% women, 28% men, 2% LGBTQI; 42% Latinx|e, 15% white, 37% Asian, 2% black, 4% Indigenous, PI, and mixed race) were N=412 students from a public university. The analyses included descriptives, bivariates, and multivariate linear regressions. We run a multivariate linear regression to investigate the effects of acculturation and enculturation (the Multidimensional Acculturative Stress Inventory - MASI) on depressive symptoms (Center for Epidemiologic Studies Depression Scale – CESD-10), controlling for demographics (age) and other stressors (perceived financial situation, first-generation student, and immigrant generation). We examined Acculturation (or Enculturation)*Race/Ethnicity*Gender interactions.We found significant differences in depressive symptomatology by gender (Women=24.0; Men=21.5; t=-4.95, p<0.0001). Acculturation (β= 1.21, p=0.011) and enculturation (β= 1.01, p=0.022) stress were significantly associated with depressive symptoms in crude regression models. After adjusting for demographics and other stressors, Asian women in the high category of acculturative stress had higher depressive symptoms (β= 8.49, p=0.023) compared to male and female students in the low acculturative stress, males in the high acculturative stress, and white, Latinx, and Black and indigenous women in the high category of acculturative stress. Our findings indicate that female Asian students with high levels of acculturative stress are at a greater risk of reporting depression symptoms. Our findings highlight the need for targeted mental health programs in higher education to identify and support students at higher risk.

Jennifer Alvarez-Martinez

CA - California State University - Long Beach

Discipline: Education

Authors:
#1 Jennifer Alvarez-Martinez

Abstract Name: Motivations, Barriers, and Outreach Initiatives in Promoting Short-Term Study Abroad Participation Among California State University Long Beach Students

According to the 2021-2022 IIE Open Doors Report, 65% of U.S. college students who studied abroad went on short-term programs. However, there has been little research into the motivations driving this population and potential barriers that might limit student participation. This project explores the motivations and barriers guiding California State University, Long Beach (CSULB) students in their decisions to pursue short-term study abroad programs, filling a notable gap in the existing literature. This study takes a dual-method approach involving surveys and interviews with CSULB students, faculty, and staff. Data was analyzed to identify patterns and themes. Preliminary results indicate the importance of financial constraints, employment, and safety concerns as barriers. At the same time, there is a relatively low cost of short-term compared to long-term programs as well as opportunities for personal and professional growth, and cultural exploration emerge as key motivators for various types of study abroad programs. These results can help

universities and colleges develop targeted outreach initiatives addressing these factors to increase participation and can work towards making their short-term study abroad programs more inclusive, accessible, and beneficial for all students, regardless of their socioeconomic background.

Crystal Amadi

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Comparison of radiation emission among electronic devices: Ipad, Earbuds, and Laptops

There have been warnings about an increase in health problems including brain cancer in connection to cellphone use. This has led to scientists implementing guidelines to reduce the effects of radiation exposure from technology. The World Health Organization has published guidelines on safe public EMF exposure levels. The range is currently 28-61 V/m. WHO considers the maximum public exposure level for TV and computers screens at an operating distance to be 10 V/M. They state that this value is for the public and does not necessarily apply to specific requirements of individuals. In this project, we wanted to measure the radiation exposure of iPads, AirPods, and a laptop to assess the danger from exposure. Beyond quantifying, we compare the RF radiation from different devices. Using an Acoustimeter we measured the RF from an electronic source at different distances; we took measurement when the devices are in use and off. Our results show that the radiation emission from devices such as iPads, laptops, and AirPods are within the recommended range, whereas AirPods outside their case are shown to emit the highest radiation.

Danielle Amaegbo

TX - Austin College

Discipline: Natural and Physical Sciences

Authors:
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#2 Dr. Katherine Henzler-Wildman

Abstract Name: Investigating the Role of PACE Transporters in Antibiotic Resistance and Susceptibility

The emergence of antibiotic resistance poses a substantial public health threat, necessitating a deeper understanding of its mechanisms. Bacteria make use of active efflux to expel antimicrobials and lower the intracellular concentration to survivable levels. To do this, multidrug resistance transporters use the proton motive force as the energy source to pump out toxic compounds. This study investigates the role of PACE transporters in antibiotic resistance and susceptibility. It was recently discovered that a related family, the Small Multidrug Resistance (SMR) transporters, can perform different types of transport depending on the specific substrate. Most interestingly, these different types of transport can cause resistance or enhance susceptibility (Spreacker, 2022). We hypothesize that PACE transporters will also be able to perform multiple modes of transport, leading to either susceptibility or resistance. We cloned and expressed three PACE transporters from Pseudomonas aeruginosa (PaPACE), Francisella tularensis (FtPACE), and Acinetobacter baumanii (AceI) in Escherichia coli and performed growth assays and resistance/susceptibility assays. We observed that strains expressing FtPACE or PaPACE exhibited significant resistance to methyl viologen, a

common substrate of multidrug efflux pumps, while AceI displayed limited resistance to this substrate, highlighting variance among PACE transporter specificity. PACE-expressing strains were susceptible to acriflavine, challenging our traditional understanding of multidrug transporters, but supporting our hypothesis that PACE transporter are functionally promiscuous like the SMR transporters. The study deepens insights into membrane transport processes and substrate specificity by multidrug transporters, providing a basis for future development of interventions against antibiotic resistance.

Justin Amakor

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

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#3 Melissa Spencer

Abstract Name: Determining the Influence of Macrophage-specific Osteopontin on Intramuscular Fat in the Dystrophic Muscle Niche

Duchenne muscular dystrophy (DMD) is an inherited degenerative muscular disease caused by loss-of-function mutations in the DMD gene, which encodes for dystrophin. Dystrophin, a protein found near the membrane of muscle cells (sarcolemma), is responsible for maintaining membrane integrity by linking the muscle cell cytoskeleton to the extracellular matrix. Without functional dystrophin, the sarcolemma is prone to ruptures that lead to chronic cycles of muscle degeneration and regeneration. The long-term consequence of this cycle is the replacement of muscle fibers with extracellular matrix (pathological fibrosis) and intramuscular fat. Previous studies done by the Spencer Lab have identified Osteopontin (Spp1) as a regulator of DMD pathology and have shown that a global knockout of Spp1 mitigates fibrosis and increases muscle strength in mdx mice, a model for DMD. Spp1 is expressed in various cell types, so, accordingly, we aim to understand how specific sources of Spp1 affect DMD progression. To start, the Spencer Lab generated a macrophage Spp1 conditional knockout (MϕcKO) mouse line using Cre recombinase to study one of the most prevalent sources of Spp1, macrophage-derived Spp1. We observed the disappearance of two novel stromal cells, Lifr and Procr positive stromal cells, after the ablation of macrophage-derived Spp1. The increased expression of adipogenic genes in these stromal cells may suggest that they play a role in intramuscular fat accumulation, a hallmark of DMD pathology. To explore this further, oil red o staining was done to understand how Lifr and Procr positive stromal cells may affect intramuscular fat. Analysis of intramuscular fat deposits in our experimental and control groups shows a trend of increased intramuscular fat deposits in mice lacking macrophage Osteopontin compared to control mice. This trend is also observed in older mice and indicates that macrophage Spp1 may play a role in exacerbating the DMD pathology.

Amarnath Amarnath

VT - Norwich University

Discipline: Interdisciplinary Studies

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#2 Jeremy Hansen

Abstract Name: CrAInium: Implementing Artificial Intelligence on MRIs to Revolutionize Brain Tumor

Analyses

Intracranial Neoplasm, commonly known as a Brain Tumor, is an abnormal mass or growth of tissues in the brain, one of the most complicated parts of our body. This research study focuses on developing and implementing Artificial Intelligence in developing models to enhance the precision and efficiency of Magnetic Resonance Imaging (MRI) analysis to address the pressing need for expeditious and accurate medical diagnostics. We evaluate and compare the performance of seven distinct machine-learning algorithms in identifying brain tumors: Convolutional Neural Networks (CNNs), Random Forest Classifier, Support Vector Regression (SVR), Gradient Boosting Classifier, Gaussian Naive Bayes (GaussianNB), XGBoost Classifier, and K-Nearest Neighbors Classifier (KNeighborsClassifier).We use a dataset of MRI scans, each labeled as benign or malignant, and further classify them into different kinds of tumors such as glioma, meningioma, pituitary, and no tumor. Evaluation metrics, including accuracy, precision, recall, and F1-score, are employed to assess the models' performance in terms of precision and accuracy. By enhancing diagnostic accuracy and expediting the dissemination of critical information, our models attempt to improve the efficiency of healthcare services, benefitting patients and medical practitioners alike.

Morgan Amos

NY - Pace University

Discipline: Natural and Physical Sciences

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#1 Morgan Amos
#2 Karen Caldwell

Abstract Name: Model Studies to Guide Cleanup of Clandestine Methamphetamine Labs: Developing Reliable Controls

The number of homes in the U.S. condemned after the discovery of clandestine methamphetamine labs (“Clan Labs”) is growing. Clan Labs are found in residential dwellings, motels and hotel rooms, garages, barns, automobiles, etc. After law enforcement and first responders remove quantities of hazardous materials, further remediation must be done by property owners. Protocols for proper remediation have not been sufficient in protecting occupants from health and safety problems arising from high amounts of residue. Properties can be cleaned of nearly all lingering amounts of methamphetamines; however, the residual amounts of the different substances used in the production of the drug are still apparent. The decontamination process for chemical residues varies, and it is unknown which type of cleaning is the safest and most effective. This study explored new approaches for the best remediation process for Clan Labs. Precise amounts of a modeled methamphetamine compound on different nonporous sample-building surfaces (e.g., stainless steel, ceramic, glass) go through the remediation process of surface cleaning. Laboratory instruments, such as UV-VIS spectroscopy, gas chromatography, and computational statistical analysis, determine the percent of surface residue recovery. The immediate goal of the study is to understand the chemical properties and surface reactions that dictate whether a particular cleaning method is effective.

Daniel Amoshie

GHA - Ashesi University

Discipline: Engineering and Architecture

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Munashe Dominic Nyazenga

Abstract Name: Automated Black Soldier Fly Incubator using Internet-of-Things and Computer Vision

Black Soldier Fly Larvae (BSFL), Hermetia illucens, have proven to convert organic waste into cheap and high-quality animal protein feed and residue frass fertilizer (a mixture of digested biowaste, larval feces, and chitin-rich exuviae) for soil enrichment while addressing the dual problem of mismanagement of organic waste and climate change. People have already discovered the benefits of these flies and are using traditional approaches to rear them. However, BSFL is difficult to rear due to its sensitivity to external conditions such as temperature, humidity, lighting, and rearing medium. Rearing them in a natural environment may sometimes lengthen their lifecycle as well as affect the by-products of each stage. Therefore, in this document a system that automates the regulation and control of ambiance in a Black Soldier Fly (BSF) farm using Internet-Of-Things as well as monitors the health of produced larvae using Computer Vision is proposed, designed, and developed. Results after testing the developed proposed system support the viability of the automated system in Black Soldier Fly rearing, with the mechanical subsystem showing structural integrity, the system effectively maintaining optimal environmental conditions (temperature: 27-32°C, humidity: 60-70%, light intensity: 100-400 lux and organic waste moisture: 60-70%) and the system demonstrating energy efficiency by its ability to changeover promptly between electrical grid and solar power.

Joshua Amosu

TN - Fisk University

Discipline: Natural and Physical Sciences

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Abstract Name: Post-Polymerization Modification of Branched Polyglycidol

The post-polymerization modification of polyglycidol is of great interest for the synthesis of novel polymeric biomaterials. We present the synthesis of novel ratio-controlled amino-oxy and keto functionalized branched polyglycidols. The biocompatibility and chemospecificity of the amino-oxy functional group make it particularly well suited for applications in bioconjugation, drug delivery and tissue engineering. Amino-oxy functionalized branched polyglycidol can serve as a critical building block for the synthesis of innovative biocompatible degradable hydrogels that are injectable. Ratio-controlled amino-oxy functionalized species were obtained by controlling the ratio of N-hydroxy phthalimide to the hydroxyl groups attached to the polyether backbone. A similar strategy was utilized to obtained ratio-controlled keto functionalized branched polyglycidols. This unique feature will allow for the tailoring of this branched PEG-like structural motif for the synthesis of novel biomaterials with tailored biochemical and biomechanical properties

Kaitlyn Amundson

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
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#3 Jennifer Wilson

Abstract Name: The Effectiveness of the Short Compassion Strengths Course Modules on First Semester Nursing Students' Compassion Scores

Purpose: This student-led study measured the impact of the Short Compassion Strengths Course (SCSC) modules on first-semester nursing students' compassion scores.Background: The 2021 American Association of Colleges of Nursing (AACN) Essentials require baccalaureate nursing students to demonstrate compassionate care. Although the importance of compassion in quality care is well-established in the literature, effective programs and best practices for formally teaching compassion are less understood and understudied. Early engagement in targeted interventions that foster compassion prior to caring for patients and measuring their progress as compassionate caregivers can accelerate students' progress in incorporating this core value into their professional identity. Durkin (2022) developed the Short Compassion Strengths Course (SCSC) modules based on his Compassion Strengths Model to foster nursing students' compassion in England. Student compassion scores in Durkin's study significantly increased (p=.001), yet the SCSC modules have not been employed or studied in the United States. Measuring compassion scores over time provides data regarding SCSC module effectiveness and provides a mechanism for both students and faculty to assess progress in applying compassionate care concepts as they transition into clinical practice.Methodology: First-semester nursing students completed nine SCSC compassion modules embedded into a didactic course prior to starting hospital clinicals. Using the Bolton Compassion Strengths Indicators (BCSI) survey, students' compassion scores were measured three times: before and after completing the nine modules and after completing clinicals. Data collection was completed in November 2023, and analysis will be completed in December 2023. Using SPSS, a RANOVA will analyze changes in compassion scores across the three timepoints.Expected Findings: It is hypothesized that students' compassion scores will increase at each timepoint. If effective, findings will drive data-driven curriculum decisions regarding the SCSC modules. Next steps include a longitudinal study measuring compassion scores across the curriculum.

Omkar Anand

CA - San Jose State University

Discipline: Engineering and Architecture

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Ayati Vyas

Abstract Name: Experimental Characterization of a Bifacial Solar Panel at Various Operating Conditions

Most solar panels are highly inefficient, with even the most expensive ones converting less than 25% of the sunlight that falls on them into usable energy. Bifacial solar panels are a new way to improve the solar panel efficiency by absorbing some of the sunlight that reflects off of the nearby ground. The current work is looking to measure the increase in voltage produced by solar panels when they are bifacial as compared to monofacial. Experimental work was performed on a commercially available solar panel (JJN Solar 200 Watt Bifacial PV Panel). The objectives of the experiment included monitoring the efficiency of the panel as a function of incident solar flux and ground reflections from the back side. For this purpose, various background surfaces were employed including grass, room tiles, aluminum foil, and sand. For each case, the short-circuit current and open-circuit voltage of the panel were obtained, and IV characteristics were plotted to measure the fill factors and measure the efficiency of the solar panels. 8 K-Type thermocouples, calibrated using the standard method, were attached to different points on the panel, and an automated 8 channel data logger was used to record the temperatures to monitor the temperature's effect on the IV characteristics. For indoor experiments, four halogen light bulbs were used to simulate sunlight. When testing outdoors, the experiment was conducted at various times of day to vary the incident flux over the panel surface. Among

different ground reflectors, aluminum foil was found to give the highest increase in the solar panel output (~1 percent) followed by the sand, concrete, and grass. Highest surface temperature reached up to 50 degree Centigrade that deteriorated the overall efficiency of the panel by (2-3) percent. Full results will be presented in the conference.

Abigail Anastasi

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Understanding the Role of Phosphorylation in RNA Binding Protein Function

RNA Binding Proteins (RBPs) play a crucial role in regulating alternative pre-mRNA splicing and, in turn, dictating the cellular proteome. Polypyrimidine tract binding proteins PTBP1 and PTBP2 are paralogous RBPs that share 74% primary structure identity and regulate alternative splicing of pre-mRNA gene transcripts. Despite their similarity, the paralogs regulate different sets of target exons, which plays a critical role in neuronal development and maturation. Previous studies discovered that PTBP2 is distinctly phosphorylated in the unstructured N-terminal and Linker regions to a greater extent than PTBP1. We determined that PTBP2 distinctly phosphorylated residues are conserved in lower species, indicating an important role in PTBP2 function. The N-terminal and Linker regions share less sequence identity between the paralogs compared to the RRMs. Thus, we hypothesize that linker region phosphorylation plays a role in the neuronal-specific splicing activity of PTBP2. Our proposed experiments are to test this hypothesis. First, we used recombinant DNA technology to create phosphate mimic aspartate mutants of PTBP2 phosphorylated residues. Alanine mutants that cannot undergo phosphorylation serve as controls. We are currently assaying these mutants in vivo in mouse neuro-2A cells to test for protein expression via Western Blotting and splicing activity on PTBP2-regulated exons via reverse-transcription PCR. Results from this study will determine the role of phosphate modifications in PTBP2 splicing activity and determine whether phosphorylation plays a role in dictating the distinct splicing activities of related RBPs in a gene family.

Skyler Andam

UT - Utah State University

Discipline: Natural and Physical Sciences

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Abstract Name: Distribution of Dahlia Mosaic Virus in Tubers

Dahlias are in high demand by florists and have been increasingly grown by Utah cut flower growers in the last few years. Growers have been trying to acquire dahlia tubers that are virus free which is very difficult. Dahlia Mosaic virus (DMV) is widespread in commercially available dahlia tubers. Recently, growers from across the country have been sending dahlia samples to the Utah Plant Pest Diagnostics lab (UPPDL) with symptoms of stunted growth, mosaic patterns on leaves and color breaking for testing after receiving

conflicting results from other testing facilities using different testing methods. The UPPDL uses conventional PCR, gel electrophoresis and when needed DNA sequencing to determine if a plant is positive. Some testing facilities claim the inconsistent results come from uneven distribution of DMV in tubers. This research project determines the distribution of three strains of DMV in individual dahlia tubers. Tubers were cut into one-inch segments, DNA was extracted and PCR with strain specific primers conducted. The results show that all three strains of the virus are evenly distributed throughout the tuber. This indicates that it does not matter from which part of the plant a sample is taken. The variation in results from different testing facilities may be attributed to potential different testing methods with varying test sensitivity.

Brooke Andel

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
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#2 Bernadette Igo
#3 Niveditha Sankar
#4 Rachel Cohen

Abstract Name: The effect of neuron death in the amygdala on aggression in green anole lizards

The green anole lizard (Anolis carolinensis) is seasonally breeding, with dramatic behavioral, physiological, and morphological changes between the breeding and non-breeding season. It is known that across different seasons, there is a change in the number of neurons within the amygdala, such that there are more neurons during the non-breeding compared to the breeding season. This is a region in the brain that is shown to play a major role in behavior, especially aggression. This study sought to see the impact of induced neuron death on aggressive behavior in this species. To induce neuronal death within the amygdala, stereotaxic brain surgery was performed on each of the lizards during the non-breeding season. These procedures locate and target small areas in an organism such as the brain, via a three-dimensional coordinate system. A small incision was drilled through the skull to the brain and the amygdala was injected with either vehicle control (saline) or staurosporine (100 nl), which is a neurotoxin that induces cell death through intrinsic apoptotic pathways, via a Hamilton syringe. After injection, the opening was sealed with petroleum jelly, and the lizard recovered for three days. Aggressive behavior was assayed pre- and post-surgery using 15-minute resident-intruder behavior tests. The lizards were allotted 5 minutes of acclimation to the cages before the intruder was added in with the resident and behaviors video recorded. Behavior recordings are currently being analyzed by an observer blind to condition using BORIS software to determine if there are changes in behavior pre- and post-surgery. This information will help us better understand the relationship between neurons in the amygdala and their influence on the behavioral differences seen in green anole lizards.

Raychel Anderle

TX - Midwestern State University

Discipline: Education

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#1 Raychel Anderle
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Abstract Name: Exploring Forms of Communication within Professional Organizations: Member Preferences

for Receiving Information

As large professional organizations seek to adapt to an ever-changing society, the need to adapt information should also change. To involve members of a professional organization, one should best understand the preferences of its members. The current research project aims to better understand the preferences of members of the Council for Undergraduate Research (CUR)'s Education Division for receiving information. Following online classes during COVID-19 and the rise of those working from home, many faculty and instructors have learned to use a variety of communication tools to receive and disseminate information to colleagues and their students (Cosco, 2015). As professional organizations have seen a generation shift in membership, both the methods to disseminate information and the language used to share information may need to change (Rowan-Kenyon et al., 2022). Many academics and other professionals utilize social media to engage with others in their field, though research to understand professionals' social media use has not been extensively studied (Jordan, 2023). The current research will first analyze websites of professional organizations to determine how organizations disseminate information to members. Then, researchers will survey division representatives to determine how they disseminate information to members. These methods will be analyzed for themes. Finally, researchers will email members a social media preferences survey tool (Attitudes Toward Thinking and Learning Survey, Galotti et al., 1999), with demographic questions to determine age. An analysis will be conducted to determine preferences for receiving information. Results will then be analyzed using correlational analysis to determine differences in preferences related to age and membership.Researchers expect to determine new methods of disseminating information to professional organization members. Researchers hope to determine whether multiple methods for disseminating information should be utilized based on generational preferences. These results will be shared with members of professional organizations to improve their communication with members.

Eden Anderson

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Eden Anderson

Abstract Name: Detecting Estrogen Pollution in the Stones River Waterways using the Yeast Estrogen Screen (YES) test of "Saccharomyces cerevisiae"

Estrogen is a steroid hormone, most well-known as being associated with the female reproductive system. Estrogen is used in the dairy and livestock industry as a muscle enhancer and used to increase growth rates. Once in the environment, estrogen enters the estrogen transmission chain, and the effects have been connected with disruptions in waterway ecosystems. This study aims to identify the levels of estrogen pollution for each site at the Stones River Watershed. Using the Yeast Estrogen Screen (YES), Saccharomyces cerevisiae was scientifically engineered to carry one DNA (either ERα or ERβ) sequence and two estrogen-responsive sequences (ERE). The ERE controls the reporter gene, lac-Z, which encodes for the enzyme β-galactosidase, and in the presence of estrogens, is secreted. The lysis buffer contains chlorophenol red-β-D-galactopyranoside (CPRG). When cleaved by β-galactosidase, it produces a colorimetric product. This study distinguishes a practical way to identify said pollutions and promotes a better understanding of what estrogen pollution can do towards biodiversity. The study also confirms why testing our local Stones River Watershed is very important, as it improves our ability to protect against threats towards biodiversity and possible contamination.

Aurora Anderson

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
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#3 Leif Hembre

Abstract Name: Genetic structure of Daphnia populations within and among lakes

Natural selection and gene flow are processes that affect genetic variation in populations and the ability of populations to evolve in the face of environmental change. These processes also determine the extent to which populations of a given species may become genetically distinct from one another. Environmental heterogeneity promotes selective conditions favoring certain genotypes in different habitats resulting in genetic differences between or within populations. Conversely, gene flow due to migration and interbreeding introduces alleles from one population to another and causes greater genetic homogeneity. The species investigated in this study is Daphnia pulicaria, a freshwater zooplankton. Daphnia usually reproduce asexually, but can switch to sexual reproduction and the production of resting eggs when conditions in their environment become poor. Sexual reproduction generates genetic diversity enabling populations to have evolutionary flexibility. Gene flow in Daphnia populations can occur when individuals move between lakes, via dispersal of resting eggs among lakes, or via “migration from the past” when resting eggs hatch from the sediment “egg bank” of given lakes. In this study, we examined the extent to which D. pulicaria populations were genetically structured within lakes and among lakes in close proximity to each other (in northwestern MN). Daphnia were sampled at several depths at two locations for each lake. Water depths sampled differed from each other in temperature and dissolved oxygen conditions, and were therefore different habitats to which particular genotypes may have been adapted. Of the five lakes sampled, three contained D. pulicaria. We found those three populations to be allelically polymorphic for both allozyme loci tested (GPI and PGM). We discovered that there was genetic differentiation within lakes implying that selection was operating differently at different depths, and we found even greater genetic differentiation between populations in different lakes, implying that gene flow among lakes is limited.

Ian Anderson

MT - Montana State University - Bozeman

Discipline: Humanities

Authors:
#1 Ian Anderson

Abstract Name: The Restoration of a 19th Century Boxwood

The School of Music at Montana State University owns a 19th century boxwood clarinet that is in a state of disrepair; my project involves researching the history of the clarinet, learning how to repair it, and getting it restored to playing condition. With today’s technology, it is easy to look up and listen to a performance or demonstration on one of these instruments, but I believe it would be more beneficial to have hands-on experience with such an instrument. I decided that I would look into the instrument further to gain a greater understanding of it, and once I had a general knowledge of the instrument and a better understanding of what needed repair, I would begin looking for someone capable of fixing it in keeping with historic preservation practices. Building on former student Karen Johnson’s project gave me a general idea of its historical context. My oboe studio professor suggested I call the American Musical Instrument Society; I contacted them to see if they would be able to help me with my project. I also consulted local instrument repair specialist Ken Decker about his ability, expertise and interest in restoring the clarinet. My hopes are that he will be capable of repairing it back to playing condition, and it will be able to be demonstrated in period ensembles by faculty

and students for years to come. I also plan to submit my research project for our campus research celebration and undergraduate research journal.

Brooke Anderson

UT - Utah State University

Discipline: Social Sciences

Authors:
#1 Brooke Anderson

Abstract Name: #IrelandIsFull: A Content Analysis of Irish Discourse on Ukrainian Refugees in Social Media

Since the beginning of the Russian invasion into Ukraine, thousands of Ukrainians have migrated to Ireland. This study is about how Irish citizens have framed Ukrainian refugees immigrating into Ireland in social media. I conducted a content analysis of 200 different posts from the social media application of X. I analyzed the posts for framing techniques and categories used to describe the immigrants. In many cases, Ukrainians were framed as “burdensome” and “a problem”. Prominent categories used to describe the refugees were “user”/”freeloader”, “intruder”, “victims” and “humans”. This study provides new insights to how immigrants are framed in social media.

Melissa Andrade

NY - Columbia University

Discipline: Humanities

Authors:
#1 Melissa Andrade

Abstract Name: El Desierto: Queer Geographies of Chicanx Identity in Arturo Islas’s The Rain God

Though much scholarly thought has focused on the inherent liminality of Chicanx identity, little has been said about its geographic genesis—the desert borderlands of the U.S. Southwest. This region, culturally significant to indigenous groups and, as I argue, to Chicanxs, operates as a literal and metaphysical space of identity-making in which Chicanxs negotiate their position as the colonial product of mestizaje, the intermingling of white Spaniards and Indigenous peoples. Arturo Islas’s semi-autobiographical novel, The Rain God: A Desert Tale (1984), delineates this disaggregated socio-ecological landscape where the desert drives a particularly Chicanx longing for historically denied filial relationships, what Eugenia Cotera and María J. Saldaña-Portillo term mestizo mourning. Through an exploration of the estrangement experienced by Miguel Chico Angel, the queer Chicano protagonist and Islas’s fictionalized counterpart, this study extends mestizo mourning to relationships between the human and the non-human desert landscape, locating the family as a microcosm of Chicanx alterity. In unveiling the dual mourning of Chicanxs—for family and land, a place and a people to belong to—this study considers the thematic resonances of death to expose the interplay between Chicanx mourning and the geographical landscapes that intertwine the living and the dead. Ultimately, I seek to map a novel ecological imaginary of the desert borderlands that moves beyond the common perception of this region as a mere transitional space between Mexico and the United States, redefining it instead as a significant site of Chicanx subjectivity, embodying both its liminal and contentious nature.

David Andrade Pereira

TX - Lone Star College

Discipline: Natural and Physical Sciences

Authors:
#1 David Andrade Pereira

Abstract Name: Swimming Against the Current: Oreochromis Niloticus Xenografts as Ultraviolet-Resistant Burn Dressings

This study compared Oreochromis niloticus (Nile Tilapia) xenografts to simulated split-thickness skin grafts (STSG) under varying ultraviolet (UV) exposure levels with an aim to assess the xenografts' UV resistance as a burn treatment. Recently developed by Dr. José Emaciel Lima Junior, these xenografts have successfully treated severe burns due to their high type I collagen levels that prevent scarring and facilitate burn site recovery. Though already considered as efficacious as human donor grafts and more flexible than porcine grafts, their UV resistance remains understudied. To address this gap, this study conducted a photochromic colorimetric analysis comparing meshed porcine skin (simulating the industry-standard STSG) to an Oreochromis niloticus xenograft. Both types of graft were placed on UV test cards and exposed to full-spectrum UV lights, starting with a control trial at 0 SPF (Sun Protection Factor) and gradually increasing to 100 SPF. As expected, UV exposure levels decreased as SPF increased for both grafts. However, the Oreochromis niloticus xenografts demonstrated a consistently lower range of UV rays throughout the trials. Findings suggest that the new fish skin-based therapy may offer superior protection to burn patients' damaged tissues even under varying sun exposures. Consequently, the field of medicine could potentially benefit from using the novel xenografts in treating severe burns. Nevertheless, confirming the results of this simulated study requires additional research in the form of pre-clinical mouse studies and clinical human trials with subject observation.

Darian Andrade-Diaz

CA - University of California - Merced

Discipline: Social Sciences

Authors:
#1 Darian Andrade-Diaz
#2 Whitney Pirtle

Abstract Name: Examining the Leaky Pipeline of Black PhD Professionals: How Networks and Racial Climates Impact Career Advancement in Sociology

There is an underrepresentation of Black professionals in higher education, which is an inequity that can lead to a lack of social justice, support systems, and retention of students of similar backgrounds. This study examines roadblocks and inroads that exist for Black PhD professionals working in academia. The research questions addressed are: (1) How do pathways and networks shape the advancement of Black sociologists in the academy? (2) How does racism and/or roadblocks interfere with advancement? The emphasis was placed on factors that perpetuate a phenomenon known as "the leaky pipeline" where Black professionals are not able to advance in their careers. Black PhD professionals (n=51) answered a series of questions in a survey that yielded quantitative and open-ended qualitative data. The survey was conducted over the course of one year, (July 2021-July 2022) with two six-month checkpoints (December 2021 and July 2022) to assess data collection progress. The data gathered gives insight into the participant's networks, how they experience the racial climate in their work environment, and how their network shaped their advancement. We expect to find correlations between participants' networks and their advancement in academia as well as a drag to their advancement related to the racial climates at the institutions where they work.

Aislinn Andrews

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Kerri Duerr

Abstract Name: Variation in Offspring Sex Ratio in American Kestrels

Grassland bird populations in North America are experiencing significant declines, including American kestrels (Falco sparverius), whose populations have been declining since the 1970's. Studies that examine population dynamics and causes of declines are important for directing conservation activities. Population metrics such as reproductive effort and sex ratio of offspring are useful for understanding population dynamics. Birds may facultatively adjust their clutch size and the sex of their offspring in relation to resource availability in their home range. High quality habitats may result in larger clutches and variation from 50:50 sex ratios, typically in favor of the larger sex (females in kestrels). Sex ratios can also vary depending on timing of breeding. We assessed reproductive success and structure of a natural population of breeding kestrels in west-central Pennsylvania during May – July 2023. We monitored 50 nest boxes for breeding activity and recorded date of clutch initiation, maximum clutch size, hatch date, brood size, nestling sex ratio, and the number of fledglings in eleven breeding attempts. Clutch size ranged from two to five eggs (mean = 4). Nest failure rates were high; only five nests survived to fledging and 17 kestrels were recruited into the local population. Sex ratio per brood ranged from 33% to 80% female and earlier nests had a higher proportion of female nestlings. Overall, brood sex ratio did not depart from 50:50. Our results suggest equal breeding for the next breeding season, but low nest success rates signal a struggling population. There may also be an increase in resource availability earlier in the breeding season due to earlier nests being predominantly female. Considering the decline of kestrels in Pennsylvania, our results suggest conservation action for this species is necessary in our region.

Elena Andrews

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Elena Andrews

Abstract Name: Reading Between the Lines: Regimental Records of Black Soldiers in the Civil War

The myth of the nation of the United States is a set of narratives, legends, and stories that help coalesce national identity around shared perceptions of the significance of those narratives, legends, or stories. The memory of nearly 180,000 Black soldiers who served in the Union Army during the Civil War has been marginalized for much of the 160 years since the Civil War ended. Out of over 2,000 Civil War monuments on the National Register of Historic Places, only 24 are dedicated specifically to Black soldiers. Utilizing the 100th Colored Infantry Regiment Records, 1864, at the University of Kentucky Libraries Special Collections Research Center, research will explore how these records help create a counter-narrative of the Civil War that centers the lives of these men within the conflict. These records, used in conjunction with soldier letters, autobiographies, secondary sources, photographs, and memorials, enable a greater understanding of the vital role these soldiers played in the Civil War. This is a study on narrative change and the power of archives to help understand the lived experiences of marginalized people. Using folkloric theory and the concept of the myth of the nation, this project utilizes muster rolls, records of effects, and furlough notices to document day-to-day activities of Black soldiers serving in Nashville, Tennessee in the summer of 1864. This project

demonstrates the ability of archival work to center the lives of these men within narratives of the Civil War, and social justice, in the United States today.

Laura Andrews

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Laura Andrews

Abstract Name: Little Boxes, Big Impact: The Use and Collection of Matchbox Art

Known now only through those who collect it, matchbox art is often an overlooked part of the history of graphic design. When matchboxes were invented, there was nothing special about the label, but as the print industry expanded, matchbox labels turned into art. Using matchboxes for commercial art was developed by countries like Japan and Sweden, soon followed by the U.S. and Britain. During WWII, matchbox labels were used not only for practical purposes but for war propaganda and public service announcements. Countries and businesses used this item that every household owned, to send a message. With the invention of the disposable lighter in the 1970s, matches became obsolete, but now, through phillumenists (matchbox label collectors), we get to see and learn about the impact that matchbox art had on the world and how it helped move forward graphic design.Keywords: Matchbox, Matchbox art, War Propaganda, Phillumenist

Naomi Anetor

CA - Biola University

Discipline: Health and Human Services

Authors:
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#2 Hannah Hong
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#10 Crystal Escobar
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Abstract Name: Visual Impairment in Ethanol Treated Zebrafish Larvae Evaluated Using a Novel Optokinetic Response Apparatus

Fetal alcohol syndrome (FAS) encompasses various physical, visual, and cognitive abnormalities resulting

from high concentrations of alcohol exposure during pregnancy. Zebrafish (Danio rerio) and mammals both have conserved genes for visual system development and share a cone-dominant vision that makes results more comparable than studies done with rodents. As a result, we sought to use the zebrafish as a model organism for comparative visual acuity experiments. Ethanol (EtOH) exposure during embryonic development can lead to various developmental abnormalities, including physical impairments that affect visual acuity, as observed in the optokinetic reflex (OKR) in this experiment. OKR, a reflex that stabilizes the visual field during motion, can be observed in zebrafish starting at 4dpf (days post-fertilization) when a high density of cones, similar to human eyes, is present in the central retina. Our lab sought to test how ethanol affects the development of OKR using an inexpensive, custom-designed OKR platform that utilizes light to test for quickness of response. Our custom-built OKR apparatus can rotate clockwise and counterclockwise which serves as an excellent tool for further investigating the underlying mechanisms and potential interventions for visual impairments. Zebrafish embryos were exposed to EtOH at 24 hpf (hours post fertilization), when they have undergone significant morphogenesis of the eyes. Our results showed that 0.5%, 1.0%, and 1.5% EtOH treatments impaired the OKR of the zebrafish larvae, significantly reducing eye saccades with increasing EtOH concentration compared to the control fish that were not exposed.

Stefanny Anguiano

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Stefanny Anguiano
#2 Ava Dragosh
#3 Lilly Olsen
#4 Regina Frisle

Abstract Name: Genetic Engineering in Dairy Cattle to Better Fit the Environment

Genetic engineering, specifically in dairy cattle, has provided many beneficial uses which has not only impacted the farmers but the industry as a whole. There is also an argument that many people in the public would assume that it is harming the cattle, when in reality there are substantial benefits such as a faster rate of production, offspring, and potentially disease-free cattles. This research is based on literature review and in this presentation, we will show how genes can be expressed to select for desired outcomes, such as the improvement of milk production, physical health, welfare, resistance to diseases such as mastitis, and the offspring phenotype such as hornlessness and physical characteristics. Through the use of genetic engineering, a solution was found for the black spots, which absorbs more solar radiation than a cattle could handle, this ultimately leads to heat stress, affecting the cattles overall milk production and impacting their offspring. Another example when looking at this from a safety level perspective is the use of dehorning of cattle. Cattle with horns affects the daily lives of workers as it would cause severe injuries and more hospital costs. It also contributed to the cattle themselves as many would harm themselves in the pens leading to less comfort. It is important to know that genetic engineering has been providing good results as research has shown that people are in contrast to this technology for a variety of reasons. Through strategic genetic engineering approaches, there is a high chance of cattle not contracting diseases and also increasing the industry's income from milk production as its protein, calcium, and vitamin D levels have also improved. The purpose of this research was to not only educate the public but important in the development and future in technology of the dairy industry.

Emma Ankar

TN - Middle Tennessee State University

Discipline: Business and Entrepreneurship

Authors:
#1 Emma Ankar
#2 Ashley Landaverde
#3 Gaia Rancati
Ashley Landaverde

Abstract Name: The Voices We Hear – Effect of Cognitive Bias and Gender on Digital Voice Assistant Shopping

Digital Voice Assistants have evolved into recommendation agents assisting users in online shopping by supporting decision-making and facilitating the search and selection of products and services. These assistants can also lead to gender stereotyping and cause cognitive biases that influence customers' purchasing behavior. This study specifically examines the potential of digital voice assistants as recommendation agents in terms of gender bias and social proof. A multidisciplinary protocol involving a scenario-based survey and a neuroscientific experiment are used to answer this research question. In the male digital voice assistant survey scenario, prior experience is more important for women than for men. For the female digital voice assistant scenario, perceived usefulness has a greater impact on purchase intention for men than women, whereas women's attitudes are more relevant than men's. Implicit association measures suggest that digital voice assistants are perceived as informative, and they indicate the presence of gender stereotypes that reinforce the opposite attraction hypothesis for digital voice assistants and participant gender. Facial expression analysis and galvanic skin conductance support these findings and show significant changes in customer attention and arousal. Most importantly, digital voice assistants' recommendations outweigh traditional social proof heuristics in customers' product selection. Keywords: Behavioral Economics, Digital Voice Assistant, Gender, Neuromarketing, Technology Acceptance Model, Voice Commerce.

Maximus Ankrah

VA - Virginia Military Institute

Discipline: Natural and Physical Sciences

Authors:
#1 Maximus Ankrah
#2 Anne Alerding
#3 Aryeh Weiss
Anne Alerding

Abstract Name: Do Strength Fibers cause more Soybean Production?

Efficient food production is vital within farming. Out of the many crops made not only in America, but in the world, soybeans pose many benefits in terms of consumption. Soybeans have a vascular system that causes production and analyzing could help us alter growth yield for the better. During research we examined cross sections of vascular bundles and wanted to focus our study on fiber cells; strength fibers that help with structure of branches to produce high fruit yield within the plant. We found that through image analysis, strength fibers do not correlate with increased seed production, but other tissues within the plant may such as water conducting xylem or turgor producing pith. This is important because we will be able to research what exactly increases growth yield and in the long run help soybean producers as well.

Maximus Ankrah

VA - Virginia Military Institute

Discipline:

Authors:
#1 Maximus Ankrah
#2 Anne Alerding

Abstract Name: Do Strength Fibers cause more Soybean Production?

Abstract: Efficient food production is vital within farming. Out of the many crops made not only in America, but in the world, soybeans pose many benefits in terms of consumption. Soybeans have a vascular system that causes production and analyzing could help us alter growth yield for the better. During research we examined cross sections of vascular bundles and wanted to focus our study on fiber cells; strength fibers that help with structure of branches to produce high fruit yield within the plant. We found that through image analysis, strength fibers do not correlate with increased seed production, but other tissues within the plant may such as water conducting xylem or turgor producing pith. This is important because we will be able to research what exactly increases growth yield and in the long run help soybean producers as well.

Isabelle Eleanor Antaran

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Isabelle Antaran

Abstract Name: An Analysis of Educational Disparities Perpetuated by Prevailing Classroom Management Practices

Alarming data shows notable differences in how students of color and students with disabilities spend less time in the classroom due to discipline and are at higher risk of being suspended without educational services. The research delves into the enduring influence of classroom management practices on the educational quality received by these marginalized groups, with the primary objective of analyzing current practices perpetuating educational disparities and their implications. Examined classroom management through three dimensions: teacher’s personality, teaching, and discipline. Identified implicit biases as pervasive influences on all dimensions. Argued that exclusionary discipline not only fails to address student concerns but also hinders the development of appropriate behavioral and communication skills. Recommends systemic training on diversity, equity, and inclusion to raise awareness and rewire preconceived attitudes. Practical suggestions include enhancing diversity and representation for a “racial match”, incorporating diversity into the curriculum, and implementing varied learning styles and differentiated instructions. These measures aim to capitalize on individual strengths, fostering an environment where students of color and those with disabilities feel heard, represented, and integrated into the educational community.

Selam Anteneh

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Selam Anteneh

Abstract Name: Evolutionary Origins of Mate Jealousy: Dichotomies due to biological sex, sexual orientation, and sexual identification

Evolutionary psychology postulated that males should be more disturbed by sexual infidelity than emotional infidelity, given paternity uncertainty and the risk of not passing on one's genes. On the other hand, females should be more disturbed by emotional infidelity because, during the era of evolutionary adaptedness (EAA), males controlled all the resources, without which offspring could not be nurtured and one's genes would not survive. Emotional infidelity may lead to the male leaving and taking his resources with him (Buss, 1992). The survey literature is contradictory on this question, so we propose to take physiological (GSR) measures. Galvanic skin response (GSR) is measured while participants listen to audio recordings and picture scenarios involving emotional and sexual infidelity (along with neutral stimuli). We hypothesize that cis, hetero males will have a ratio of GSR responses to sexual and emotional infidelity greater than 1.0 when listening to scenarios of sexual infidelity relative to emotional infidelity, reflecting greater distress to sexual infidelity. Conversely, cis, hetero women should have a ratio of responses of less than 1.0, reflecting greater distress to emotional infidelity. Since homosexual men have feminized brains, and there is indirect evidence that lesbians have masculinized brains, we hypothesize that these ratios will be reversed in homosexuals, and will correlate with the Kinsey Sexual Orientation Scale. Finally, the ratios of transsexual individuals will be calculated, although we do not have an a priori hypothesis.

Kaylee Anthon

UT - Utah State University

Discipline: Humanities

Authors:
#1 Kaylee Anthon

Abstract Name: Framing Climate Change: A Comparative Study of Climate Change Framing in State-owned and Independent News Media in Russia

This study conducted a comparative analysis of how climate change is framed in state-owned versus independent news media in Russia, focusing on RT International and the independent news source Moscow Times. The findings revealed differences in framing between the sources: RT portrays climate change as primarily non-local, emphasizing temperature increases and vague natural disasters, while the Moscow Times presents it as a global issue with statistically significant consequences. Both sources employ framing techniques to either support or criticize governments.

Anders Anthonisen-Brown

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Anders Anthonisen-Brown
#2 Josh Sedarski
#3 Lifeng Dong

Abstract Name: Evaluating the Performance of Various Wood Biochars as Supercapacitor Electrodes

Energy storage devices such as supercapacitors typically rely on activated carbon derived from nonrenewable sources such as coal and petroleum. Biochar, charcoal produced from the pyrolysis of biomass, serves as a renewable alternative. Future research demands more information about the performance of different biomasses as biochar when used as activated carbon in energy storage devices. This study explored the performance of biochars derived from four different species of wood: Boxelder, Buckthorn, Bur Oak, and Green Ash. Although these four species, sourced from Minnesota, are all hardwoods, they have distinctive microstructures and thereby different specific surface areas. Wood samples were pyrolyzed using a Top-Lit Updraft Gasifier before undergoing potassium hydroxide chemical activation in a tube furnace. Activated carbon was then used in the fabrication of supercapacitors as electrodes. The supercapacitors were tested by undergoing 250 charge/discharge cycles to simulate their lifecycle. They were analyzed by three primary metrics: specific capacitance, cycling stability, and internal resistance. For instance, Bur Oak supercapacitors have achieved excellent results reaching a specific capacitance of 105.6 F/g, and a cycling stability of 98.59% over 250 cycles. Comparing this to a device created with commercially available activated carbon that has a specific capacitance of 102.0 F/g, and a cycling stability of 94.17%, as well as qualitatively determining that wood biochar supercapacitors achieved a lower internal resistance, it is apparent that wood biochars can outperform commercial activated carbon. This study assesses the performance of biochars derived from the four wood species and provides insight into correlations between wood microstructures and their applications for supercapacitor electrodes.

Nehemiah Antoine

TN - University of Tennessee at Chattanooga

Discipline: Natural and Physical Sciences

Authors:
#1 Nehemiah Antoine
#2 Marisa James
#3 Keenan Dungey
#4 Jared Pienkos

Abstract Name: Alkynyl Iodide-Based Halogen-Bonding with Isocyanides to Improve Utility

Isocyanides are utilized in synthetic chemistry and are used in multicomponent reactions such as the Ugi and Passerini reactions, but their pungent odor limits their utility. Halogen bonding was found to quell the stench of isocyanides while retaining their original properties, in particular, halogen bonds were formed between iodo-pentafluorobenzene and isocyanides. We are interested in expanding the repertoire of halogen-bonded isocyanides and so have investigated alkynyl iodides, a class of halogen bond donors. We used FOPT calculations with a STO-3G basis set to compare the halogen bond lengths and complexation energies of our proposed scheme, 4-iodoethynyl-nitrobenzene and 2,6-dimethylphenyl isonitrile (3.908 Å and -0.90 kcal/mol), to that of a co-crystal from the literature: iodo-pentafluorobenzene and 2,4,6-trimethylphenyl isonitrile (3.987 Å and -0.29 kcal/mol). Then, we synthesized 4-iodoethynyl-nitrobenzene to co-crystallize with 2,6-dimethylphenyl isonitrile. On the halogen bond donor, the strong polarizing effect of the sp carbons and the electron-withdrawing effect of the nitro group polarize the iodine atom to become electrophilic. Our hypothesis is that alkynyl iodides would suppress the odor of isocyanide due to halogen bonding.

Joana Antonio

CA - Pomona College

Discipline: Natural and Physical Sciences

Authors:
#1 Mihoko Kato

Abstract Name: The Role of the Neurotransmitter Acetylcholine in a C. elegans Cell Migration

The linker cell (LC) is a leader cell for the long-range migration of the developing C. elegans male gonad. In the L4 stage, the LC migrates along the ventral bodywall of the animal in close proximity to the ventral nerve cord, which contains cholinergic–muscarinic and nicotinic– neurons that release the neurotransmitter acetylcholine (ACh). We previously found that excess ACh induced by the drug aldicarb causes the LC to reverse its migratory direction from the normal posterior-facing to anterior. We show here that the LC uses nicotinic receptors acr-15, acr-16, and lgc-9 to respond to ACh. We also used time-lapse microscopy to capture z-stack images of the migrating linker cell as it reversed in response to excess ACh over the span of two hours and 30 minutes, reflective of the regular migratory LC timeline. The bullet-shaped LC is always polarized towards the direction of migration with the cytoplasm in front and nucleus in the back. We measured directional change by tracking the position of the cytoplasm relative to the nucleus as the LC reversed directions in recorded z-stack images. There were clearly at least three specific stages by which reversal occurs—posterior facing, ventrally facing, and anterior facing. The LC always rotates clockwise towards anterior facing, with the ventral facing as an intermediate step in reversal. We propose a model that increased levels of ACh lead to stronger adhesion and polarization of the LC towards the ventral bodywall, causing the initiation of the turn. This may then result in the follower cells overtaking the LC, resulting in the LC completing the reversal.

Hannah Antrican

TN - Middle Tennessee State University

Discipline: Social Sciences

Authors:
#1 Hannah Antrican

Abstract Name: "What Can I Do About It?": Climate Anxiety in College Students

Climate change presents increasingly worsening global social justice issues. Along with the environmental and economic effects of the changing climate come a variety of personal stressors. Mental health practitioners have noted a growing number of patients expressing distress due to environmental issues. This distress, known as climate anxiety, is a relatively new topic and thus has been used in multiple contexts with varying definitions. It is a topic of relevance to sociologists as well as mental health practitioners. Understanding climate anxiety will aid in promoting action to combat climate change. This research examines the existing literature on climate anxiety, specifically in college-age individuals in preparation for a future study measuring it in the student population of Middle Tennessee State University. Research studying climate anxiety in college students is of particular importance as they represent emerging professionals and scholars who will shape the future of climate policy. Limited research on climate anxiety in college students exists, but a study by the Yale Program on Climate Change Communication showed that Gen Z and Millennials have higher rates of climate anxiety compared to older adults. Existing research has found a negative relationship between climate anxiety and positive mental health in teens and emerging adults. The aim of this article is to provide an overview of research about: (a) ways that climate anxiety has been defined, (b) existing measures of climate anxiety, (c) the relationship between climate anxiety and pro-environmental behavior, and (d) climate anxiety and overall mental wellbeing.

Shane Appiah

DC - Howard University

Discipline: Social Sciences

Authors:
#1 Shane Appiah

Abstract Name: The Howard Movement: Collective Action Framing Amongst Howard University Student Protestors

Using the sociological comparative historical approach and primary source analysis of The Hilltop Student Newspaper, I make two arguments: first, that student protestors through instrumental collective memory anchoring, use collective action frames as well as framing dynamics and processes to influence collective action. Second, although these two protests occurred twelve years apart, the processes have ensured the continuity of a singular continued social movement unified by what I term the "collective Howard student memory and identity". Through informing The Hilltop Student Newspaper staff writers and public media, Howard University's 2021 #BlackburnTakeover Protest and September 4th, 2009 protestors claimed the administration was responsible, held rallies, and drew on past protests. Furthermore, they create slogans, unify with the faculty and staff as well and encounter internal and external disputes to frame the events in a manner that benefits their campus protests's objectives. This research expands the literature on social movement theory, collective memory, collective identity, and framing by exploring collective memory and identity on a singular college campus across time as well as providing insight into how student protestors construct campus movements.

Sheyda Aquino

CA - University of California - Irvine

Discipline: Health and Human Services

Authors:
#1 Sheyda Aquino
#2 Shu-Hui Chu
#3 Katherine Yanes
#4 Melissa Lodoen
#5 Andrea Tenner

Abstract Name: Effect of Toxoplasma gondii Infection on Amyloid Plaque Accumulation and Microglial Activation in an Alzheimer's Disease Mouse Model

In the United States, roughly 6.5 million people have Alzheimer's Disease (AD), a disorder characterized by clinical symptoms of memory loss, difficulty concentrating, and a decline in ability to make judgements and decisions. It is also characterized pathologically by the accumulation of beta-amyloid plaques and neurofibrillary tangles. This project aims to explore how Toxoplasma gondii affects AD pathology in Arctic mice, an AD mouse model.Toxoplasma gondii (T. gondii) is a foodborne parasite that is able to infect most warm-blooded animals. It does not typically present with life-threatening symptoms and it has been found to evade complement mediated lysis. Data from our collaborators show that infection of T. gondii in the 5xFAD mouse model of AD resulted in reduced plaque pathology 6 weeks post-infection that was accompanied by increased microglial activation. Immunohistochemistry (IHC) techniques (anti-Iba1 staining for microglia) and thioflavin staining for amyloid plaques were used to see whether a second AD model, the Arctic mouse, would have the same results. Since C5aR1 has been reported to be activated upon T. gondii infection, the responses of the Arctic mice with and without C5aR1 receptors (C5aR1KO) were compared to determine if

the presence of C5aR1 contributes to plaque reduction. Finally, mice were infected with T. gondii at either 6 weeks or 12 weeks before perfusion to determine how long after infection the effects on plaque pathology are maintained. Preliminary results show that Arctic mice that were infected with T. gondii had a decrease in amyloid plaque pathology and an increase in microglial activation 6 weeks post-infection. The absence of C5aR1 had no effect on these measures. However, this suppression of plaque accumulation appeared to dissipate 12 weeks after infection, suggesting control of the infection limits microglia activation and thus clearance of amyloid in the Arctic model.

Melissa Aragon

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Melissa Aragon

Abstract Name: Racial & Economic Disparities in NYC's Public School Athletic League

The Public School Athletic League (PSAL) is the oldest and largest sports league in the United States, serving New York City Public Schools' approximately 1.1 million students. In nearly 70 years since the Brown vs. Board of Education (1954) lawsuit, New York City student-athletes won a class action lawsuit based on gross racial disparities in the New York City Department of Education (DOE). In majority Black and Latinx schools, students had access, on average, to 7 PSAL teams. In non-majority Black and Latinx schools, students had access to over 29 PSAL teams. As a part of a settlement of this lawsuit, the DOE implemented the Shared Access Program with the intent to increase access to sports teams by creating new teams for students from schools of close geographical proximity to participate in. However, over three years after its implementation this study explores how effective such programs are in addressing the root causes of racial disparities in the DOE. Based on the Shared Access Program's targeted approach based on disparate school districts I will conduct qualitative research using ethnographic observations comparing neighborhoods with the largest disparities, in order to ask pertinent questions to neighborhood stakeholders. The neighborhoods selected for this study were from four distinct districts, all of which are part of the Shared Access Program. We anticipate finding environmental features that help us understand the nature of inequality, rooted in the neighborhoods, that goes beyond what the Shared Access Program attempts to address. This raises the question of how much, if at all, the program can lead to significant changes regarding poverty.

Takeru Arai

JPN - Musashino University

Discipline: Business and Entrepreneurship

Authors:
#1 Takeru Arai
#2 Hiroya Takamatsu

Abstract Name: Curriculum Validation and Effectiveness Measurement of Entrepreneurship Education at Musashino EMC

This study aims to uncover the current state, challenges, and distinctive features of entrepreneurship education at the undergraduate level in Japanese universities, with a specific focus on Musashino University

Entrepreneurship Faculty (Musashino EMC), which actively implements entrepreneurship education at the undergraduate level in Japan. Japan has recognized the importance of startup creation, evident in the establishment of the "Startup Development Five-year Plan" in 2022. In this context, entrepreneurship education has emerged as a crucial factor in fostering startup initiatives. Musashino EMC defines entrepreneurship as "a mindset of stepping out and creating new value based on high aspirations and ethics, without fear of failure. This mindset is deemed indispensable for fostering startup creation in Japan. Despite the growing emphasis on entrepreneurship, the provision of entrepreneurship education at the university level in Japan remains limited. Moreover, there is a notable lack of comprehensive measures to assess the educational impact and the development of effective methodologies related to entrepreneurship education. This study examines the curriculum at Musashino EMC and investigates its educational effectiveness through questionnaires and interviews. The purpose is to utilize the curriculum framework adopted by Musashino EMC and to determine how each curriculum contributes to enhancing students' entrepreneurship. As a result, it will become clear how the curriculum at Musashino EMC fosters entrepreneurship, and the current status, issues, and characteristics of entrepreneurship education as a leading example. It will also reveal what curriculum elements can foster entrepreneurship. This study aims to contribute to the discussion on the future of entrepreneurship education.

Maren Archibald

UT - Utah State University

Discipline: Humanities

Authors:
#1 Maren Archibald

Abstract Name: Is this you? Foucauldian Ethics in Multifactor Authentication

Multifactor authentication (MFA), which was in use as early as 1994, is a system used to verify user identity during the login process to increase security and deter hackers. Today, MFA requires a user to prove their identity by way of their knowledge, through a password or one-time code; their possession, through a physical key or USB; or their inherence, through biometrics like a fingerprint or an eye scan. While the sign-on method has proliferated in recent years, little if any research has been done in relation to its ethical implications as a surveillance technology. In his scholarship on discipline, Michel Foucault writes of surveillance as “an architecture that would operate to transform individuals.” MFA is one such method of surveillance — various forms track users’ location data, common usage and login hours, and biometric information — that is changing its users. Through autoenrollment, employers and other organizations have implemented MFA in a way that requires users to sacrifice privacy in order to gain protection. In my presentation, I will apply Foucauldian ethics to show how MFA violates the definitions of privacy and security, and in doing so, diminishes our autonomous self-concepts. As a part of our daily lives, the routinization of MFA surveillance is changing the way we perceive ourselves and our ability to act with independent power.

Reginald Archibald II

OK - Langston University

Discipline: Mathematics and Computer Science

Authors:
#1 Reginald Archibald

Abstract Name: NASA LU ROCKON 2023

In 2023, the Langston University NASA RockOn team, comprised of five members, will build a real sounding rocket payload and launch it on a two stage Terrier-Orion rocket into outer space. Our project manager will lead our team by 1) Scheduling of the rocket launches, agenda, and other events. Maintain inventory of workshop and create acquisition and requisition reports. 2) Understand the chemical makeup of the rocket materials and their molar masses. Analyze data collected by using properties of atmosphere and matter to determine temperature, pressure, speed, and acceleration. 3) Understand Rocket history 101, the center of pressure, and center of gravity, design & build a rocket, rocket motor, payload, and recovery system, and coordinate launch missions. 4) Using an Arduino minicomputer to create a hardware/software system (payload) to collect data. Store data on an SD card for analysis. 5) Document the progression of the project by way of photos, video, oral presentation, and written work.

Andrey Arcidiacono

VA - George Mason University

Discipline: Humanities

Authors:
#1 Andrey Arcidiacono

Abstract Name: Restorative History and Community Led Narrative Change on Maryland’s Eastern Shore

This project, completed over the summer of 2023 focuses on bringing the local history of Maryland’s eastern shore to light through a community led process of preserving and making accessible their history. Through conducting archival research and becoming involved in the community at Salisbury I worked with the City of Salisbury, the University of Maryland, Eastern Shore, and the Maryland State Archives. Working in close partnership with the Maryland State Archives, I was able to find documents that were relevant to our investigation around lynchings in Maryland, most notably in the cases of Garfeild King and Wright Smith. It was previously believed that the first secret investigation by a private firm was commissioned by governor Philips Lee Golds-borough following the lynching of King Johnson in Brooklyn Maryland in 1911. These newly uncovered 1898 correspondence with the Pinkerton National Detective Agency investigation establish this investigation as the earliest known secret investigation by a private firm in Maryland. These findings further solidify the precedent of Maryland using private firms to commission secret investigations and also demonstrate significant financial investment by the state with receipts showing significant costs for the investigations in 1898.

Jessica Ardeshana

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Bethany Mostert

Abstract Name: Testing the efficiency of membrane enzyme truncations for medicinal in-vitro systems using E. coli

Malaria is a highly infectious disease affecting an estimated 249 million people in 2022. The primary

treatment for Malaria is artemisinin, which is isolated from the plant Artemisia annua. However, the affordability of this treatment, especially for countries in the Global South, is a significant concern due to two main challenges: the low extraction yields of artemisinin and its infrequent harvest. To address this issue, our lab uses well-established metabolic engineering strategies to increase artemisinin content in planta. One approach involves understanding key enzymes in the artemisinin biosynthetic pathway and enhancing their capacity for catalysis. To achieve this, we currently use E. coli as our model system to produce recombinant enzymes from this pathway. Our focus is on Cytochrome P450 (CYP450), responsible for synthesizing artemisinic acid—a precursor of artemisinin—and its redox partner, Cytochrome P450 Reductase 1 (CPR1). Both of these enzymes pose a challenge for expression in a prokaryotic system due to their native binding to endoplasmic reticulum (ER). These proteins are inserted into the ER membrane by its hydrophobic N-terminal anchor. Due to this domain, they bind to the plasma membrane when expressed in E.coli and make it difficult to purify the proteins since they form many inclusion bodies (accumulation of unfolded protein) during extraction. Truncating the transmembrane domain was demonstrated to produce a soluble CYP450 and CPR1 for optimal expression conditions in E. coli and better purification. I aim to further that research by testing the efficiency of multiple truncation expression constructs that are created using Gateway Cloning. The production efficiency of these truncated enzymes will be analyzed using SDS-PAGE, a technique for protein separation. This solution not only addresses immediate challenges but also contributes to our overarching goal of understanding in-vitro mechanisms of artemisinin biosynthesis to enhance enzyme production in planta.

Fazil Onuralp Ardic

CA - University of California - Los Angeles

Discipline: Engineering and Architecture

Authors:
#1 Fazil Onuralp Ardic
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#3 Cagatay Isıl
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Abstract Name: All-Optical Image Denoising Using a Diffractive Visual Processor

Image denoising, an inverse problem aiming to eliminate noise/artifacts from input images, serves crucial roles in fields like computational photography, medical imaging, and remote sensing. Current image denoising methods often come with significant latency and computational burden. Our paper introduces an analog diffractive image denoiser operating optically and non-iteratively. These characteristics enable it to function at the speed of light and consume minimal power, only requiring a small amount for input illumination. The denoiser comprises passive transmissive layers with tiny phase modulation features optimized through deep learning. These features scatter the optical modes corresponding to noise characteristics away from the output image field of view while preserving modes related to the object features of interest. The training occurs for an arbitrary illumination wavelength λ, allowing the realization of a physical network spanning <250λ for any chosen wavelength without retraining. In a proof-of-concept experiment, our denoiser was demonstrated to operate at the terahertz spectrum. Our results exhibit the efficient removal of salt-and-pepper noise and spatial artifacts associated with image rendering from input phase or intensity images. Additionally, it achieves an output power efficiency of approximately 30-40%. Due to their speed, power efficiency, and minimal computational overhead, all-optical diffractive denoisers can revolutionize various display and projection systems, such as holographic displays.

Joshuah Arellano

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
#1 Joshuah Arellano
#2 Malia Bautista
#3 James Fowler
#4 Christie Fowler

Abstract Name: Characterizing the Role of Lynx2 Following Chronic Mild Stress

Cigarette smoking is the leading cause of preventable disease and death in the United States. Nicotine, the psychoactive constituent from tobacco, is responsible for the reinforcing properties of smoking. Adult smokers who attempt to quit, may relapse within the first few weeks as result of discomfort from stress. Lynx2, a negative allosteric modulator of nicotinic acetylcholine receptors (nAChRs), is enriched in brain regions associated with stress regulation and nicotine reinforcement. Thus, our studies aim to characterize the mechanism by which lynx2 may impact stress related behaviors. To address this, we implemented a chronic mild stress (CMS) protocol including several different conditions (nesting removal, water deprivation, damp bedding, cage tilt, continuous light, and white noise with predator odor) with both wild-type (WT) and transgenic lynx2-knockout (TG) mice. Following the CMS protocol, both CMS and control mice underwent a social interaction test and a nicotine conditioned place preference (CPP) paradigm. We hypothesized that in the social interaction test, CMS mice would spend less time in a chamber containing a novel mouse in comparison to the control group, with WT mice exhibiting greater time spent in the chamber compared to TG mice. In addition, we hypothesized that CMS conditioning would exacerbate the preference for the nicotine-paired chamber in both WT and TG mice compared to the control group as assessed in nicotine CPP. Overall, our studies suggest a potential interaction where lynx2 significantly interacts with stress exposure to alter social behavior in mice. In conclusion, our studies illustrate a role for lynx2 in nicotine cessation and stress exposure.

Maria Arenas Florez

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Maria Natalia Arenas Florez
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Abstract Name: Comparing Differences in the Endpoint of Mutations Between Ancestry Groups

Differences across genetic ancestry groups have been observed in the rate and genomic location of somatic chromosomal alterations (mCAs) detected from sequencing of blood tissues from donors without cancer. This project sought to determine whether there are differences in the frequency of somatic copy number mutations that span entire chromosome arms compared to those with endpoints within a chromosome arm, which would indicate a double strand break during generation of the copy number change. A double strand break (DSB) occurs when the sugar-phosphate backbone of the DNA molecule is split between two neighboring nucleotides. This type of DNA damage can be caused by environmental agents such as ionizing radiation, ultraviolet light, chemical compounds, diet, smoking, and air pollution. The driving hypothesis behind this project is that differences in mutation rate, if present, stem from variations in DNA-damaging factors or genetic susceptibility across ancestry groups. Determination of differences in mutation frequency across European American (EA), African American (AA), and Hispanic American (HA) groups (clustered based on genetic similarity) was accomplished through the development of python scripts to identify breakpoints from

somatic copy number changes. These were then sorted across two categories: Endpoint at chromosome arm boundaries and endpoint within the chromosome arm. The results of this analysis indicate that there are no differences across genetic ancestry groups in the frequency of inferred somatic copy number changes arising from double strand breaks. Our findings support the notion that genetic and environmental drivers do not lead to differences in DNA double strand breaks across these groups; however, further validation is warranted in additional cohorts.

Alicia Argrett

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Mechanisms for Microbial Regulation In the Presence of Amphetamine

Amphetamines (AMPHs) are effective psychostimulants used to treat neuropsychiatric disorders such as attention deficit hyperactivity disorder (ADHD). Much of the published data shows reciprocal communication between the microbiome and the brain. In a recent study using Drosophila as a model system, it was demonstrated that Fusobacterium nucleatum (F. nucleatum) enhances behavioral responses to AMPH (hyperlocomotion, sexual drive, and drug preference) through secretion of butyrate, inhibition of histone deacetylases, and upregulation of expression of DA transporter (DAT). This increased expression of DAT leads to non-vesicular DA release (DA efflux), in response to AMPH, translating into enhanced AMPH-induced behaviors. This provides evidence of a role for imbalances in the microbiome (dysbiosis) in the pathogenesis of AMPH use disorders and supports previous work, in mice, demonstrating that administration of antibiotics reduces AMPH-induced hyperlocomotion, conditioned place preference, and sensitization. The mechanisms by which AMPH affects F. nucleatum abundance are not known. Preliminary data demonstrates that AMPH does not directly alter F. nucleatum growth rates, but instead increases biofilm formation As biofilms protect anaerobic F. nucleatum colonies from environmental oxygen, and F. nucleatum colonization enhances host responses to AMPHs (including preference for AMPH), the ability of biofilm inhibition was tested for a decrease in host responses to AMPH. F. nucleatum adhesins are known to facilitate formation of multi-species biofilms with the aerobic bacteria Streptococcus mutans (S. mutans). After confirming that co-cultures of F. nucleatum and S. mutans enhance the presence of AMPH, a dependence for AMPH was tested for by co-colonizing F. nucleatum and S. mutans bacteria. Additional pharmacological inhibitors that exhibit an inhibition of AMPH-enhanced biofilm formation were then tested. It was anticipated and was found that aerobic environments block co-culture biofilm formation. This is significant because biofilms provide a major route to tolerance and resistance for bacteria, especially to agents such as antibiotics.

Alan Arizmendi Almaraz

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Alan Arizmendi Almaraz
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Abstract Name: Updated Molecular Dynamics

Aptamers are single-stranded nucleic acids that behave similarly to antibodies in that they bind to certain target molecules. The main difference being that aptamers can be synthesized in lab (in vitro) while the main synthetical pathway to create antibodies often includes some sort of biological element (in vivo). Additionally, some research suggests that aptamers may have tunable properties and might generally be more chemically resistant than antibodies. This makes aptamers a subject of interest for various biochemical applications. Our chosen aptamer is the malachite green aptamer (MGA), which binds to its target molecule, malachite green (MG). Malachite green is an organic molecule mainly used in dyes and fungicides. Molecular dynamics (MD) simulations are a computational method to model desired systems that has been used in complement with experimental methods. We focus on using MD simulations to generate models of how MGA behaves in water—in the unbound state and while bound to malachite green. Specifically, we aim to determine the mechanism through which MGA binds to malachite green. It has been reported in previous studies that an “induced fit” method is the main way MGA binds to MG. In other words, the structure of MGA is only loosely determined before binding and undergoes a reorganization of structure while it is binding to MG. Previous computational simulations have been done on this same system before. Though the advancement of technology and develpment of new software has made it possible to take an updated look at this system. Comparing the updated simulated bound and unbound states helps us understand the possible differences in flexibility and stability between both states. This in turn, could point to certain behaviors that could explain the mechanism we seek to understand.

Autumn Arnett

CA - California State University - Fullerton

Discipline: Social Sciences

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Abstract Name: Effects of Perceived Health of Hair on Attractiveness Ratings

Attractiveness is likely a combination of evolutionary and cultural factors, which makes identifying features that contribute to attractiveness an important topic of debate within the field of psychology. The current study assesses how perceived hair healthiness influences perceived attractiveness. Hair density and diameter has been shown to have a strong influence on perceived youth, health, and overall attractiveness due to hair health being indicative of hormonal changes related to age in women (Fink, et al., 2016; Matz & Hinsz, 2018). It was hypothesized that (H1) for images of women, the higher the health rating of hair, the more attractive a participant would be rated. Additionally, we predicted that (H2) the higher the estradiol levels of the photographed woman, the higher the perceived hair quality. Participants (N=37) used the computer program, SuperLab, to rate grayscale images of hair on hair healthiness (5-point scale) and another group of participants (N=55) rated on overall attractiveness (7-point scale). The results of the study did not support H1 (r=0.08, p=0.31) nor H2 (r=-0.15, p=0.84); no significant correlation was found between hair health and attractiveness nor estradiol levels and ratings of hair health. Understanding factors that influence perceived attractiveness helps further guide research to identify features relevant to analyze when using attractiveness as a research measure. Because the results of our study are not consistent with other studies of hair health and female hormones, and hair and attractiveness, we plan to further explore the conditions for these three conditions to be related.

Elizabeth Arnold

KY - Morehead State University

Discipline: Social Sciences

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Abstract Name: Sexuality and Mental Health Part Two

Previous research (Arnold et al., 2023) has indicated an association among mental health disorders, sexual orientation, romantic orientation, and gender identity. However, these studies have examined the relationships in the context of the overall LGBTQIA+ community without considering specific mental health disorder groups. Therefore, the objective of this research was to expand on these findings by investigating the relationships among different sexual orientations, identities, and specific mental health disorder categories. To explore these relationships, a comprehensive 100-question survey was designed. The survey included questions about demographics, mental health, sexual orientation, sexual identity, discrimination, and catch questions used for data validation. The survey was administered using Survey Monkey and distributed through Prolific.com. Participants were required to meet specific criteria, including being 18 years or older, US citizens, and proficient in English. Out of 1045 registered participants, data from 999 individuals who completed the survey and provided consent were analyzed. The preliminary data analysis resulted in significant correlations among sexual orientation, romantic orientation, gender identity, and various categories of mental health disorders, as expected. Among specific significant correlations (p. = < .01) identified were those between (A) schizophrenia diagnoses and transgender male identity, (B) non-binary identity and trauma/stressor-related disorders, and (C) questioning of sexuality and institutionalization for mental health disorders. This research revealed a better understanding of the relationships between mental health disorders and LGBTQIA+ affiliation. Instead of merely examining the global relationship between mental health and sexuality, associations between specific sexual orientations and certain mental disorders were identified. However, more research into the links between specific mental health issues and specific sexual orientation should be performed. Additionally, other lifestyle factors may undoubtedly have a significant influence on mental health. Identifying these factors and the links may provide a better understanding and treatment of mental disorders.

Roel Arriaga

TX - Laredo College

Discipline: Mathematics and Computer Science

Authors:
#1 Roel Arriaga
#2 Manuel Peralta
#3 Antonio Carranza

Abstract Name: The World's Leading Countries, And Their Perspective On Artificial Intelligence

Artificial intelligence (A.I.) has always been a topic of debate, however more recently so. Most of the world's leading countries have invested billions of dollars into the A.I. industry. It has become so popular that we unknowingly use it in our daily lives ranging from: answering machines, search engines, to speech recognition apps. A systematic research was conducted using JSTOR and Google Scholar. Eight research

articles were used to collect data on artificial intelligence and government policies. Politics plays a massive role in the development of A.I. and how it will be implemented by a country's respected government. The results from this paper showed that a vast majority of countries have implemented guidelines regarding the creation and use of artificial intelligence. Countries' have their own regulations on A.I.and these regulations differ based on the countries' economies and governments. The United States has invested billions of dollars into artificial intelligence, China has invested 150 billion, Russia 12.5 million, and determining the EU's total investment cannot be conclusive as Brexit had an impact on the total budget for A.I. The project's goal was to determine the perspective world's leading countries have on artificial intelligence, countries' regulation and implementation of artificial intelligence. Every government should integrate policies, ethical guidelines, and resources into artificial intelligence since it might affect the economy of the country.

Amanda Arrieta

CA - University of California - Riverside

Discipline: Natural and Physical Sciences

Authors:
#1 Amanda Arrieta
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Abstract Name: FLUORESCENCE STUDY OF MAGNESIUM OXIDE AND MAGNESIUM HYDROXIDE NANOPARTICLES WITH GRAM-NEGATIVE AND GRAM-POSITIVE BACTERIA

Previous studies found that magnesium oxide nanoparticles (nMgO) had antibacterial effects against two Gram-negative and three Gram-positive bacteria, and magnesium hydroxide nanoparticles (nMg(OH)2) were antibacterial against Staphylococcus epidermidis. Currently, the specific mechanisms are unknown, but several have been suggested in previous studies. Understanding these mechanisms may lead to their potential in a clinical setting, for example, with surgical implants to aid in postoperative infection mitigation. To identify these antibacterial activities, fluorescence dyes have been integrated into studies involving bacteria exposed to nMgO or nMg(OH)2 to identify suspected mechanisms. These may include Gram-negative bacteria membrane permeability, Gram- negative and Gram-positive plasma membrane depolarization, reactive oxygen species detection, and the effects of reactive oxygen species. Observing fluorescent dye reactivity will reveal if nanoparticle activities include one or more or these mechanisms in bacterial cells. Results of this study are expected by the end of April 2024. Overall, this study will give further insight into the nature of nMgO and nMg(OH)2 effects on bacteria and will aid in downstream research involving nMgO and nMg(OH)2.

John Arriola

CA - University of California - Irvine

Discipline: Interdisciplinary Studies

Authors:
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Abstract Name: RACE-ASSOCIATED DIFFERENCES OF INFLAMMATORY PROFILES IN TYPE 2 DIABETES

Type 2 Diabetes(T2D) is an inflammatory health disparity, which presentation and progression is known to be exacerbated in some races more than others, such as African Americans(AA). Reports have shown that the presence of inflammatory molecules like Th-17 cytokines (IL-17A, IL-17F, IL-21, and IL-22) are associated with type 2 diabetes. However, most of these results come from non-diverse cohorts, neglecting the characteristic inflammatory status of T2D in diverse populations. We hypothesize that there are differences in the inflammatory profiles in AA with T2D compared to white Americans. To test this hypothesis, we took blood samples from the AA and white American cohorts and analyzed their plasma samples using Luminex. Luminex is a laser-based instrument that we used to measure the expression of 53 cytokines between our racial cohorts. Our data analysis involved uni and multivariate analytical approaches. The univariate results showed that out of the 53 cytokines evaluated, 4 (eotaxin, IL-27, M-CSF, MCP-1) were significantly different in terms of them being expressed at a higher amount in the white cohort over the AA cohort. Out of these cytokines, MCP-1 and M-CSF are associated with acute inflammation while IL-27 is known to inhibit TH-17 differentiation. These findings suggest that the AA cohort may be less susceptible to develop an acute inflammation response and be impacted by an increase of TH-17 cyotkines, indicating a more severe inflammatory status. For the multivariate analysis, cluster generation was done using the gap statistics and k-means method. There were no significant differences in these clusters between races and sex groups. Overall, we conclude that there are racial differences in the inflammatory profiles in our diverse cohorts. In the future, control groups (non-T2D and pre-diabetics) and other confounding variables will be included to evaluate further differences in T2D inflammatory status.

Viviana Arroyo Rodriguez

FL - University of Central Florida

Discipline: Visual and Performing Arts

Authors:
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Nico Chen

Abstract Name: Canvases for Expression: Redefining Pediatric Prosthetics and Societal Stigmas Through Themed Expression and Airbrush Artwork

Vuillermin et al. estimate 5 in 10,000 children have a limb difference, with many rejecting prosthetic devices. Unsatisfactory cosmetic appearance contributes to this rejection. Prosthetic limbs often try to replicate human anatomy but can fall victim to Mori’s Uncanny Valley, where robotics with human likeness are correlated with distaste. This research proposes a design scheme to address prosthetic rejection due to cosmetic appearance, offering children a platform for personal expression.New artistic effects were explored for clinical trial applications to enhance patient expressivity. Within current trials, participants design interchangeable cosmesis on a 3D-visualization web-interface. The design scheme is then elevated with a focus on artistic elements of the cosmetic's form, color, and shape. User involvement is imperative to the satisfaction of the product and process. Automotive-grade airbrush techniques are used to apply artistic finishes to the cosmesis, which are then magnetized onto the novel prosthetic arm. This creative research

aims to uplift children with limb differences and enable them to express themselves. The research will adapt following participants' feedback, with preliminary data indicating that participants feel confident while wearing their cosmetics.Exploring new artistic effects, two cosmeses were created to showcase vibrant expressions reminiscent of princess gowns. The first sleeve follows a triadic color scheme using iterations of value and chroma of the primary colors. Following David Kessler's color system, harmony appears with pink, blue, and yellow being dominant, non-dominant, and accent colors, respectively. Vibrancy, saturation, and composition enhance the angular topology, creating an energetic and playful experience. Furthering this expression, a new black-light effect will create visual dynamics in black-lit environments. The second sleeve follows an analogous color scheme ranging from yellow-orange to blue-green, complementing a new light-sensitive color-shifting paint, providing visual interest in simplistic topography. Integrating these new artistic effects expands opportunities for personal expression within prosthetics.

Marc Aruguete

WI - University of Wisconsin-Platteville

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Microfabricated Silicon Filters for Shape-Based Separations

Separation by shape of similar-sized particles requires innovative filtration methods with potential benefits to fields such as biomedical diagnostics, environmental testing, and additive manufacturing. Through microfabrication processes including photolithography, reactive ion etching, and anisotropic wet etching of single crystal silicon wafers, we produce precision filtering microchips with 3-dimensional pore geometries customized to pass or trap particles based on their shapes. This pore structure can be exploited for the separation of micro- and nanoscale objects such as bacteria, viruses, prions, and microplastic contaminants. A stereolithographic resin printer is used for its feature precision capabilities in the manufacture of a microfluidic cell that houses the silicon filter and permits forward, reverse and cross-flow filtration. We describe microfluidic principles, fabrication processes, and proof-of-concept tests for shape-based separations.

Adyasha Aruk

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Adyasha Aruk
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#3 Jenny Hsieh

Abstract Name: Assessing the Pathogenic Role of APOE4 Genetic Risk Factor of Alzheimer's Disease in 3D Brain Organoids

Apolipoprotein E4 (APOE4) is a prominent genetic risk factor for Alzheimer's Disease (AD) and is associated with 3-12 times greater risk of developing AD. Human induced pluripotent stem cell (iPSC) technology allows us to derive patient-specific 3-D brain models that recapitulate features of human brain tissue structure, providing a tool to study early pathogenic mechanisms and disease-related phenotypes. The exact mechanism of how APOE4 affects specific neuronal cell types, and their relevance to AD risk, is unknown. Recent studies show that there is increased maturation in specific cell types which may contribute to AD risk. To investigate the role of APOE4 on various neural cell types, we generated two types of iPSC-derived cortical organoids, human cortical organoids (hCO) that are enriched in excitatory neurons and human subpallial organoids (hSO) that are enriched in inhibitory neurons. We compared cellular phenotypes of iPSC-derived hCO and hSO from healthy (APOE3) control organoids, the non-risk allele, to AD patients (APOE4) organoids. Across all time points, we observed a significant decrease in the size of APOE4 organoids in both hCO and hSO. In hCO, we observed a trending increase in proliferation and a significant decrease in cell death in the early time points. In hSO, there is a significant increase in the proliferation and growth of neurons and progenitors in the early time points, but there is also a significant increase in cell death in the later time points. These results are consistent with the notion that APOE4 leads to increased maturation of cells and APOE4 has a differential effect on neuronal cell subtypes, which may contribute to AD risk. Further examination at later points is needed to understand the full extent of the influence of the APOE4 allele on AD pathology on cortical organoids.

Valliammai Arunachalam

WI - University of Wisconsin-La Crosse

Discipline: Mathematics and Computer Science

Authors:
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#2 Song Chen

Abstract Name: "Automatic Brain Tumour Detection: An Enhanced SSD Algorithm With SIFNET Architecture and Shap and Lime CNN Explanations"

In medical diagnostics, the significance of automatic brain tumor detection cannot be overstated, especially when comparing it to error-prone manual methods. By discerning subtle patterns and abnormalities in MRI images, automated techniques empower healthcare professionals to identify brain tumors in their initial stages, facilitating prompt intervention and treatment. Despite the current research showing good accuracy, challenges persist in achieving precision for irregularly shaped tumor identification and ensuring interpretability. To bridge this research gap, we propose an automated brain tumor detection technique using the SSD (single shot multi-box detector) algorithm. We have adapted the model by applying transfer learning to the existing approaches utilizing an enhanced SIFNET (self-attention interaction fusion network) architecture with SSD framework on a larger dataset for more accurate object classification compared with existing research. Models tailored to small testing datasets are the focus of the present research. We propose to expand the reach of our model to a dataset of larger variety and size. We have integrated LIME CNN and SHAP CNN explanations for interpretability and increased transparency of the model, a pioneering move in automated brain tumor detection that has not been explored before. To determine whether the results of the research are reliable and helpful, we also intend to collaborate with oncologists.

Advika Arya

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Advika Arya

Abstract Name: Online Education: Increasing Accurate Prediction of Adaptability After Online Education

The recent pandemic/Covid-19 adversely impacted our education system where in-person mode of education was replaced by online education. Students' adaptability in online education emerged as an issue that still needs attention. We hypothesize that by incorporating AI/Machine Learning techniques, students' adaptability level predictions can improve online education. Additionally, we plan to oversample some of the minority cases, to make up for the data being unbalanced. In this work, data from Kaggle was borrowed to develop machine learning models. The data from Bangladesh included thirteen important features including age, gender, educational level, institution, class durations, internet and network type, devices, load-shedding, IT-related-studies, and financial conditions. A total of 1205 students from academic institutions were involved. The availability of IBM platform made it possible to use multiple algorithms to develop predictive models. In this work, Snap SVM classifier, Gradient Boosting Classifier, and Logistic regression with and without enhancements were employed. In our previous work presented at SSCUR 2023, the accuracy of various models was found at moderate levels below 80 percent. However, in the current work, the data was manipulated to make it balanced; the algorithms after this gave an accuracy 5 percent higher than the previous case. In each algorithm, significant features percentage contribution to model predictions were noted. The feature importance for SVM classifier without oversampling was found to be 100% for financial conditions, and 92% for class duration. The corresponding values for the SVM classifier with enhancements were similar, with financial condition being 100% and class duration being 63%. In both cases, similar results from the other two algorithms were obtained with slight deviation. ROC curves, F1 score, and confusions matrices were obtained for a comparative discussion. A full discussion on machine learning results including methods to further improve the accuracies will be included in the presentation.

Jillian Arzoumanian

FL - The University of Tampa

Discipline: Education

Authors:
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#3 Michelle Roux-Osovitz
#4 Jeffrey Grim

Abstract Name: It Takes Two to Tango: Positive Student and Instructor Affect Supports the Success and Persistence of a New Pedagogical Tool

A growing body of literature shows that student-centered pedagogical tools enhance student learning and experience, yet widespread curricular transformation has not necessarily followed. This is likely because successful curricular transformations require buy-in from both students and instructors. Consequently, much effort has been expended to explore the extrinsic and intrinsic barriers to instructor buy-in for such changes, including their perceptions and experiences. The long-term incorporation of these tools in classrooms is likely to be limited if either the instructors or students fail to recognize the student benefits or lack confidence in the efficacy of a given tool/approach. Two-stage collaborative group exams (CGEs) are a student-centered pedagogical tool involving students working together in groups to complete the same or similar assessment after first attempting the assessment individually. This study explores the effects of large-scale adoption of CGEs across all levels of a biology curriculum at a medium-sized private university. The alignment between student and instructor perceptions and experiences with CGEs was evaluated through surveys with quantitative and qualitative data recorded from 834 individual students and 10 participating instructors,

respectively. Additionally, students' performances on individual exams and CGEs were used to estimate and compare performance gains across the academic semester. Our data indicate that the perceptions and experiences with CGEs were generally aligned between students and instructors. CGEs improved exam performance, and students overwhelmingly reported decreased exam anxiety, positive group dynamics, and enhanced perceived learning. The majority of instructors adopting CGEs reported similar positive perceptions and experiences, while also expressing the intention to continue using CGEs (or similar assessment strategies) in the future. These results support the ideas that 1) the student benefits of CGEs are seemingly universal and 2) mutually-positive experiences for instructors and students are likely to increase the success of curricular transformation and persistence of new pedagogical tools.

Kirubel Asfaw

OH - Capital University

Discipline: Interdisciplinary Studies

Authors:
#1 Kirubel Asfaw

Abstract Name: Obstacles to Intra-Africa Trade

This research explores the critical obstacles to intra-Africa trade, with a particular emphasis on the challenges posed by inadequate hard infrastructure. Despite Africa's potential for increased regional trade, various factors, including limited road networks, insufficient electricity supply, and inadequate logistics facilities, have hampered the continent's intra-regional commerce. The study draws from various resources, including reports from the African Development Bank (AfDB), World Bank, Asian Development Bank, and the United Nations Economic Commission for Africa. Using a comparative approach, it examines successful infrastructure projects and initiatives in other regions to glean insights applicable to the African context. From the Øresund Bridge in Europe to the East-West Economic Corridor in Asia, these case studies provide valuable lessons for Africa. The research aims to underscore the vital role of well-planned and executed infrastructure development in enhancing trade and proposes strategic directions for improving Africa's intra-regional trade infrastructure.

Yadeal Asfaw

CA - University of California - Los Angeles

Discipline: Humanities

Authors:
#1 Yadeal Asfaw

Abstract Name: Straighten Your Hair- It's More Professional, Exploring the Relationship Between Black Hair and Professionalism

From racial discrimination to wage gaps, workplace discrimination is a significant and pressing issue. According to Omri Ben-Ari, racial discrimination in professional settings are often difficult to detect, as the employer's inability to hire/promote an individual on account of race is nearly impossible to assess (Ben-Ari, 2011). While identifying the racial discrimination may be difficult, socially, implicit biases and perceptions of people of color have become normalized (James, 2019). Traditional hair styles like braids, afros, or dreads have socially been deemed unprofessional while straight hair has become the standard for what a professional should look like (James, 2019). In addition, new research suggests that the lack of people of color in

professional settings have normalized what “professional” actually looks like, making the small number of black people appear unfamiliar and therefore unprofessional, too (Henson, 2020).Beyond this, other research has found that this issue scopes beyond aesthetics. In researcher Bridges' sociology study, statistically, African Americans were found to be least likely to graduate high school and college due to high dropout rates (Bridges, 2017). While there are many factors for this, Bridges highlights that the systemic barriers in place for black people has inhibited this minority group from even reaching the interview stage, contributing to the perception that black aesthetics lack sophistication and professionalism (Bridges, 2017). This present research seeks to explore the relationship between African American hair and perceived professionalism. Specifically, what factors aid in the perception that Black aesthetics are unprofessional, and how does the education system influence this, if at all?

Trevor Ashby

UT - Utah Tech University

Discipline: Natural and Physical Sciences

Authors:
#1 Trevor Ashby
#2 Elizabeth Maclennan
#3 Gabriela Chilom
Elizabeth Maclennan

Abstract Name: The Influence of Organic Amendments on the Heat Capacity of Soils

The heat capacity of soil is an important thermal property influencing heat storage and transfer, impacting greenhouse gas emissions, seed germination, plant transpiration, and contaminant dynamics. This study explores the modification of soil heat capacity following the incorporation of organic amendments, aimed at enriching soil organic matter and enhancing soil health and fertility. We specifically investigate the changes in soil heat capacity before and after the addition of various organic amendments, such as humic acids and biochar. The excess heat capacity was determined by the difference between measured values against theoretical predictions based on the mixture rule. This approach facilitated a comparative analysis of the magnitude of excess heat capacity across four distinct soil samples, each treated with different amendments.

Abdullah Ashiq

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Abdullah Ashiq
#2 Xinhe Zheng

Abstract Name: Enabling AAV-based in vivo Perturb-seq

Human genetic studies have tied neurodevelopmental disorders to ‘risk genes’, where inherited or de novo genetic variants significantly increase one’s likelihood of developing these disorders. Several Autism spectrum disorder (ASD)-risk genes have been identified, yet most of their molecular mechanisms remain unclear. In vivo Perturb-seq combines clustered regularly interspaced short palindromic repeats (CRISPR)-based gene editing and single-cell RNA sequencing (scRNA-seq) to enable elucidation of these mechanisms across diverse cell types. We can knock out many genes simultaneously in various cells within the prenatal

brain and individually sequence postnatal, developed cells' transcriptomes. We can therefore examine each gene's role across cell types, providing greater insight into their molecular logic. In vivo Perturb-seq requires lentiviral vectors to deliver gRNAs, which have limited in vivo transduction efficiency, thus impacting the scalability of Perturb-seq. Adeno-associated viral (AAV) vectors have higher efficiency with less immunogenicity. However, unlike lentiviral vectors, they are unable to integrate into the host genome, leading to low expression level of gRNA and dampened perturbation effects and capture in the scRNA-seq. My project addresses this fundamental challenge by boosting gRNA expression in AAV-based in vivo Perturb-seq via a separate transposase piggyBac (hypPB), which integrates the transgene into host cell genomes, stabilizing and enhancing expression. To demonstrate enhanced expression via hypPB, embryonic brain targeting AAV vector containing a transposon with fluorophore was co-injected alongside AAV-hypPB in E14.5 mice and analyzed via immunohistochemistry at P7. With hypPB co-transduction, I found the number of fluorophore-positive cells were 2.2-fold greater. To demonstrate enhanced gRNA expression, I transfected the vectors in vitro and analyzed the gene expression via RT-qPCR of extracted RNA. gRNA expression increased by 4.2-fold as hypPB-based genomic integration enhanced expression. Our research thus significantly enhances in vivo Perturb-seq's efficiency, providing a modular platform to understand the molecular intricacies of genes.

Nana Atanda

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Nana Atanda
#2 Onyinye Ihearahu
#3 Niangoran Koissi
#4 Anne Wiley
#5 George Ude

Abstract Name: Genetic Analysis of the Invasive Barn Owl Species Tyto alba Through DNA Barcoding

Barn owls, as avian predators, exhibit nocturnal behavior and inhabit diverse ecosystems worldwide, spanning Australia, Europe, Africa, and North America. These avian species are distinguished by their capability for silent flight, exceptional visual acuity, and superior auditory prowess, facilitating proficient prey localization even in low-light conditions. DNA barcoding, a scientific methodology utilizing DNA sequences for the identification and classification of species, serves as the primary tool in this study to ascertain potential genetic variations within the invasive barn owl population (Tyto alba) introduced to the Hawaiian Islands during the 20th century. Before sequencing, DNA extraction, polymerase chain reaction (PCR) utilizing cytochrome oxidase subunit I (COI) primer, and gel electrophoresis were carried out to confirm the successful amplification of 45 owl breast tissue samples. Sequence analysis, facilitated through the blue line of DNA Subway, was employed to discern polymorphisms within the species. Among the 45 samples sequenced, 29 yielded sequences of high quality. Analysis of these sequences implies the potential presence of specimens from two barn owl species, Tyto alba and Tyto furcata, within the Hawaiian samples. Polymorphisms were also identified within certain samples. This study provides valuable insights into the genetic diversity of the introduced barn owl population, contributing to our understanding of the evolutionary dynamics and ecological implications of invasive species establishment in different environments.

Jake Atencio

MN - University of Minnesota - Rochester

Discipline: Health and Human Services

Authors:
#1 Jake Atencio
#2 Dr. Aasma Ferdjallah M.D. MPH.

Abstract Name: Understanding the Social Determinants of Health in Accessing Sickle Cell Disease Care Services in Southern Minnesota.

Rural residents of the southern Minnesota region represent 63% of the total number of individuals with sickle cell disease in the state. Among these, nearly half report issues related to public transportation and problems related to nutritional access as cornerstone impairments of pursuing care. Geographically isolated treatment centers only further problems related to transportation access. The goal of this study is to provide a model of patient need/access versus geographical region. As a part of this regional summary, data collected through a literature review in tandem with comparison data provided by the Olmsted County REC and Minnesota Sickle Cell Coalition systems were used to isolate the greatest Social Determinants of Health (SDOH) impacting the rural sickle cell population; sighting transportation and nutrition access specifically. A proposal for further statistical evaluation of patient trend data was developed, utilizing EPIC as the primary software charting system for which discharge trend data would originate. The statistical validity of the proposal was evaluated and adjustments to specified data were made. A trend summary for patient data was compiled to provide a quantitative comparison to the previous qualitative study to verify the impact of transportation and nutritional access in patient care outcomes. The study results can be used to inform future policy development related to public transportation and food supply in supporting the health of rural southern Minnesota.

Taylor Atkins

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Taylor Atkins

Abstract Name: Ikko Tanaka: Fusing the East and West

Ikko Tanaka is celebrated in contemporary art critiques for his ability to blend. His impact on the global art world is undeniable, as traditional imagery meshed with mass consumer culture of the West was his main subject. This study of his work will be focused on his ability to bridge cultural barriers while creating a visual language that was understandable to a broad range of audiences. This exploration into Tanaka’s body of work will compare and contrast typical designs of the late 20th century for further context into his popularity. Furthermore, the combination of analyses on Tanaka’s artistic background, the images selected, and the aesthetic mainstream choices of both the East and West will conclude that he is one of Japan’s greatest graphic designers.Keywords: design, woodblock, posters, Pop Art

Taylor Atkins

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Taylor Atkins

Abstract Name: Women’s Artistic Memory: Andean Textile Practices

This study explores the aesthetic and technical development of Andean textiles over the course of Spanish colonization. Some scholars have and continue to argue that the excellence of indigenous tornesol techniques formed as a direct result of European contact. This study instead analyzes how the colonial setting acted as a global platform for indigenous cultural memory. Cloth was a significant cultural tool in Pan-Andean communities which was drastically altered at the behest of the Spanish Crown and the Catholic Church. Constructs of race, gender, and religion implemented in the “New World" changed the gendered nature of many forms of work, such as weaving. Under the hierarchical nature of colonial-run textile production, Spanish authorities created workshops and imposed regulations which exploited Indigenous women’s mastery of textiles and removed them from religious spaces. Women were ordered to make clothing for priests, colonial officials, local elites, and European exports. Thus, benefitting the Spanish colonizers as they profited from the highly sought-after textiles. This research is based on the formal examination of pre- and post-colonial textiles originating from the Andes region in South America, oral histories from indigenous peoples, and scholarly sources on the topic such as the writings of historian Denise Arnold. This study will conclude that textile practices were passed down among Indigenous women and their creativity and skill culminated in the cloth that shimmers in the sun, tornesol.

Stephan Atkinson

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Stephan Atkinson

Abstract Name: The rail link between the State of Utah and the Republic of Kyrgyz Republic

Railroads have played a significant role in the development of Utah, connecting the state to the rest of the country, and facilitating economic growth. The first transcontinental railroad was completed in Utah in 1869, which led to an increase in transportation, commerce, and settlement in the state. The railroad made it easier to transport goods and people and allowed Utah to become a hub for mining and agriculture. Similarly, the construction of a new railroad in the Kyrgyz Republic will have a significant impact on the country and the region. The proposed railway will connect Central Asia to China and Europe, providing a faster and more efficient means of transportation for goods and people. This will likely lead to increased economic activity, job creation, and improved living standards for the region. However, there are also potential drawbacks to consider, such as environmental concerns and the displacement of communities along the route. It is important for the government and stakeholders to carefully consider the costs and benefits of the railway and ensure that it is implemented in a sustainable and equitable manner. In conclusion, the impact of railroads on Utah and the potential impact of the proposed railway in Kyrgyz Republic demonstrate the importance of transportation infrastructure in shaping economic development and social progress.

Nicholas Atmore

CA - University of California - Riverside

Discipline: Social Sciences

Authors:
#1 Nicholas Atmore

Abstract Name: Remembering Owen: Exploring How TikTok's Algorithm Can Facilitate Cyber Abuse

For my presentation I will provide an ethnographic account of how TikTok's moderation algorithm helps facilitate cyber-abuse on its platform. I will focus on the story of Owen, a transgender man who's abusive former boyfriend used TikTok's moderation features to further control, isolate, and tyrannize him online. After leaving a physically and emotionally abusive relationship, Owen developed a following on TikTok in order to make meaningful social connections and eventually met a new romantic partner named Lee, another TikTok user who developed a relationship with him through the social media platform. Unfortunately, Owen's abuser discovered Owen's TikTok account and recruited several of his friends to simultaneously report Owen's videos as content that violate TikTok's community guidelines. Per TikTok's moderation algorithm, once an account is reported enough times it is permanently erased from from the platform and the owner of the account banned from TikTok permanently.Such eviction from social media is known as deplatforming. Through deplatforming Owen's abuser weaponized TikTok's moderation algorithm and deprived Owen of the relationships he made online, isolated him, and emtionally hurt Owen via this virtual platform, a dynamic referred to by Elisa Giaccardi and Liedeke Plate as cyber-abuse. This unfortunate dynamic eventually proved too much for Owen and he committed suicide in May of 2022. This tragedy must call into question both the TikTok algorithm and the nature of deplatforming. TikTok's algorithm must be amended in order to prevent such weaponization by malicious actors. Additionally, deplatforming must become a more commonly recognized form of cyber-abuse.

Mackenzie Austin

TN - University of Memphis

Discipline: Social Sciences

Authors:
#1 Mackenzie Austin

Abstract Name: Perceptions of Therapist Notetaking

This study attempts to further the research on whether a therapist taking notes during a therapy session affects the perception of the therapist. Notetaking is often a part of therapy, yet there are few studies on how it affects therapy. The studies that do exist each reach different conclusions on the effect of notetaking on perceptions. The current study attempts to determine if perceptions of the therapist's credibility/expectancy and empathy are affected by notetaking. Credibility and expectancy were found to correlate highly so they were combined into a single variable named skill. Videos of graduate student therapists are paired with audio from APA therapy sessions to provide an authentic therapeutic experience. It was planned for the data to be analyzed with a two-factor repeated measures ANOVA but due to an order effect being present, a between-subject design is currently being used. The results will be used to make inferences on how notetaking affects client perceptions. The results will provide information on whether the therapist's notetaking affects how observers perceive the therapist. Preliminary analysis of the available data indicates that notetaking is perceived positively in both the skill variable and the empathy variable. This result is different from the few studies that do exist on the research topic.

James Auwn

NC - Appalachian State University

Discipline: Natural and Physical Sciences

Authors:
#1 James Auwn
#2 Andrew Bellemer

Abstract Name: Endogenous metalloprotein activators of pain sensing neurons in Drosophila melanogaster

The Bellemer lab seeks to investigate the cellular and molecular factors that influence nociceptor sensitivity. For my research project, I will investigate an endogenous metalloprotein (EM) as a direct protein activator of nociceptors—specialized sensory neurons that show preferential transduction of noxious stimuli. While many proteins act as inflammatory mediators that sensitize nociceptor ion channels via intracellular signal cascades that result in post-translational changes to the ion channels, this remains disparate from any endogenous protein directly activating nociceptors. We will use RNAi knockdown via Drosophila husbandry in order to drive the depletion of our target EM in resulting progeny, allowing our experiments to compare EM lacking and EM having larvae. Baseline thermal and mechanical nociception behavioral assays will be shown to demonstrate whether EM depletion affects baseline nociception in EM knockdown, wildtype, and genetic control larvae. Further, nociception in larvae sensitized from UV/tissue injury will be tested behaviorally to clarify if there are certain physiological conditions in which metallothionein acts on nociceptors. Lastly, putative patch clamp electrophysiology recordings may be shown to elucidate which ion channels our target EM may be acting on.

Marine Avequin

MI - Michigan State University

Discipline: Interdisciplinary Studies

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#1 Marine Avequin
#2 Carina Abbasov
Carina Abbasov

Abstract Name: Art as a Tool for Processing Trauma: Global Similarities in Commemorating the COVID-19 Pandemic

Our Mellon-founded project, Creativity in the Time of COVID-19: Art as a Tool for Combating Inequity and Injustice, explores how populations are using creative outlets to foster healing and beginning to push back against the systemic inequities exacerbated by the COVID-19 pandemic. In gathering stories of how individuals turned to creativity to get through the pandemic, this project has culminated in a digital and physical exhibition that explores how the shared space of collective artworks (and memories) may pave a path towards envisioning a more just future. Creativity, broadly defined, has allowed people across cultures and identities to memorialize their experience of the pandemic and honor the loved ones they have lost. We have collected hundreds of survey responses in which most respondents indicated grief, anxiety, and stress, but also expressed hope for the future and pride in their identities. Many of these responses come from people worldwide; however, it was noticed that people often processed the pandemic in a similar way, despite their wide-ranging geographical locations. Through our survey submissions, we aim to better understand the

thematic similarities across the various art mediums people utilized during the pandemic. While analyzing patterns in pandemic-era artwork from across different countries and cultures, we found that common themes emerged such as self-portraits, data processing, and commemoration of loved ones. Self-portraits often reflected common feelings of isolation and confusion despite the wide range of people creating them. The loss of loved ones became more common in the wake of the pandemic and is thus shown across many art pieces. Despite the differences in individual circumstances, using art as a method of processing trauma is a collective experience that is not isolated to a specific culture.

Jose Avila

CA - California State University - Long Beach

Discipline: Engineering and Architecture

Authors:
#1 Jose Avila
#2 Amr M. Morsy

Abstract Name: The Use of Transparent Geomaterials in Geotechnical Engineering Modeling

Geosynthetics are human-made polymeric products with diverse applications in geotechnical engineering, including reinforced soil retaining structures, foundations, and encased stone columns. To understand the mechanical behavior of geosynthetics as they interact with the surrounding soil, geosynthetics could be tested in the lab in surrogate transparent soils that allow direct visualization of geosynthetics as they deform under loads. Such tests have significantly improved the understanding of how geosynthetics behave underground. Additionally, opaque soil particles can be seeded in the transparent soil medium to allow direct visualization of soil particles as they displace in the vicinity of geosynthetics. However, in some geotechnical engineering applications, geosynthetics may obscure soil particles that need to be monitored. This research experimentally evaluates the practicality of using products that can model transparent geosynthetics in geotechnical engineering lab experiments. A comprehensive review of the pertinent literature was completed which assisted in devising the experimental program. A number of transparent soils have been created in the lab, including transparent sands made of fused quartz submerged in a mixture of mineral oils of a matching refractive index to that of fused quartz. A few product candidates were used to simulate transparent geosynthetics. The experimental program involves the evaluation of soil and geosynthetic transparency and transparency depth for various mixtures of oil types and ratios.

Paige Avila

NY - Colgate University

Discipline: Social Sciences

Authors:
#1 Paige Avila
#2 Elizabeth Velazquez
#3 Madeline Chernavsky
#4 Bailey Cooper
#5 Jordan Shapiro

Abstract Name: The Effects of Physically and Affectively Exaggerating Hand Gestures on L2 Mandarin Tone Production

Hand gestures are ubiquitous in second language (L2) learning (Gullberg, 2006), but they play only a limited role in helping novice learners produce Mandarin speech (Zheng et al., 2018). However, learners with greater experience in Mandarin may derive more benefit from gestures (Danesh & Shahnazari, 2020). Given the tight coupling between gesture and L2 speech (Li et al., 2020), the accurate production of gestures is crucial. Moreover, previous research suggests that teachers' enthusiasm enhances L2 learning (Keller et al., 2016). Building on this work, this study explores how physically and affectively exaggerated gestures facilitate Mandarin tone production in intermediate learners. Participants will watch three video conditions: speech alone (S), speech+gesture (SG), speech+gesture+emotion (SGE). In the gesture conditions, a native speaker will use exaggerated hand gestures to map the contour of the tones, while the SGE condition will add enthusiastic facial expressions. Participants will imitate what they hear and see in each condition. They will be video recorded to measure the accuracy/enthusiasm of their gestures. To determine tonal accuracy, acoustic analysis of fundamental frequencies will be conducted.Based on studies showing that intermediate learners have greater motivation in L2 learning contexts (Danesh & Mohammadtaghi, 2020), the SG and SGE conditions should increase tone production accuracy compared to the S condition. Based on work showing that enthusiasm keeps students motivated and engaged in learning (Keller et al., 2016), the SGE condition should increase accuracy compared to SG. If the SG and SGE conditions enhance tone production accuracy, we can conclude that gestures and emotions improve phonetic pronunciation of words for intermediate learners. Thus, co-speech hand gestures help students more than research previously perceived. This is not only important for expanding scientific knowledge of multimodal learning but has practical benefits in helping L2 students according to their current proficiency level.

Ayesh Awad

NC - Elon University

Discipline: Mathematics and Computer Science

Authors:
#1 Rony Dahdal
#2 Carissa Potter
#3 Ayesh Awad
#4 Mary Hermes
Rony Dahdal
Carissa Potter

Abstract Name: Agent Based Modeling of Immune System Response to SARS-CoV-2

To investigate the human immune response to SARS-CoV-2, we develop an agent-based modeling (ABM), a novel computational approach that describes the actions and interactions of autonomous agents to understand the behavior of a system and what governs its outcomes. In contrast to a compartmental model based on differential equations (DE), the ABM simulates variables as moving, interacting agents constricted by a pre-defined spatial environment and, thus, captures their spatial movements in the context of COVID-19. In this project, we first apply ABM to understand the dynamics of a simple COVID-19 model. Then, we extend it to consider a complex model that includes more critical components such as innate immune cells and cytokines present in COVID-19 patients. Our ABM results would not only validate but supplement the predictions of our previously developed DE model, which will enhance our understanding of the COVID-19 dynamics and inform potential therapeutic treatments. More broadly, our model could be used to identify several therapeutic targets that would provide hypotheses to be tested clinically, thus, serving as a foundation for the development of evidence-based therapeutic strategies.

Elqanah Awkward

NC - Wake Forest University

Discipline: Natural and Physical Sciences

Authors:
#1 Jill Harp
#2 Ryan Fitzgerald
#3 Jalaa Qays-Grier

Abstract Name: Synthesis of Diphenylpyraline Derivatives

For centuries the brain has been studied to uncover its complexity. Researchers from psychology, biology, chemistry, etc. have been interested in connecting the brain and behavior and understanding neurochemical pathways. More recently, the effect of illicit drugs on the brain has been researched extensively. The dopamine transporter (DAT) is one of the main sites in the brain where addictive drugs such as cocaine and methamphetamine bind. Previous research has shown that cocaine and diphenylpyraline (DPP), an antihistamine, have similar effects in terms of increasing dopamine (DA) in the synapse. The mechanism of action involves these compounds blocking the DAT and hence, the reuptake of DA from the synapse into the presynaptic terminal. Importantly, DPP does not block the DAT as well as cocaine. Additionally, some analogs of DPP, (WSS-X), present low affinity in comparison to cocaine while others were superior. Our work involves improving the synthesis of these analogs for further biological testing. Through S N 2 coupling reactions, dehydration synthesis, and metal-catalyzed reactions, we aim to not only improve on the synthesis but also determine which molecules would serve best as molecular probes to help with unraveling the complexity of the dopaminergic neuronal system. This research will help to create radiotracers for PET imaging in order to further our knowledge of the brain's DA neurotransmitter systems and maybe open the door to improvements in therapeutic treatments, especially in the area of addiction research. Hence, toxicity studies are also critical when designing compounds. Herein we report our current findings.

Lilli Aylward

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
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#2 Chloe Yeap
Chloe Yeap

Abstract Name: Photocatalytic Ability of Titanium Coated Gold Nanoparticles

Metal-semiconductor photocatalysts have shown an increased ability to transfer electrons in recent studies. The premise of our research is that the injection of hot electrons into the TiO2 conduction band will result in the system becoming more catalytically active. Based on this, we hypothesized that the presence of ALD or sol-gel deposited TiO2 on plasmonic AuNPs will enhance charge separation/transfer, therefore increasing the photocatalytic activity of AuNPs in the visible region. To test our hypothesis, TiO2 was deposited onto 3nm, 10nm, and nanorod nanoparticles and their photocatalytic activity was observed using UV-Vis spectrophotometry. This poster discusses how the presence of deposited TiO2 affects the charge separation/ transfer of gold nanoparticles, therefore increasing their photocatalytic activity. Additionally, we discuss difficulties identifying nanoparticles of increased photocatalytic activity due to aggregation of some of the gold nanoparticles. The results revealed several issues related to working with TiO2 coated nanoparticles. Our main challenge was the fast charge recombination. Another complication we've encountered is the aggregation of our samples, where difficulties finding viable concentrations for both TTEAIP and AuNP, for example, have led to the aggregation of the AuNP during the coating process. Based on our results, more testing is needed in order to more accurately determine the photocatalytic ability of TiO2 coated

nanoparticles. Further steps will include filtering out the large aggregates in order to separate the coated nanoparticles from the non-coated particles. However, as of our current research, we have concluded that aggregated liquid phase-coated TiO2 is not applicable for photocatalysis.

Oluwatobiloba Ayodeji

TX - Trinity University

Discipline: Humanities

Authors:
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#2 Kimberly Monroe

Abstract Name: Historical Injustices and Contemporary Challenges: Examining The Medical Exploitation of Black Women.

In the early 1900s, Dr. J. Marion Sims, known as the ‘father of modern gynecology,’ performed medical experiments on enslaved Black women without their consent or anesthesia. He used enslaved Black women as test subjects for his surgical techniques, which he later used to treat wealthy white women (Equal Justice Initiative, 2019). Historically, Black women have been subjected to medical exploitation and mistreatment by healthcare institutions. They have been used as test subjects without consent for the sole purpose of advancing medical knowledge. Despite medical procedures being an integral part of the healthcare system, there is a significant disparity in the quality of healthcare provided to people of color, especially Black women. From the unrestrained medical experiments done on enslaved people to the infamous Tuskegee Syphilis Study, forced sterilization, and the unauthorized use of Henrietta Lacks' cells, there is an undeniable need to confront past transgressions to pave the way for ethical medical practices for the future. Today, Black women still suffer at the hands of medical professionals as they are often ignored when they are in pain, especially during pregnancy and childbirth. Research shows that Black women are two to three times more likely to die from pregnancy-related complications compared to White women (Petersen et al., 2019). This paper will examine the history of medical exploitation of Black women in the United States. The research will include examples of unethical experimentation, forced sterilization, mistreatment during childbirth, racism present in healthcare today, and the medicine that has derived from slavery in the US. It will also engage in questions related to Black women's gendered racism in comparison to White women (Chinn et al., 2021), contemporary unethical medical practices towards Black women, and the lack of accountability for doctors.

Morgan Ayscue

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Morgan Ayscue
#2 Cecilia Nottingham
#3 Angela Allen
Cecilia Nottingham

Abstract Name: A Continual Analysis of the Impact of the Trash Trout Catchment System on the Waterways within the Walnut Creek Watershed

Trash entering our waterways either intentionally or unintentionally has a negative impact on the quality of aquatic life, plants, and humans in the surrounding area. In this study, we are monitoring the impacts of trash on Little Rock Creek located within the Walnut Creek Wetland Center in downtown Raleigh. This area has a history rich in environmental injustice, resulting in a lack of stewardship of the land. Over the years many environmentally questionable practices were used in the area of the watershed, such as the introduction of dense rubber tires into streambanks; something momentarily useful as an erosion control measure, but having long-term impacts on the presence of water quality through the leaching of toxic chemicals into nearby creeks. Additionally, many plastic products enter the waterway from downtown stormwater drainage pipes, increasing the presence of synthetic material in the water. As a method of combating this ongoing trash issue, Sound Rivers, a non-profit organization, embedded a “Trash Trout” Catchment system at the center. Weekly measurements of basic water quality parameters such as pH, conductivity, dissolved oxygen, nutrients, and turbidity will give us a better understanding of the form of pollution that causes changes in the data observed. In addition, monthly biological testing of total coliform and E. coli is performed to monitor changes throughout the project. In addition to other testing sites (upstream and downstream) from this location of measurements, we can analyze how significant the collection of trash is by observing the changes pre- and post-trash removal. By analyzing these preliminary findings, conclusions can be drawn regarding the effectiveness of this system on the overall condition of the waterway. These findings will be helpful in concluding beneficial engineering and placement adjustments to be applied to the system.

Dua Azhar

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
#1 Dua Azhar
#2 Alexander MacKenzie
#3 Sophie Caron

Abstract Name: Investigating the Neural Networks of Learning in Drosophila melanogaster

The mushroom body of Drosophila melanogaster is a structure in the brain that is necessary for learning, but much of how it functions remains unknown. In this model organism, D. melanogaster’s mushroom body neurons, known as Kenyon cells, and input projection neurons have connections that are random and biased —in which some projection neurons connect with Kenyon cells more than others—allowing the fly to potentially prioritize the learning of particular odors. Theoretical and experimental approaches were taken to investigate the functional consequences and characterizations of these biases in order to understand the biological role they play for the fly. With a computational model of the D. melanogaster olfactory system, how biased connectivity to the mushroom body influences its ability to form associations with various odors and distinguish between similar odors was explored. Experimentally, the morphological features of olfactory circuits were characterized with low to high connectivity rates to the mushroom body, allowing us to see the unique features in these circuits that are beyond the different connectivity rates. Through a combination of immunohistochemistry and confocal microscopy, high-quality images were generated of these different neuronal olfactory circuits and their morphological qualities, such as the number and volume of boutons they project to the mushroom body. Altogether, these findings demonstrate how neural connectivities behind learning shape the representation space in D. melanogaster and impact its learning outcomes.

Sreekar Baddepudi

CA - San Jose State University

Discipline: Health and Human Services

Authors:
#1 Sreekar Baddepudi
#2 Sumanth Mahalingam

Abstract Name: Assessing the Efficacy of Polyrhythmic Music in Attention-Based Therapies through Electroencephalography(EEG) Monitoring

Understanding the brain's response to polyrhythmic music has been a potential avenue of research to treat neurological conditions, such as attention deficit disorders. The brain's rhythm processing involves neural entrainment, wherein oscillatory neural frequencies align with the structure of the beat in an anticipatory fashion, as if to predict the beat and allocate neural resources accordingly. This study aimed to explore the primary question of whether polyrhythmic music (involving two simultaneous, overlaid rhythms) may play such a role in neurological attention therapies. An electroencephalography (EEG) device measured neural responses in the frontal regions of the brain using Power Spectral Density(PSD). Participants, first, listened to a polyrhythmic melody and were instructed to copy a passage, to understand the extent of the music's effects on motor coordination, attention to detail, and concentration. Afterwards, participants were instructed to copy down a passage while listening to a non-polyrhythmic melody and finally with no music played. Results showed comparative increases in frontal beta waves and decreases in frontal theta waves between the three iterations with regards to PSD and word count, indicating an increase in focus when the polyrhythmic music was played. There was also a dramatic decrease in the Theta wave to Beta wave ratio(-0.14) in polyrhythmic playback as compared to non-polyrhythmic playback(-0.03) and silence(0.1). We expanded the original findings from 8 participants to 20 participants and this has shown interesting results in comparison to prior iterations of the study. This study demonstrates that polyrhythmic music may be a viable avenue in exploring the treatments of those with neurological conditions.

Ryan Badre-Hume

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Ryan Badre-Hume

Abstract Name: Exploring the tension between Division 1 College Tennis and the Professional option in Tennis

What's the difference between pursuing a career in professional sports or choosing the college option? In the era of expanded student NIL rights, the distinction between the two paths is less clear than it once was. This project explores the question by focusing on the sport of tennis. Unlike professional team sports, tennis is an inherently individual one, and the choice between going pro or attending college is often unclear and involves substantial risk. It can take years to accumulate enough qualifying points for a player to enter a tournament on the ATP tour, requiring a substantial financial investment with no guarantee of any return. Using statistical data from the National Collegiate Athletics Association as well as interviews with aspiring, current, and former players, the project seeks to tell the stories of current tennis players going through the decision making process while also examining the issue in historical context through discussions with former players, coaches, and tennis journalists. No common story exists--in some instances, such as former longtime pro John Isner, a player has spent all four years in college; in others, as with new pro Alex Michelsen, the player forgoes college altogether. The project also explores themes of class (does the expense of pro tennis prevent players without wealthy parents from having a chance?) and race (given the underrepresentation of Black players at the highest ranks of tennis, should colleges focus more on expanding the pipeline?). The focus on tennis provides a specific way of exploring broader questions about the intersection of sport and society. And I also discuss my opinion on what is the best option, in general, for individuals to take.

Helia Baez Armas

FL - Florida International University

Discipline: Social Sciences

Authors:
#1 Helia Baez Armas
#2 Maureen Kenny

Abstract Name: Cross-Cultural Perceptions of Child Abuse and Parenting Practices

Culture impacts many aspects of life including parental disciplinary practices and views of children. Acceptable forms of discipline and treatment of children vary across cultures. However, the US has a robust system of laws governing the treatment of children and identifying certain behaviors as child abuse. Given the cultural diversity in the US, it is important to examine potential cultural differences in child-rearing practices and child discipline. What may seem like an appropriate form of discipline in one culture, might be seen as abusive or neglectful in others. Despite the US demographics including a large proportion of immigrant families, there is little cross-cultural research on differences in parenting practices. This study aims to fill the gap in cross-cultural parenting research. One thousand students from a large Hispanic-serving institution in the southeast were recruited for participation (83% females). They were asked to rate vignettes describing parental practices on a scale from 1 (not abusive or neglectful) to 3 (very abusive or neglectful). Data collection is complete, and analysis is beginning. It is expected that there will be differences between cultural groups, specifically, Caucasians will be more likely to rate parenting behaviors are abusive. It's also expected that Hispanics have very high severity ratings for physical abuse, but lower for emotional abuse. Asians are expected to have lower severity ratings for abuse than the previously mentioned cultural groups. Lastly, African Americans are expected to have the lowest severity ratings for abuse from any of the groups. It is also expected that there will be a consensus amongst cultures when it comes to acts of sexual abuse, with all cultural groups reporting sexual behavior toward children as abusive. Finally, while the sample for parents is small (n=117), it is also expected to rate differently than those who don't have children in their lives.

Breanna Bailey

CO - University of Northern Colorado

Discipline: Social Sciences

Authors:
#1 Breanna Bailey

Abstract Name: Take a Ballot: Can Transnational Theatre Foster Political Efficacy in Women of Color?

This research examines whether transnational theatre fosters political efficacy in women of color. Research shows the history of disenfranchisement of women of color; even today, upper-class, white males have the greatest access to opportunities to ignite their political efficacy– like theatre– in the United States. The gap in research fails to examine how, and if, transnational theatre affects women of color's political efficacy. This research begins to close the knowledge gap by analyzing theatre's role in fostering political efficacy, in order to explore avenues for building a more equitable and democratic society. This research utilizes a case study analysis of two female playwrights from opposite sides of the U.S. border– Sor Juana Inés de la Cruz (1648-1695) and Estela Portillo Trambley (1926-1998). As a playwright in former New Spain (i.e., current-day Mexico), Sor Juana represents the originator of transnational theatre, having authored plays outside of the

United States. Estela subsequently authored a biographical play about Sor Juana's life. I anticipate finding Sor Juana's work inspired Estela to engage in political activities considered not typical of women of color in the United States. I explore Estela's political consciousness through documented knowledge of her political radio show "Stella Says," interviews with Estela, and thematic analysis of her plays. By utilizing primary source documents of Estela's at the University of Texas at Austin's, Benson Latin American Library, I am analyzing themes-particularly those regarding female empowerment and political expression-explored by Estela in her theatre practice. I will connect Estela's multiple political actions to a level of heightened internal political efficacy. This research opens a dialogue regarding the lingering effects of colonialism, how women of color continue to be affected, and how academics, political scientists, and theatre practitioners may acknowledge historic wrongdoings by looking to the future of political engagement through theatre.

Kaitlyn Baker

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Kaitlyn Baker

Abstract Name: The Relationship of Undergraduate Stimulant Abuse to Adulthood Substance Use

A disturbingly high number of students sell or give away their ADHD-related prescriptions. These coveted stimulants are the second most highly used drugs among undergraduates. While medicinal for legitimate patients, stimulants are controlled substances with a dangerous addictive potential. Yet, there is a hole in the literature examining the long-term consequences of their routine abuse on university campuses. This study investigates how stimulant abuse as an undergraduate may foster adulthood substance abuse. Data was sourced from peer-reviewed journals in the field of psychology. Stimulant-using and nonusing stimulants were compared. Data from students with genuine ADHD diagnoses was incorporated for context. Demographics, social organizations, motivation, drug/alcohol use, behavior profiles, and baseline neurological dysfunction we all considered. The research revealed that stimulant abuse is highest at competitive colleges. The most likely culprits were white, Greek life-affiliated students. With no indication of lower intelligence, the overwhelming motivation was desire to offset self-inflicted educational hurdles caused by frequent binge-drinking, marijuana use, and cocaine use. Intentional polysubstance use was common. Alarmingly, when stimulant abuse persisted past college, a tendency developed to escalate other drug choices to ones more highly lethal and addictive than before. Compared to their nonusing peers, stimulant-using students scored higher on impulsivity exams and lower on behavioral control and self-regulation tests. Together, these findings suggest a generally elevated predisposition for addiction among stimulant users. In the context of America's prescription drug epidemic and with colligate substance use record high, this topic is of the utmost concern. Additionally, nonprescription stimulant use raises serious questions about academic and subsequent professional integrity; usage rates have swollen into double-digits at medical and dental schools. Given that stimulants are typically used as an academic coping mechanism, additional research should target how this common practice during youth may foster dangerous drug or alcohol-related coping methods during adulthood.

Levi Bala

MT - Montana State University - Bozeman

Discipline: Engineering and Architecture

Authors:

#1 Levi Bala
#2 Matthew Willett
#3 Kayla Bedey
#4 Adrienne Phillips
#5 Catherine Kirkland
#6 Alfred Cunningham

Abstract Name: Incorporating Gels in Microbially Produced Calcite Precipitation to Decrease Time in Shale Core Sealing

Microbially induced calcite precipitation (MICP) is a process through which Sporosarcina Pasteurii hydrolyze urea during growth, then, in the presence of calcium, produce calcite. This mineral production has been used to seal fractures in shale rock columns with a goal to apply it in unconventional oil and gas wells to reduce methane emission. In the summer of 2023, I conducted research at the Center for Biofilm Engineering at Montana State University to seal cores using MICP. One downside of this sealing method is it requires many injections to effectively seal a fracture. The goal of this project is to improve the sealing time of MICP of rock fractures by incorporating gels in the growth medias of S. Pasteurii. The incorporation of gels will increase the viscosity of the medias, ideally containing the mineral reaction within the fracture to reduce the need for multiple injections. Two gels, guar gum and sodium alginate, were tested for bacterial growth inhibition in a preliminary growth study, then an ideal additive and concentration of such additive was determined. This additive will then be implemented in a flow-through injection core sealing experiment, following protocol from a previous core sealing experiment. The results of this flow through experiment will then be compared to results from my previous research to determine effectiveness of gel addition.

Shrijith Balasundararajan

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Shrijith Balasundararajan
#2 Margaret Bell
#3 Xiaosen Ouyang
#4 John Chatham
#5 Victor Darley-Usmar
#6 Jianhua Zhang

Abstract Name: O-GlcNAc regulation and expression of subunits of cytochrome c oxidase

The post-translational modification of proteins by O-linked N-acetylglucosamine (O-GlcNAc) is a dynamic and reversible process that plays a crucial role in the regulation of various cellular functions such as transcriptional regulation, cellular signaling, and metabolism. The addition of O-GlcNAc is catalyzed by the enzyme O-GlcNAc transferase (OGT), while its removal is facilitated by O-GlcNAcase (OGA). Cytochrome c oxidase (COX), is a key enzyme in the mitochondrial electron transport chain, and vital for cellular energy production. Our recent studies have shown potential regulatory role for O-GlcNAc regulation of COX level which may impact mitochondrial function and pathogenesis of neurodegenerative disorders such as Alzheimer's disease (AD). This study is aimed to investigate the acute and chronic impact of pharmacologically increasing O-GlcNAcylation using the OGA inhibitor Thiamet G (TG) on the transcriptomes of mouse brains starting at 1 month of age. We hypothesize that elevated O-GlcNAcylation in response to TG decreases the expression of subunits of cytochrome c oxidase. Subunits that are being considered to look at include COX1, COX2 and COX3 which make up the catalytic core of the enzyme. Along with many other subunits, other things that will be looked at is assembly factors such as Cox14, Cox19, and any other enzymes that may have a significant role in COX. We are investigating this using real-

time RT-PCR and Western blot analyses. We anticipate that this study will help establish the how O-GlcNAc impact COX level and activities.

Chloe Baldauf

DC - American University

Discipline: Social Sciences

Authors:
#1 Chloe Baldauf

Abstract Name: Revolution of the Heart: An Interpretivist Analysis of the Reverse Shift in American Teen Pregnancy Policies

Teen pregnancy policies in the United States underwent a fundamental shift from 1978 to 1996. During the Clinton administration, a series of teen pregnancy policies were passed that focused on morality-addressing initiatives, such as abstinence education programs and punitive laws for unemployed or out-of-school minor parents on welfare. This was a stark contrast to the first federal teen pregnancy policy of 1978, which called for increasing social services and welfare for minor parents. Theories that conceptualize the U.S. as a secular state expect to see a gradual shift from morality-centric policies to resource-centric policies as states become more secular due to human rights universalism replacing religious values within the public policy sphere. This paper addresses the question: why did U.S. teen pregnancy policies undergo a “reverse shift” from the Carter administration’s resource-centric policies to the Clinton administration’s morality-centric policies? Using poststructuralist discourse analysis, this study maps a series of representations about minor parents and the causes of teen pregnancy across five fundamental teen pregnancy policies and finds that a gradual change in language surrounding teen pregnancy began taking place in policy documents during the end of the Carter administration and set the tone for the Clinton administration’s more morality-centric policies. The paper also challenges the conceptualization of the U.S. as a secular state by drawing upon secularization theory and locating a transformation in official discourse surrounding women, families, and morality toward the end of Carter’s presidency. Its results may be used to better understand the current partisan divide over the purpose of reproductive health education in U.S. schools.

Noah Balderrama

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
#1 Noah Balderrama

Abstract Name: Political Ideologies and Mobilities of the LGBTQ Community in the United States

Utilizing surveys, this research explores the connection between an area's political ideology and LGBTQ individuals' perceptions of safe neighborhoods while thinking of places to live. During the 1970s, LGBTQ individuals gathered in urban neighborhoods to protect themselves from society's discriminatory behavior. However, recently, they have been seeking to move beyond these historic residential patterns, though the reasons for doing so remain uncertain. Some explanations considered economic and cultural factors, but this research focuses on the impact of political ideologies on their residential decisions and imaginaries. We know that LGBTQ people are now moving to more heteronormative spaces and not restricted to queer-specific spaces. However, we do not know to what extent political ideologies influence their decisions when

perceiving safe places to live and navigating unfamiliar environments. I hypothesize that cities with more prominent liberal ideologies are more attractive to LGBTQ individuals because liberals now tend to create more favorable and supportive policies for the LGBTQ community. The findings of this research are important to the LGBTQ community as they can make informed decisions about friendly and safe neighborhoods to relocate to, especially with the decline of gay-specific neighborhoods.

Brittany Baldwin

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Brittany Baldwin

Abstract Name: The need for regulations in Wilderness Therapy

Wilderness Therapy is a practice to help adolescents disconnect from the world around them to help with mental disorders, severe behavioral issues, and substance abuse. Wilderness therapy started in the 1940s during the war when German educator, Kurt Hahn, noticed that the newer young sailors had been struggling not having enough strength to bear the open sea. He developed Wilderness Therapy as a way for young boys to develop strength and character to build their self-esteem. It has developed little from having this rugged 'survival of the fittest' experience for these young adults and they are not getting the benefits they need from it. There have been numerous reports of neglect, abuse, and death. The first reported death was in 1970 at an institution which was the start of Wilderness Therapy; the most recent report of death was in July of 2023. There needs to be more accountability for these institutions and regulations. There needs to be regulations on the local and the federal level. I hope bringing a call for regulations to the federal level will get more cohesiveness to it avoiding anything being swept under the rug. The primary purpose of my research is to bring forward previous research that has been done and bring in my own opinions about what else we can do to make the changes that are needed. This research will bring the history of Wilderness therapy, the negative impacts it has caused, what the benefits are, and the potential they can get if we have the regulations to make it more beneficial to those who attend.

Ellie Balensiefen

WI - Marquette University

Discipline: Natural and Physical Sciences

Authors:
#1 Ellie Balensiefen
#2 Laxmi Devkota
#3 Adam Fiedler

Abstract Name: Dioxygen Reactivity of Synthetic Fe and Ni Models of Dioxygenase Enzymes

Enzymes that contain a metal-centered active site (metalloenzymes) are highly selective and efficient catalysts. Ring-cleaving dioxygenases are an important class of metalloenzymes that use dioxygen (O2) to cleave the aromatic and heterocyclic rings of metabolites and xenobiotic pollutants. While the majority of these enzymes feature a nonheme iron active site, examples with other transition metals (Mn, Co, Ni) have been reported. The design of synthetic complexes that mimic the structure and reactivity of ring-cleaving dioxygenases can provide a better understanding of enzymatic catalysis. This presentation will describe the

preparation of Fe and Ni complexes that model the substrate-bound active site of aminophenol dioxygenases (APDOs). Both sets of complexes have been characterized with X-ray crystallography and NMR spectroscopy. Importantly, exposure of the Fe-based complexes to O2 results in oxidative cleavage of the aminophenolate ring, thereby replicating the enzymatic reactivity. Reaction of the Ni complexes with O2 does not yield ring-cleaved products; instead, the aminophenolate ligand is oxidized to a Ni-bound radical. Multiple spectroscopic techniques were used to analyze intermediates observed during the O2 reactions. The results shed light on the role of metal ion identity (Fe vs. Ni) in controlling the catalysis of metalloenzymes that activate dioxygen.

Thomas Bales

IL - Illinois College

Discipline:

Authors:
#1 Thomas Bales

Abstract Name: J. Edgar Hoover: Tyranny Within the Federal Bureau of Investigation

During the course of the 20th century, we witnessed the most notorious FBI director who unleash countless campaigns and investigations onto black leaders through most of the Civil Rights Movement. J. Edgar Hoover over his five-decade career delt with Communism, Civil Rights, and anarchist terror attacks. When it came to black leaders Hoover employed unethical and illegal crusades against figures like Bayard Rustin, Malcolm X, Paul Robeson, Thurgood Marshall, Black Panther Party, and most famously Reverend Martin Luther King Jr. Hoover's ruthless campaign against King was sparked by a fear of Communism however, as shown in internal FBI documents was made aware of no Communist tie or infiltration into King's Movement. Hoover illegally surveyed King from the start of the movement up until his assassination in 68, which led to Hoover trying to discredit, dimmish, and destroy King's name and popularity. Once Hoover failed to find any tie to Communism, instead of backing off King Hoover doubled down and started to target King's personal life. This entailed illegal surveillance of King trying to expose his extramarital affairs and the 1964 FBI suicide letter. Scholars like Beverly Gage, Lerone Martin, Curt Gentry, and Paul Letersky all bring explanations for Hoover's questionable actions within his career. This paper is meant to further their research and pinpoint the motivations for the endless targeting of King. Hoover's paradoxical battle with the immorality of King's personal life while keeping the white supremist status quo of the Jim Crow era. Expanding our knowledge of a complex history of an infinitude of immorality within Hoover's almost century long career and battles with race, conspiracy, and morals.

Kat Balke

KS - University of Kansas

Discipline: Humanities

Authors:
#1 Kat Balke

Abstract Name: A Medieval MeToo: Christine de Pizan's Feminist Pastourelle

In 2006, Tarana Burke founded the #MeToo movement to provide resources, support, and guidance for women who had been sexually assaulted. Since its inception, #MeToo has evolved from a small, grassroots organization to a global phenomenon dedicated to raising awareness of sexual assault, coercion, and the

importance of consent. Yet grappling with the imbalances of sexual power is unfortunately not new: Christine de Pizan's Dit de la Pastoure [Shepherdess's Tale], is emblematic of what I am calling the medieval #MeToo movement. This poem challenges the popular pastourelle genre, which traditionally depicts a brief conversation initiated by a man who flatters, harasses, and often rapes a woman in an idyllic country setting. By contrast, Christine's radical and proto-feminist narrative shifts to feature a woman narrator and her perspective, and it epitomizes Christine's polemical contributions to early feminist theory. In this thesis, I argue that pastourelles and the Dit de la Pastoure in particular expose men's "chivalric" or "courtly" flattery of woman as part of a pattern of control over women's bodies. I deploy the innovative method of "contrapuntal reading" (developed by Edward Said) to place Christine's poem and #MeToo survivors' stories into conversation as a way to illuminate the exploitation of women's bodies and women's ultimate potential to reclaim authority over their bodies and over their stories.

Timothy Ballard

OK - Cameron University

Discipline: Humanities

Authors:
#1 Timothy Ballard

Abstract Name: Frankenstein's Symbolic Eco-Feminist Agenda

This presentation discusses the theme of ecofeminism embodied in Mary Shelley's Frankenstein and its significance. Ecofeminism maintains that men's domination of nature and women led to ecological crisis and gender inequality. The author argues that Shelley illustrates this theme through her use of symbolic characters in Frankenstein. Through Victor (Frankenstein himself) and his creation ("the monster"), Shelly conveys both the patriarchy's abuse of technology and its ignorant manipulation of nature. Similarly, through the three main female characters (Frankenstein's mother, his fiancée, and the housemaid) and their submissive and unequal relationship with Victor, Shelley demonstrates that in the society that men represented power, strength, and rationality, women were under men's mental oppression and lose their self-consciousness of pursuing their own lives. The author contends that Shelley's use of symbolism in Frankenstein further illuminates the novel's ecofeminist agenda: the synchronicity between how one treats the nature and how one treats women in society. Thus, she intends to warn us that if humans continue to be obsessed with scientific exploration at the cost of sacrificing nature, humans may not be able to build equal relationship between two genders, and we humans might be even destroyed by ourselves. So from an ecofeminist lens, the author maintains that the novel functions as a cautionary fable warning against patriarchal "domination" of the natural world: a vital lesson for our current era of climate catastrophe and environmental struggles due to humans' over-dominance on nature.

Elizabeth Ballmann

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Ballmann
#2 Mariyas Mahipala Mudalige
#3 Aaron Rury

Abstract Name: Terahertz Analysis and Harmonic Characterization of Antiferroelectric Crystal 2-

triflouromethylbenzimidazole (TFMBI)

Interest in using terahertz time-domain spectroscopy (THz-TDS) to characterize biological samples has recently increased as the low wavelength radiation can measure bond vibrational frequencies without denaturing samples. Simultaneously, interest has grown in understanding the connection between the structures and dynamics of organic antiferroelectric crystals and the ability of these materials to store electrostatic energy. Our objective is to understand hydrogen bonding intermolecular interactions present in the antiferroelectric crystal 2-triflouromethylbenzimidazole (TFMBI) and how they affect this material's vibrational spectra and dynamics. To examine these properties, we use THz-TDS and fast Fourier transformation (FFT) methods as implemented in commercial software. Following measurements of the THz transmission spectra of TFMBI sample grown through re-crystallization processes, we use periodic density functional theory (DFT) calculations to assign vibrational spectra of TFMBI in the region between 0.5 and 2 THz. Our analysis shows that the main peaks in the measured spectra correspond to low-frequency vibrational modes consisting of pseudo-rotational motions of both molecules within the material's unit combined with intramolecular ring distortions. These results have critical implications into the study of quantum mechanics in molecular crystals as the harmonic frequencies predicted by DFT calculations cannot capture anharmonic behavior of the vibrational dynamics with the hydrogen-bonded crystalline framework of TFMBI, which may help researchers understand how imidazole-based molecular pack into pharmaceuticals and react within biological subjects.

Anika Banerjee

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Anika Banerjee

Abstract Name: Alpha-Gal Testing for Americans with Coronary Artery Disease: A Model for Earlier Median Diagnosis of AGS in the Southeastern United States

The tick-borne Alpha-gal syndrome (AGS) has gathered increasing attention in the southeastern United States as α-Gal sensitization has trended upwards in recent years. The AGS epidemic began with the publication of twenty-four cases in 2009, and over 34,000 Americans were diagnosed by 2019. Those presenting with undiagnosed AGS have demonstrated an increased risk for developing premature coronary artery disease (CAD), allowing for AGS to be underreported and/or misdiagnosed. Although national CAD mortality rates have fallen from 2009-2017, data suggests stagnation in rural CAD mortality, whereas a decline persists in metropolitan regions. This research identifies a correlation between AGS and premature CAD through a detailed literature review of works published from 2011-2022 regarding AGS, food allergy, and CAD. The databases CDC, NIH, and AHA were referenced extensively in this study. This research offers a model checklist for providers to reference during AGS diagnosis, which includes lesser-known symptoms, comorbidities such as premature CAD, and post-diagnosis steps. A standardized procedure for diagnosing AGS may benefit both AGS and CAD trends in the southeast United States. Further research and proofing is required for the possibility of a more formal and specified checklist that could be implemented nationwide and internationally. Keywords: tick-borne disease, alpha-gal syndrome, α-Gal sensitization, premature coronary artery disease, cardiovascular disease, food allergy, southeastern United States

Katherine Banholzer

PA - Albright College

Discipline: Social Sciences

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#3 Laura Poynter
Samantha Raby
Laura Poynter

Abstract Name: Priming Effects of Divorce Experience on Photo Gaze Patterns

This study was an examination of priming effects on participant gaze patterns after viewing divorce scenario videos. Priming effects were studied with three eye tracking technology trials per participant. Each trial had participants watch one of three stimulus videos selected in a randomized order before viewing 100 slides of facial photos and silhouettes. After the three trials, participants were given a demographics form to complete which allowed us to gather basic information (age, gender, college year) as well as parental marital status information. Demographics were kept anonymous, only tied to an anonymous participant number to allow for the data to be compared with the demographics information. We hypothesized that the priming video (mom blame, dad blame, and no blame) shown would produce priming effects for gaze pattern depending on the gender of the parent mentioned in the video. There were statistical tests conducted that included all thirty-three participants whose data was collected. Another set of tests were conducted with just fourteen participants who retained at least fifty percent of their data from the eye tracker. The participants who were removed from the analysis had less than fifty percent of usable data either due to technology malfunction or another unidentified confound. We found that our results suggested potential implicit biases surrounding gender but did not suggest an interaction between the video manipulations and gender. If this study were to be recreated in the future, an implicit associations test would be valuable to include before the eye tracking portion of the study.

Alexis Banks

MD - Towson University

Discipline: Health and Human Services

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#2 Carrington Jones

Abstract Name: The Role of Genetics in Post-Cerebrovascular Accident Impairments

Cerebrovascular accidents (CVAs), commonly known as strokes, represent a significant global health burden with substantial morbidity and mortality. While risk factors for stroke are well-established, the role of genetics influence the occurrence and severity of side effects following a CVA remains an area of growing interest. Genome-wide association studies (GWAS) have become instrumental in identifying genes involved in complex multifactorial diseases and other medical conditions. This study investigates genetic factors of stroke susceptibility as well as side effects in individuals who have experienced CVA. Electronic health records and genomic data from participants in large, diverse All of Us Research Program data resource analyzed using R in a Jupyter Notebook environment. A GWAS was performed on short-read whole genome sequencing data using Hail. Evidence suggest potential association between gene mutations with increased risk of ischemic stroke and diseases that correlate to stroke. Gene mutation such as TREX1 are in individuals with conditions known as retinal vasculopathy, cerebral leukodystrophy. ACTA2, COL4A1 gene mutations result in integrity of blood vessels, particularly in the small vessels of the brain with aneurysms affecting the vessels that supply the brain. Secondary genes have connections to other diseases like atherosclerosis. Genetic factors shown via results measures the relativity of statistical finding to be pursued further in genes. The GWAS method involved the examination of genetic variaSpetion from ClinVar across the entire genome

in a large cohorts (254,388) of individuals with and without CVAs. The approach allowed for the identification of single nucleotide polymorphisms associated with the risk of stroke. (Gene: C7K43 SNP rs39471494 P-value: 2.18E-08, Gene: OKL37 SNP rs80535217 p- Value: 1.85E-10, Gene: BLO71 SNP rs58671438 p-Value: 9.29E-10). Further work to better understand the environmental contribution to stroke occurrence and post-stroke complications, which may lean to precision preventions and treatment measures that can help all patients.

Ava Baranik

CA - Cuesta College

Discipline: Social Sciences

Authors:
#1 Ava Baranik

Abstract Name: Forensic Taphonomy

The goal of the research was to look at the taphonomy of animal bones to be applied in a forensic context, with the main focus being the marks scavengers leave or don't leave. To conduct the research the first step was to find an area with a lot of wildlife activity by using a trail camera. Once the area was chosen, the lower legs of a wild boar carcass was set up in front of the camera to capture the different types of animals that scavenge. Once there was little to no soft tissue remaining on the bones, they were taken from the site and the soft tissue was removed using the maceration process. With the bones clean, marks were found on the iliac body that are consistent with turkey vulture marks. The results on the bones line up with the videos captured on the trail camera. The study was conducted in Atascadero, California in the month of November. The weather also impacted the research including the rate of decay and the maceration. The camera was able to capture 902 videos of the chosen site, with 704 of the images being centered around the wild boar sample that had the bones recovered. The camera also provided evidence for how many times a scavenger or carnivore was at the site, giving information about the infrequency that they come into contact with the bones and leave marks. A background is provided for the animals captured on video. If provided with more time, avenues for future research could include, leaving the bones out for longer to see what further scavenging would happen, if any root growth would occur, how the continued drop in temperature would affect the activity.

Julia Barbee

NE - Creighton University

Discipline: Natural and Physical Sciences

Authors:
#1 Julia Barbee
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#3 Diego Paine-Cabrera
#4 Udayan Apte

Abstract Name: Role of HNF4alpha in Subacute Liver Injury and Subsequent Regeneration

Following acute liver injury, hepatocytes and biliary epithelial cells regenerate to restore the hepatic mass. However, subacute or chronic liver injury impairs this mechanism, resulting in delayed or loss of regeneration. Hepatocyte nuclear factor 4 alpha (HNF4α) is a key hepatic nuclear receptor that plays an important role in proliferation and differentiation during liver regeneration. This study investigated the role of

HNF4α in regulating liver regeneration after subacute liver injury. Wild-type (WT) and hepatocyte specific HNF4α knockout (HNF4α-KO) mice were given choline-deficient and ethionine-supplemented (CDE) diet to induce sub-acute liver injury. To study mechanisms of subacute liver injury, WT and HNF4α-KO mice were fed a CDE diet for one week. To study regeneration and recovery, WT and HNF4α-KO mice were fed one-week CDE diet followed by a one-week recovery period on a normal chow diet (recovery model). Blood and liver tissue samples were obtained to determine liver injury, liver cell proliferation, and hepatic gene expression. WT and HNF4α-KO mice showed significantly higher liver injury after one week of a CDE diet. qPCR analysis revealed that the CDE diet significantly induced inflammation markers, fibrosis markers, and proliferation markers in HNF4α-KO mice only. Further, progenitor cell marker Epcam was upregulated in HNF4α-KO while Sox9 expression was greater only in WT mice. In the recovery model, CDE diet-induced inflammatory, fibrosis, and proliferation markers were significantly downregulated in HNF4α-KO mice during recovery. Progenitor cell markers Krt19 and Epcam showed significant decreases in HNF4α-KO mice whereas Sox9 expression decreased in WT mice during the recovery period. These data suggest that the CDE diet enhances liver injury, inflammation, and fibrosis in HNF4α-KO mice as compared to the WT mice. Recovery after the CDE diet ameliorates these effects and promotes regeneration.

Elliot Barber

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Elliot Barber

Abstract Name: Muted Group Theory, Linguistic Censorship, and Marginalization in Higher Education Settings

This paper will explore the impacts of linguistic censorship within higher education settings, such as student affairs; Diversity, Equity, and Inclusion (DEI) offices; and university programming on marginalized students. In Muted Group Theory, Edwin and Shirley Ardener (1975) discuss how non-dominant cultural groups are excluded from the creation of language by the dominant group. This limits the ability of these groups to speak about their own experiences, as the dominant culture does not provide models of communication that reflect them. Non-dominant groups are forced to create their own language to describe their experiences, which is seen as less valid and is policed and challenged in education, literature, government, research, and healthcare spaces by the dominant group. This paper will review existing research and demonstrate the importance of representation in language for marginalized groups and the negative impacts of censorship and language regulation on students in higher education. Future research is needed on the current trends of linguistic censorship in higher education settings for their impact on community engagement, education outcomes, retention, graduation, and wellbeing of marginalized students.

Esteban Barillas

NC - William Peace University

Discipline: Social Sciences

Authors:
#1 Esteban Barillas

Abstract Name: Perceptions of Therapy Among the Latino Community

Although previous research has examined the stigma around mental health in the Latino community and how that correlates with the underutilization of mental health services (Kouyoumdjian et al., 2003), the research is 20 years old and needs to be further studied. Previous research has also shown that when compared to other ethnic groups, Latinos have greatly underutilized mental health services (Chang et al., 2013) while being at high risk of experiencing mental health issues such as depression and anxiety (Willerton et al., 2008). The current study examines the association between the negative stigma surrounding mental health in the Latino community and their underutilization of mental health services while also examining whether there is an association with depressive or anxiety-related mental health symptoms. It is hypothesized that Latinos are less likely to attend therapy compared to other ethnic groups due to the negative stigma surrounding mental health within the Latino community. The current sample consists of 42 participants aged 18 or older from the Raleigh area. Participants completed a survey on their perceptions of therapy, the Beck Depression Inventory (Beck et al., 1996), and the Beck Anxiety Inventory (Beck et al., 1961). For this study, therapy is defined as meeting with a counselor privately regarding one's personal issues being faced. To examine the association between participants' perceptions of therapy and their depressive and anxiety symptoms, correlational analyses were performed. Participants' perceptions of therapy were unrelated to symptoms of depression ($r(42)=-.17$, $p=.269$) or symptoms of anxiety ($r(42)=-.16$, $p=.319$). At this point in data collection, an insufficient number of Latino participants have been recruited to adequately test the hypothesis. Due to this, additional participants will be recruited to test the hypothesis. This will include translating the surveys into Spanish in order to increase the number of Latinos recruited.

Jerica Barkley

AR - John Brown University

Discipline: Social Sciences

Authors:
#1 Jerica Barkley

Abstract Name: Historical Trauma and the Bosnian Genocide

While the field of psychology is adequately equipped to assess and treat ethnic conflict, thus far, its application to this international crisis has consisted of the analysis of political and governmental reactions. This discipline could be incredibly useful for addressing this deadly social ill, particularly in contexts where ethnic conflict has prevailed for multiple generations. A theory adequately fit to begin this pursuit is that of historical trauma, which emerged as recently as thirty years ago as a psychological and sociological concept used to understand the lasting effects of colonization, genocide, and ultimately ethnic conflict on the physical and mental health of American Indian and Alaskan Native (AIAN) peoples. From a clinical perspective, historical trauma draws on ideas of intergenerational trauma and PTSD. Although the theory was initially developed to describe the Native American experience, its place in academia has broadened, allowing its use to apply to any historically marginalized or oppressed ethnic group. Could this concept, then, be used to describe the traumatic effects of the multigenerational experience of ethnic conflict? In this academic research, I will utilize data from psychological literature to qualitatively synthesize the ethnic cleansing of Bosniak Muslims in the Bosnian War of 1992-1995 and the concept of historical trauma. I hypothesize that this project will reveal the connection between extreme traumatic experiences and aggressiveness, as transmitted intergenerationally through parental and communal means, serves to reinforce and maintain historic ethnic conflict within the Balkans, extending as early as the Ottoman Empire to ethnic tensions in the present. Through this pursuit, I hope to contribute to my future goal of creating a theoretical clinical model for understanding ethnic conflict that can be applied on a global scale, including current crises like that of Israel and Palestine.

Burnices Barlue

MN - St. Catherine University

Discipline: Natural and Physical Sciences

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#4 Isobel Scarisbrick

Abstract Name: Regional Heterogeneity of CNS Glial Response in a Translational Model of Type-1 Diabetes

Type I diabetes (T1D) is an autoimmune disease where T-cells destroy insulin-producing β cells, leading to insulitis and hyperglycemia. The non-obese diabetic (NOD) mouse, a common model of T1D, experiences immune responses leading to T1D pathogenesis. Experimental autoimmune encephalomyelitis (EAE), a murine autoimmune disease, is inducible through myelin oligodendrocyte glycoprotein immunization in these mice. Mice develop severe EAE and shortly experience a disease pattern resembling relapsing-remitting multiple sclerosis due to T-cell infiltration and myelin degradation. The goal was to determine how T1D impacts glial response and synapses in the central nervous system (CNS) and to analyze differences in regional responses. We hypothesized that the metabolic dysfunction in T1D and inflammatory pathways degrade synaptic integrity and oligodendrocyte number but increase astrocyte response in the CNS, as will be evident through a diminished expression in both Olig2 and Synapsin I (SYN1) and increased glial fibrillary acidic protein (GFAP) expression. Tissue from NOD/Lt mice and CD-1 (control) mice were used for DAB immunohistochemistry (IHC) assays for an oligodendrocyte marker (Olig2), an astrocyte marker (glial fibrillary acidic protein, GFAP), and a synapse marker (Synapsin I, SYN1). Light microscopy and image analysis were conducted. Average area percentages and cell counts were graphed and analyzed by t-test. $P \leq 0.05$. Decreased cortical staining for SYN1 and increased staining for GFAP in the rostral corpus callosum was present in NOD mice. Decreased Olig2 staining in the dorsal column and decreased GFAP staining in the whole spinal cord and white matter were present. Staining in other brain and spinal cord regions were not significant. The corpus callosum, cortex, and spinal cord seem most vulnerable to metabolic dysfunction induced in the T1D model. For a better understanding of differential responses, further analysis of glia and synapses in the spinal cord on a regional level may be beneficial.

Elyse Barnes

PA - Duquesne University

Discipline: Engineering and Architecture

Authors:
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#2 Mirabella Stump
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#7 Bin Yang

Abstract Name: Air-jetting based bioprinting of alginate droplets for human stem cell encapsulation toward biomanufacturing of pancreatic islet organoids

The transplantation of biomanufactured pancreatic islet organoids has shown promising results towards finding a treatment for Type-1 diabetes. However, the process for generating consistent and robust derivations of mature organoids from human pluripotent stem cells (hPSCs) is challenging. The primary focus of this

research is to explore the application of air-jetting droplet printing in combination with alginate-based hydrogels that house hPSCs. We developed a custom alginate droplet generation system by integrating a syringe pump system with a 3D-printed air-jetting adapter. We conducted comprehensive studies to investigate and validate the design and configuration of this system, as well as parameters for droplet generation. We were able to establish a consistent and replicable bioprinting technique for generating uniform, spherical blank alginate droplets with a small diameter (<500 μm). Our research has since been centered on understanding the impact of the addition of hPSCs to the bioink and other various modifications to our printing process on the characteristics of the alginate droplets. Our primary objective is to enhance the replicability of these droplets, ensuring uniform quality and optimal performance in the bioprinting procedure. To achieve this, we have conducted several analyses, including monitoring the longevity of the alginate by observing its viscosity changes over time, evaluating droplet reproducibility by examining images that recorded the speed of droplet production, assessing how different concentrations of solutions used during the production process can produce better droplets, and investigating the most effective methods for mixing cells and alginate to achieve superior outcomes. By gaining insights from these investigations, we aim to develop a more precise and reliable bioprinting technique, ensuring consistent and high-quality hPSCs containing droplets that contribute to the successful biomanufacturing of pancreatic islet organoids.

Grace Barnes

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Grace Barnes

Abstract Name: The Entertainment Industry and Its Effects on Desensitization and Romanticization of Mental Health in College Students

With the entertainment industry as prevalent in people's lives as it is today, it is no wonder there is a positive correlation between exposure to entertainment and mental health issues. In research on the association between suicide statistics and the release dates of the show, there has been a strong correlation between suicides immediately after the release of an episode or whole season (Reidenberg et al., 2020). This study aims to determine the impact of the entertainment industry on the desensitization and romanticization of mental health in college students. The researcher hypothesized that there would be a positive relationship between exposure to the entertainment industry and desensitization and/or romanticization in college students. A researcher surveyed undergraduate students (N=100) at a Christian university. Screen Time Behavior Questionnaire (STBQ, Bandiera et al., 2020) and Public Perception of Mentally Ill People (Mushtaq et al., 2015) were measured. The researcher also created a unique scale to measure the romanticization of mental health. Correlations and simple linear regressions were used to analyze the data in this study. This study's findings revealed a significant relationship between the entertainment industry (measured by screen time behavior) and desensitization, including blame and immorality. There was no significant correlation between the entertainment industry and romanticization. Some future studies should include social media application usage and personal history with mental illness, as those can also impact the results.

Madysen Barnes

FL - The University of Tampa

Discipline: Social Sciences

Authors:

#1 Madysen Barnes
#2 Benjamin Marsh

Abstract Name: Higher recognition accuracy for biographical information of racial in groups compared to racial out groups

The cross-race effect (CRE) is the likelihood of more accurately remembering faces of your racial in-group (same-race faces) compared to your racial out-group (other-race faces). While this effect is well established, it is unclear whether better memory for same-race faces extends to better memory for biographical information of those faces. It is also possible that the CRE is mitigated by providing biographical information for same-race and other-race faces, in that more information could lead to better processing of faces. In addition, 132 White Participants were introduced to eight faces paired with either long or short biographical introduction. In addition, faces equally varied by race (i.e., Asian, Black, Latino, and White faces) and gender wherein two racial groups were male and the other female with counterbalancing. Participants then studied 48 distractor faces. Recognition memory was tested by presenting the eight introduced faces and 48 distractor faces intermixed with an equal number of new faces. Participants indicated whether they remembered seeing each face. A second test phase had participants identify which faces they were introduced to by picking four faces from an all-male and all-female grid of 16 faces. To recognize that a face has been seen before only requires a feeling of familiarity but identifying the specific context in which the face was encountered requires higher memory processes. Analysis found remembering which faces participants were introduced to was noticeably more difficult than recognizing whether they previously saw those faces. The CRE was more prevalent when participants had to recall which faces were given introductions compared to recognizing whether a face was seen before. Moreover, participants remember information about White faces more accurately than Black and Latino faces. Findings showed that participants' recall for careers and faces of those paired with short bios were significantly better than those paired with long bios.

Levi Barnett

UT - Utah State University

Discipline: Humanities

Authors:
#1 Levi Barnett
#2 Crescencio López-González

Abstract Name: Beyond the Melody: Corridos Tumbados and Their Impact on the Perception of Women in Mexican Society

Gaining popularity in 2019 with the release of singer Natanael Cano's innovative album "Corridos Tumbados", a new generation of corrido was born that mixed the already present gangsta rap and trap movement in Los Angeles with the old generation corrido framework. Some common themes found in corridos are el amor, which usually exhibits a beautiful woman whom the protagonist wants to conquistar (conquer); el desamor, a man who is heartbroken by a beautiful woman; and el éxito, those who have overcome difficulties and have now found fame. These themes comprise the selection of songs for the present investigation, both prevalent in more traditional corridos (which I refer to as "Old Gen Corridos") and corridos tumbados (or "New Gen Corridos"). This research will compare lyrics found in select New Gen and Old Gen corridos based on popularity and the presence of the aforementioned themes. Through an analysis of the main tropes and traditions found within the songs and music videos, along with current gender studies theory, this investigation will show the similarities and differences between how the two types of corridos represent women, and the role these women play within the songs. This will also be analyzed in correlation with the generational gap between the two types of corridos, along with their respective stigmas. Through this investigation, we can start to understand how the victimization and consumerism of women directly correlate

with the generational divide in Mexican society, and how the messages found within may carry more similarities than differences.

Sydney Barnett

IN - Franklin College

Discipline: Humanities

Authors:
#1 Sydney Barnett

Abstract Name: Franklin College and the AIDS Epidemic

Beginning in the early 1980s, the AIDS epidemic in the United States produced lots of misinformation, stigmatizing the LGBTQ community. Conservative policymakers and national leaders did not respond very positively to the crisis.My research contributes to the existing historical scholarship of the epidemic by focusing on the response of a small liberal arts institution in the Midwest, Franklin College. Historian Bradford Martin, who analyzed the effects of Ronald Reagan's presidency, and Kathrine Cummings, who studied histories of discrimination against gay communities in America, provide the broader context for my research.The research then investigates how Franklin students, the administration, and campus organizations reacted to the AIDS epidemic. It also examines the extent to which the campus formed activist groups and/or spread false narratives about the disease. My research uncovered that many students at Franklin College initially shared many of the biases toward the AIDS epidemic that existed in the national discourse in the mid-1980s. However, through the efforts of faculty, staff, and student activists, Franklin College students increasingly countered larger trends of homophobia and embraced greater acceptance towards the LGBTQ community than was found elsewhere in the state and nation. My research depends upon the Franklin College archives and its collection of student newspapers, which contain frequent columns of student life and campus activities throughout the 1980s and 1990s. Additionally, an oral history with a critical campus advocate also contributed to my work. My research concludes that Indiana was mostly a conservative state, and Franklin College went against the norms and advocated for the AIDS crisis. AIDS activism at Franklin College continues to shape our present health and wellness efforts on campus.

Ruby Barragan

CA - California State University - Long Beach

Discipline: Social Sciences

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Abstract Name: Investigating the effects of relationship quality on cortisol levels during pregnancy and postpartum by ethnicity.

Altered levels of cortisol (a biological marker of stress) during pregnancy are associated with poor maternal and infant health outcomes. Prior studies have explored the role of ethnicity on cortisol levels throughout pregnancy. Specifically, Latina and African American mothers are shown to have altered cortisol patterns that may lower their resiliency against stressors. However, few studies have examined whether factors such as the quality of the relationship with one’s partner affect cortisol levels during pregnancy and postpartum. The current study examined whether relationship quality is associated with salivary cortisol levels and if ethnicity

influenced this relationship during pregnancy and postpartum. The sample was comprised of 97 low-income pregnant women (71% Latina, 18% African American, 4% non-Hispanic White, 7% Asian American or mixed race), most of whom were married or living with a partner (77%). During the second trimester of pregnancy and at three months postpartum, relationship quality (ENRICH) was assessed through self-report and saliva was collected four times in one day (waking, 12pm, 4pm, and 8pm) to assess total cortisol produced (AUC). Regression analyses showed that mothers who reported more relationship satisfaction had lower cortisol levels (p<0.5). A non-significant trend was found for African American mothers, with higher relationship satisfaction being associated with higher cortisol levels during pregnancy. This differs from the general trend of lower prenatal relationship quality being associated with higher cortisol levels. At three months postpartum, lower relationship quality was associated with higher cortisol levels, with African American mothers producing the greatest cortisol levels (a non-significant trend). These results suggest a protective role of relationship quality on daily cortisol levels after pregnancy. To promote maternal and infant health, interventions should focus on improving relationship quality during pregnancy and postpartum. Future studies should investigate the mechanisms that contribute to the different experiences of African American mothers.

Maria Paula Barrantes Castillo

KY - University of Kentucky

Discipline: Business and Entrepreneurship

Authors:
#1 Maria Paula Barrantes Castillo

Abstract Name: Old Taylor and Old Overholt Whiskey Brands' Marketing Strategies: Balancing Heritage and Modern Consumer Engagement

The worldwide whiskey industry, valued at 80 billion dollars a year, is vital to Kentucky's economy and the financial well-being of the Commonwealth depends on how this historical distilled spirit is domestically and internationally marketed. Balancing heritage and modern consumer engagement, Old Taylor and Old Overholt whiskey brands have deployed marketing strategies into cultivating long lasting customer relationships to maintain their presence in the liquor market since the 1800s. Despite challenges such as Prohibition, evolving consumer tastes, and ownership changes, these brands have preserved their essence and competitiveness in the market over the years. To understand the methods behind their enduring success, this study examines the Old Taylor and Old Overholt whiskey collection, 1895-1944, at the University of Kentucky Libraries Special Collections Research Center. The collection contains business and marketing materials documenting the history, evolution, and cultural significance from these renowned whiskey brands from 1895 to 1944. Through this analysis, valuable insights into historical marketing practices within the whiskey industry emerge, allowing for meaningful comparisons with modern marketing campaigns. However, the significance of this research extends beyond the whiskey industry. In a rapidly changing market characterized by technological advancements and evolving consumer preferences, understanding the role of continuity and heritage is crucial for success as it reflects the uniqueness of their brand. Effectively balancing heritage with modern consumer engagement strategies is essential for businesses to remain competitive and connect with a wide range of consumers. In this context, this research offers a relevant exploration of brand heritage and its impact on customer relationships.

Delia Barrezueta

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Delia Barrezueta

Abstract Name: Implementation of Flexner Report on Delegitimization of Black Providers to Understand Presence of Doulas

The increase in maternal mortality has disproportionately affected Black women. It has become evident that doulas may be beneficial for mothers, as they are able to enhance maternal care. However, doulas are not commonly used. The Flexner Report, written by Abraham Flexner in 1910, changed the standards of medical education throughout the United States, in which medical schools still use today. Identifying the underlying reasons for their limited use is critical to enhance maternal care. This study aims to investigate how doulas may be used to alleviate current health disparities in maternal care by examining the Flexner report, specifically with regards to the medical education of Black students and women. In a comprehensive literature review of peer reviewed sources, this study explored historical maltreatments against the Black population, the delegitimization of Black maternal providers, the benefits that doulas offer, the perceptions that maternal care providers have towards doulas, and the standards of education for doulas. This study examined the experiences of maternal providers and doulas working together and investigated potential reasons on why doulas may not be as accepted as other medical professions or incorporated institutionally. Findings indicate that historical medical maltreatment, such as the Tuskegee Experiment and Eugenics Movement, have contributed to current health disparities, such as an increase in Black maternal mortality. In addition, doulas are able to serve as advocates, some maternal care providers have negative perceptions of doulas, and doulas are found to pursue certification for various reasons, such as being perceived as legitimate to other maternal care providers. As a result, through a set standardized education, doulas may be implemented into the healthcare system, effectively addressing health disparities.

Natalie Barrientos

CA - California State University - San Bernardino

Discipline: Health and Human Services

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Abstract Name: Improving Discharge Instruction Among People with Language Barriers in the Emergency Department

PurposeThe diverse population in the United States often encounters language barriers in healthcare, which can be problematic and lead to adverse outcomes. The purpose is to compare traditional and technological interpretation modalities for patients with limited English proficiency (LEP) by using a quasi-experimental approach. The goal is to identify the most effective communication modality, ultimately improving patient outcomes and satisfaction while preventing potential deaths.MethodsThe study was conducted at Arrowhead Regional Medical Center (ARMC) Emergency Department (ED). The study comprises two surveys - one administered after the initial assessment and another before the patient is discharged. The study will include 200 total participants between 18 and 60 years of age, indicating Spanish as their primary language.ResultsThe study may anticipate greater patient satisfaction, health outcomes, and discharge

instruction comprehension through the use of technological interpretation modalities, such as video-based interpretation and google translate.ConclusionsThe findings indicate that the usage of technological interpretation modalities for patients with LEP is critical for discharge comprehension and better health outcomes. To minimize ED admissions and increase cost efficiency, technological modalities should be prioritized versus traditional forms, such as in-person and phone-based interpretation. Hospitals and healthcare institutions adopting this as a common practice would establish a streamlined ED admission process to treat more patients in less time.Policy Implications include advocating for expansions and improved access to translation services and resources by increasing the number of interpreters and video devices for interpretation, providing educational materials printed in the preferred language, and standardizing translation services.

John Barrier

CA - Pepperdine University

Discipline: Mathematics and Computer Science

Authors:
#1 Kevin Iga
#2 John Barrier

Abstract Name: Adinkras: an exploration of Supersymmetry and Graphs

When Describing the equations that make up supersymmetric physics, things can get very complex and be a challenge to work with. One tool that is useful in the study of these equations is called an Adinkra. Adinkras are graphical representations of the math that describes supersymmetry. Using an adinkra allows study of the relationship between different particles in supersymmetric gauge theory. Seeing a graphical representation allows one to visualize patterns that form in the relationships. For example, particles arrange themselves into structures that may be familiar to us, most notably N dimesional cubes. These structures also behave in the same patterns as self correcting code. The use of adinkras in studying these relationships allows one to better visualize and communicate what is happening under the surface of complex algebra. This helps make the study of supersymmetry both more accessible and intuitive.

Kayla Barrios

TX - The University of Texas at San Antonio

Discipline: Social Sciences

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#1 Kayla Barrios

Abstract Name: The Aftermath of Intimate Relationship Inventory-21

IntroductionRecently, the field of psychology has shown a growing awareness of the significance of understanding the emotional ride individuals experience after ending their relationships. The Aftermath of Intimate Relationship Inventory -21 (AIRI-21) has recently been made a crucial resource to measure people's experience after a committed relationship. This study seeks to explore by examining the AIRI-21's utility in assessing psychopathological aspects of social anxiety, suicidal behaviors, depression, and revenge. Methods A total of 424 undergraduate participants were given five self-report measures: The Aftermath of Intimate Relationships-21 (AIRI-21) to examine experiences after a committed relationship, The Multidimensional Revenge Attitude Inventory-21 (MRAI-21) to analyze types of revenge, Patient Health Questionnaire-9

(PHQ-9) to evaluate mental health, specifically depression, Social Anxiety Questionnaire-30 (SAQ-30) to detect anxiety in social settings, and the Suicidal Behavior Questionnaire-Revised (SBQ-R) to determine past and potential suicidal behaviors and thoughts. ResultsThe internal consistency analysis of the scale scores for all measures consistently exceeded the 0.8 threshold, which indicates that questionnaires can be considered reliable for the study. Using Pearson's correlation analysis, the AIRI-21 demonstrated discriminant correlations under 0.3 throughout the scales. The correlations between AIRI-21, and the SBQ-R, were found to be below 0.16, meaning suicide behaviors and aftermaths of relationships don't have a strong relationship. However, emotional distress and MRAI's revenge rumination dimension had the highest correlation overall with 0.34, which indicates a slight yet discriminant association between these variables. In addition, SAQ-30, PHQ-9, and AIRI-21 had an overall low correlation of 0.2, signifying that these two aspects also don't strongly influence each other. DiscussionThe findings imply that post-intimate relationships experiences offer a unique perspective on psychopathology and its constructs. The AIRI-21 is a crucial tool for understanding people's post-committed relationship experience and gaining a better comprehension of the complex relationship between these factors.

Nancy Barron

AZ - Northern Arizona University

Discipline:

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#1 Nancy Barrón
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Sibylle Gruber

Abstract Name: Saturday Morning Live: Student researchers and a structured public audience

Pedagogy that requires undergraduate research is a skill that often includes critical thinking, investigation, disciplinary writing, document design, and the work is often prepared for an audience of one—the professor. Also, it is common for students to provide final presentations or to display visuals for a disciplinary audience of one—the classroom. The limited audience, common for academia, reinforces what Francis Bacon observed, "The Idols of the Cave consist of conceptions or doctrines which are dear to the individual who cherishes them, without possessing any evidence of their truth." Rather than increase a student's limited understanding of their work based on a confined traditional classroom, two faculty designed Saturday events, "The Gallery" and "CapCon" for the Fall and Spring terms. The focus is on student presentations of research findings because as Vico reminds us "It is in tune with the opinions of the audience that we have to arrange our speech. It often happens that people unmoved by forceful and compelling reasons can be jolted from their apathy and made to change their minds by means of some trifling line of argument" (p929). Students not only learn how to design an argument-presentation, they positively experience first-hand and immediately, the impact their words have on their audience which emphasizes what Gloria Anzaldúa noted "A lack of belief in my creative self, is a lack of belief in my total self and vice-versa—I cannot separate my writing from any part of my life. They are one." Each event includes a series of Infographic presentations and special attention to seniors and interns whose presentations include questions from a senior professor directly. While similar to a symposium or a conference, the differences include low cost, structured feedback, and a format that is appealing for faculty and students alike. We will include core principles for adaptation.

Alix Barry

MA - Worcester State University

Discipline: Social Sciences

Authors:
#1 Alix Barry
#2 Kathryn Frazier, Ph.D

Abstract Name: The Intergenerational Transmission of Intensive Parenting Beliefs among Contemporary Mothers

This study investigates the transmission of intensive mothering beliefs across generations and how contemporary mothers redefine, reclaim, or discontinue these dimensions in their parenting practices. Intensive mothering refers to a parenting ideology that emphasizes the idea that mothers should devote significant time, energy, and resources to raising their children despite its association with adverse mental health outcomes such as anxiety, depression, shame, and guilt.Early research has primarily focused on the transmission of parenting behaviors across generations. Studies indicate that parents tend to emulate the parenting behaviors they experienced in earlier generations. Family relationships, maternal well-being, and social support significantly mediate the transmission process. Adverse childhood experiences can negatively impact infant development, further underscoring the importance of understanding the complex factors that shape parental behavior.While numerous studies have investigated the transmission of parenting behaviors, few have specifically focused on the intergenerational transmission of intensive mothering beliefs. This study addresses this gap by examining the transmission of intensive mothering beliefs through a cultural lens. It considers the ways contemporary mothers reconcile intensive mothering discourses in their own parenting practices.Interviews were conducted with 26 mothers to examine their experiences and perceptions of motherhood. The analysis focused on discussions of intensive mothering, cultural factors influencing the transmission of intensive parenting behaviors, and the factors leading contemporary mothers to redefine, reclaim, or discontinue intensive mothering dimensions.The thematic analysis explored the influence of family as culture in navigating norms and values, particularly in the context of intensive mothering. It also examines the impact of past experiences on current mothering practices, the changing landscape of parenthood, and the challenges mothers encounter in reconciling societal expectations.The findings contribute to understanding intergenerational transmission of intensive mothering, the cultural factors that influence parenting practices, and how contemporary mothers navigate this ideology in their parenting practices.

Sara Barry

MA - Bridgewater State University

Discipline: Health and Human Services

Authors:
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#2 Leslie Sattler

Abstract Name: A Qualitative Study of In-School Support for LGBTQ+ Students

Research suggests that LGBTQ+ students experience higher rates of bullying and harassment due to their gender identity in school (Moe et al., 2015). Therefore, the need for schools to create a positive school climate and provide interventions for these students is imperative. This study aimed to understand the effectiveness of these interventions from the perspective of adjustment counselors. This study followed

Moustakas's methods of transcendental phenomenology and semi-structured interviews to collect data. The sample consisted of seven adjustment counselors interviewed on their usage and perceived effectiveness of in-school supportive interventions for LGBTQ+ students. Five themes surfaced (e.g., open and accepting climate, policies, professional development, therapeutic support, in-school community). These results echo existing research that adjustment counselors play a supportive role for LGBTQ+ students in schools. Participants describe the importance of having in-school supportive interventions accessible for students, school staff, and families as they attribute these as central for a positive and accepting school climate for LGBTQ+ students. These findings contribute to the research base on LGTBQ+ student success in school and suggest that schools could better support such students through professional development on LGBTQ+ topics for school personnel and an integrated curriculum for students.

Cheri Barta

WI - University of Wisconsin-Madison

Discipline:

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#1 Cheri Barta
#2 Catherine Chan
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#5 Sarina Strnad
Catherine Chan
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Abstract Name: Mentoring Matters: Impact of Partnership on the Success of Programs, Mentors and Trainees

Responsive mentorship of novice researchers in science, technology, engineering, mathematics and medicine (STEMM) has been well-documented to result in many positive benefits, including increased self-efficacy and persistence of trainees in their chosen field of study. The question of how to effectively and inclusively mentor undergraduate researchers is, however, not as well defined in the literature. During this presentation, we will explore the transformative impacts of mentorship on student-led research. Program directors/administrators from the Division of Diversity, Equity and Educational Achievement (DDEEA) at the University of Wisconsin-Madison will share current mentoring methods that have been shown to be effective in supporting students, especially those from historically marginalized backgrounds, among a variety of research disciplines. Mentored undergraduate researchers from DDEEA programs will also share the impacts of the mentorship they have received, highlighting specific mentoring techniques that have individually motivated and inspired each scholar. Collecting effective and culturally-responsive mentoring strategies and styles in a concerted manner and providing models of effective implementation will allow for STEMM mentors and trainees to support each other towards the creation of supportive environments where researchers and research programs flourish.

Katherine Bartek

OK - Cameron University

Discipline: Education

Authors:
#1 Katherine Bartek

Abstract Name: Queer and Transgender Representation in Mary Shelley's Frankenstein

There are several potential ways in which the relationship between Victor and the Monster can be interpreted in Mary Shelley's Frankenstein. Some critics believe that they portray a more 'maternal relationship' while others view their bond as a symbol for the 'creator and his creation'. However, it is worth considering how the behavior and mindsets of these characters' depict queer struggles and transgender representation. When looking at their perception of themselves, each other, and the world around them from this perspective, there are numerous important factors to analyze. A few of these issues include Victor's reaction to the Monster's creation as potential suppression of homosexuality as well as his polarized perception of the novel's male and and female characters. Furthermore, the negative treatment of the Monster by a shallow, oppressive society introduces parallels between transgender feelings of isolation and the sensation of 'otherness' he feels as a result of being outcast for his appearance. Addressing these topics will not only further my argument that Frankenstein portrays queer representation, but it will also deepen the novel's meaning and present a strong message to a marginalized community. Victor's internalized homophobia through his horrified, disgusted response to the Monster's creation would become an outlet for the sexual tension and self-loathing experienced by many queer individuals. Additionally, how the Monster was negatively perceived and outcast by others can be appreciated as an allegory for the rejection and segregation of transgender people in today's society. Approaching Frankenstein from this perspective demands an alternative angle to be considered which would make the novel more impactful, memorable, and relevant to thousands of readers.

Alexandra Bartis

CA - University of California - Los Angeles

Discipline: Mathematics and Computer Science

Authors:
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#4 Ben Vessely

Abstract Name: The Futurama Theorem: Solving Mind-Swapping Variations Using the Symmetric Group

In the television series Futurama, a character creates a machine capable of swapping the minds of two people. However, the machine was faulty in that once a pair swaps, they can not swap back. If a group of people permute untraceably amongst themselves, can the swapping be undone with the introduction of characters who have not used the machine? Keeler's theorem tells us it can with the introduction of two people who have not used the machine. Recently, J. Elder introduced the variation of a mind permutation machine that can cycle n people under the restriction that once a permutation is done, none of the permutations in the subgroup it generates can be used. Elder solves this problem for the cases in which n is prime and when n is even. We pick up where she left off, generalizing her proof to the case where n is odd. We introduce an additional restraint: that no two cycles can permute the same n people. Using well known results on the alternating group allowed us to find all possible situations a group of people could get into using the machine. Analyzing these findings allowed us to solve the problem for all n. We go on to study the optimality of the case where n equals three and introduce a more optimal algorithm. We further explore a variation on a machine that cycles an infinite amount of people, showing unexpectedly that finitary permutations can be undone in just two swaps using this machine. This work was funded by the CC-REU NSF REU grant (DMS-2050692).

Jessica Bartman

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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Abstract Name: Flow Imaging Microscopy and Machine Learning Analysis to For Finding the Root Cause of Protein Aggregation

Therapeutic proteins in the form of monoclonal antibodies (mAbs) are becoming increasingly used in the medical field. However, the various stresses that these mAbs may encounter between manufacturing and their injection in patients can cause protein aggregation and subsequent particle formation. The negative implications of particle formation are safety concerns and the loss of drug product potency. Thus, it is imperative that particles formed during manufacturing are closely monitored. Previous works used thousands of images of particles captured using flow imaging microscopy (FIM) to train convolutional neural networks (CNNs) to monitor changes in collections of images of proteinaceous particles. These changes were induced by an obvious imposed stress condition (e.g., peristaltic pumping). However, it is unknown whether stable, pre-formed proteinaceous particles are affected by more subtle stresses, such as time. In this work, we use supervised and unsupervised CNN techniques to monitor the stability of proteinaceous particles generated from subjecting mAb solutions to a stirring stress after an incubation period in a refrigerator. Machine learning models were first trained on particles obtained immediately after the applied stir stress. The trained models were then applied to FIM images unseen by the CNN models during training, obtained after incubation in the fridge over the course of 24 weeks. Initial results of the project have not shown any significant changes in particles over 8 weeks. The results of this work will inform future efforts in machine learning based particle analyses on the effects of an incubation period on protein particles following an applied stress and test the sensitivity of machine learning algorithms to be able to detect minute changes in collections of images.

Eric Barton

NY - SUNY Buffalo State College

Discipline: Mathematics and Computer Science

Authors:
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Abstract Name: : Leveraging Large Language Models for Structuring and Querying Unstructured Data

This research project delves into the application of Large Language Models (LLMs) to efficiently structure unstructured data and facilitate information retrieval through natural language queries. The study focuses on harnessing the power of LLMs to enhance the comprehension of web data by leveraging their contextual understanding and language processing capabilities.The project adopts a practical approach by utilizing Python and the OpenAI API to develop a Flask application. The application is designed to scrape data from the Buffalo State webpage, and using LLMs, transform the unstructured information into structured formats. This innovative approach enables the comparison of different structuring techniques, shedding light on how LLMs interpret and organize data.Key components of the research include the implementation of a systematic process that integrates the OpenAI API key to fetch data from a specified webpage URL. The data is then processed and structured in various ways to facilitate meaningful comparisons of results. The goal is to discern the nuances in how LLMs read and interpret information, providing insights into their strengths and limitations in handling diverse types of data.By employing natural language queries, the research assesses the

ability of LLMs to comprehend and respond to user-generated questions based on the structured data. This methodology not only contributes to the understanding of LLMs' natural language processing capabilities but also explores the potential of these models in creating user-friendly interfaces for information retrieval.The findings from this research contribute to the growing body of knowledge on the practical applications of LLMs in structuring and querying unstructured data. The developed Flask application serves as a valuable tool for testing and evaluating LLMs in real-world scenarios, offering a foundation for future advancements in natural language understanding and data processing.

Kelsey Bas

CA - Dominican University of California

Discipline: Health and Human Services

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Abstract Name: Vaccine Hesitancy in the homeless population of Marin County: is COVID any different?

COVID-19 booster hesitancy amongst different populations is a continuing public health issue. Within Marin County, individuals experiencing homelessness are not receiving their booster vaccination in spite of receiving the primary series of the COVID vaccine. Hence, there is a lack of research that reveals the barriers and motivation as to why individuals experiencing homelessness in Marin are facing hesitancy towards the COVID-19 booster. In this qualitative study, the researchers will interview clients of the Ritter Center. Semi-structured interviews will be conducted with individuals ages 18 and older, currently experiencing homelessness, and speak English. Voice recorded interviews will be transcribed through Otter.ai and interviews not recorded will be hand transcribed by the researcher at the time of the interview. Once transcribed, the interviews will then be coded and divided into common themes using Dedoose. Based on preliminary results, thematic analysis reveals three main themes for the barriers and motivations to remaining unboosted amongst those experiencing homelessness: non-accessible services, prior COVID-19 infection, lack of vaccine promotion. Non-accessible services manifest as difficulties accessing booster vaccine services as it may be a common barrier which will reduce their efforts to receive the booster. Prior COVID-19 infection or experience appears as a theme when individuals have contracted COVID-19 prior to vaccinations that will negatively affect their motivations. Lack of booster vaccine promotion was reported when the participants were unaware or not given opportunities to learn about the booster. The themes of non-accessible services, prior COVID-19 infection, and lack of vaccine promotion are expected to be common amongst the interviews held which suggests that these recurrent experiences have led individuals experiencing homelessness to remain unboosted. Public health intervention can increase accessibility and offer more education services to further promote COVID-19 vaccination efforts to individuals experiencing homelessness.

Sattvik Basarkod

MI - Wayne State University

Discipline: Social Sciences

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Abstract Name: Sex-Specific Associations Between Brain Structures and Anxiety Symptoms in Preadolescent Children

Background: Pediatric anxiety symptoms are more prevalent in females than males. This study aimed to look at how sex influenced the association between brain structures and anxiety symptoms in children. The amygdala is a critical region in the threat detection network and is related to psychopathology risk. The rostral anterior cingulate cortex (rACC) and orbitofrontal cortex (OFC) regulate amygdala activity. Thus, we hypothesized that larger amygdala, but smaller regulatory regions would be associated with increased anxiety symptoms differently in sexes. Methods: We recruited 59 children (age 9 years, 35 females) from an urban population of Detroit, MI. T1 -weighted structural images were acquired using a 3T Siemens MRI system. FreeSurfer was used to reconstruct images by segmenting white- grey matter surfaces and parcellate brain structures. Self-reported anxiety symptoms were collected using Behavioral- Assessment System for Children (BASC- 3). PTSD symptoms were measured two years following initial visit using UCLA-Reaction Index Scale. Analyses were stratified by child sex.Results: We found that right amygdala volume was positively correlated with increased anxiety symptoms (r=.52, p<.01) in females, but not males, even after co-varying for intracranial volume. On the other hand, OFC and rACC thickness was associated with decreased anxiety symptoms (r= -.41, p<.05; r= -.44, p<.05 respectively), in males but not females. Both sexes with larger amygdala predicted greater PTSD symptoms in the future (r=.41, p<.01), even after controlling for additional anxiety symptoms. Discussion: Our findings suggest that sex may influence the association between brain structures and anxiety symptoms. Larger threat sensitivity regions associate with female but not male anxiety symptoms. Thicker regulatory cortical regions may have protective effects in males but not in females. Importantly, larger amygdala may be a biomarker to predict future PTSD in both sexes. These sex specific structural findings show neural markers of psychopathology.

Inah Cassandra Bascos

FL - University of Central Florida

Discipline: Health and Human Services

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Abstract Name: Clinical Outcomes and Patient Satisfaction of Platelet-Rich Plasma Injections in Regenerative Aesthetic Medicine

The skin, being the largest organ, plays an important role in defense and survival due to its inherent ability to repair and renew itself. With the notable progress in medical care and nutrition, there is an increasing imperative to devise innovative approaches aimed at enhancing the process of cutaneous healing. The field of medicine is currently experiencing rapid progress in the direction of developing procedures that are minimally invasive or non-invasive, as well as treatments that can expedite the healing process. These advancements aim to minimize the negative impact on patients' health and enhance their ability to regain normal bodily functions, leading to an improved quality of life (QoL). Regenerative medicine is a growing interdisciplinary domain within biomedical research that seeks to restore, regenerate, and substitute impaired tissues and cells. Platelet-rich plasma (PRP) is an emerging therapeutic modality in the field of regenerative medicine, which has garnered considerable attention for its capacity to facilitate and expedite tissue healing processes. Regardless of the existence of various conventional therapeutic approaches focused on wound healing and growth factors, the utilization of innovative treatments continues to pose a clinical challenge. There is an ongoing pursuit of regenerative therapies to reduce the burden on healthcare systems. For these reasons, the current study seeks to examine the field of regenerative skin wound healing, with a specific focus on the use of platelet-rich plasma as a cost-effective and safe therapeutic intervention that enhances the overall quality of life for patients. The present study utilizes a semi-structured interview format to evaluate

the following: (i) whether platelet-rich plasma (PRP) therapy improves clinical outcomes in the field of regenerative aesthetic medicine; and (ii) whether platelet-rich plasma (PRP) therapy and patients' quality of life (QoL) are positively correlated.

Abigail Basener

VA - Virginia Military Institute

Discipline: Mathematics and Computer Science

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Abstract Name: Data Seriation Techniques with Average Repelling Distance in the Tree-penalized Path Length Method

Understanding the structure of data allows for many aspects of data analysis. Data ordering, otherwise known as data seriation, is a useful tool that helps to understand the data structure better. For example, one can use an ordering of data obtained by a seriation method to reorder the rows and columns of the distance matrix. Then visualize the data structures using heat maps of the matrix to understand the data structure. Obtaining a good ordering is crucial in this process. In this study, we try to improve a seriation method, called Tree-penalized Path Length (tpPL), which was shown to produce orderings that keep clusters of data together and have short path length, along with other merits. We introduce a new dissimilarity measure, Average Repelling Distance (ARD), and use it to construct two new distance matrices. We use the matrices and tpPL to produce orderings of 39 datasets and visualize them via heat maps of reordered distance matrices. We then compare the obtained orderings with those of tpPL, Optimal Leaf Order (OLO), and Travelling Salesman Problem (TSP) seriation methods using two numerical criteria. Although our work is contained within the field of data seriation, our new distance matrices may potentially be useful to other fields that use distance matrices in data analysis.

Derek Basil-Porter

CA - Pomona College

Discipline: Health and Human Services

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Abstract Name: Mapping Hybridities of People, Places, and Projects to Strengthen a Model of Sustainability from the Margin

Favelas are increasingly being recognized as sources for new models of sustainability and resilience. The Sustainable Favela Network (SFN), a network of community leaders from over 127 favelas in and around Rio de Janeiro, generates and shares these models through in-person and digitally mediated gatherings. In 2018 and 2021, these projects were added to the Sustainable Favela Network Map, serving as a platform showcasing diverse sustainability initiatives that enable members to connect around shared objectives, experiences, and goals. To visualize how the culturally and contextually relevant ideas of sustainability travel, we interviewed community leaders from ten favelas in and around Rio de Janeiro, to explore their relationship to the network and how their work fits into the conceptual understanding of sustainability. The term favela, and the territories they refer to, have often been contested. As such, we asked community leaders

how they define their communities. We used ArcGIS Pro to visually represent the interconnections between Sustainable Favela Network members and to highlight how ideas of sustainability travel across networks. From our findings, we aim to better understand the practices for community-based participatory mapping that provide heuristic and practical approaches for strengthening collaborations and networking amongst various grassroots sustainability initiatives.

Eden Bass

OK - University of Central Oklahoma

Discipline: Social Sciences

Authors:
#1 Eden Bass

Abstract Name: Autism Screams: Exploring Opinions, Definitions, and Social Injustices of the Autistic Community

Since the early 1900s, Autism Spectrum Disorder, also referred to as ASD, has been feared, stigmatized, and often kept behind closed doors. Multiple social factors and misconceptions have been spread throughout the United States, causing the experience of Autistics to be erased and demonized. The anti-vaccination movement and orginazation such as Autisim Speaks have rapidly silanced the true experinaces of Autisitics, allowing fear to be the foundation of our sociatal understanding around ASD. This restricts Autistics from self-advocating, finding independence, and receiving respect within their day to day lives. The infantilization of adult Autistics creates systematic, educational and social injustices by preventing Autisitc-led advocacy. This study aims to shed light on the neurodiversity paradigm, which views Autism not as a defect or deficit, but a valuable human perspective that can be utilized to accelerate our collective knowledge. In addition to the rapid spread of information surrounding Autistic experiences throughout the COVID-19 pandemic, Autism diagnosis have spiked over the past decade. Centering and examining queer, BIPOC, and female Autistic experiences continues to open a plethora of new symptoms and skills within the Autistic community. This study will examine these factors and advocate for a redefinition of ASD in medical, mental health, social, and sociatal enviroments.

Christopher Bass

GA - Morehouse College

Discipline: Natural and Physical Sciences

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Abstract Name: Net Nitrification Rates with Soil Depths in an Agricultural Peatland

Agricultural croplands emit one-third of global greenhouse gas emissions. Globally many croplands are peatlands, wetlands that contain soils with high amounts of carbon. Although they are excellent sources of vegetation and agricultural production, major greenhouse gases are released at these sites. Our study sought

to measure the change of nitrate concentration over two weeks from soils of varying depths to estimate net nitrification rates in the Sacramento-San Joaquin Delta, a source known to emit large amounts of nitrous oxide. Our trend analysis encapsulated a five-step procedure using a soil probe, potassium chloride extractions (nitrogen mineralization), a soil incubator, and a SEAL Analyzer. After testing soils from depths, our findings showed that nitrification rates decreased as soil depths lowered. These findings help us understand the correlation between soil depths and their biogeochemical compositions to help further understand the best conditions to promote nitrification. Further studies are needed to simplify the approach to minimize disturbance and calculate samples closer to real-time.

Cassedy Bastilla

TX - Lone Star College

Discipline: Natural and Physical Sciences

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Abstract Name: Mapping of Microplastic Concentration in the Pearl River Estuary in China and the Indo-Pacific Humpback Dolphins (Sousa chinensis) Population

With the purpose of determining where the concentration of microplastic contamination in the Pearl River Estuary in China is located and the population area of the Indo-Pacific humpback dolphins (Sousa chinensis), a critical literature review was conducted with a focus on data sets from research studies conducted from 2018 to 2021. Previous research has shown that industrial clothing factories such as Shien, located near the Pearl River Estuary, are releasing microplastic-contaminated wastewater into the river. In order to identify if Pearl River Estuary Sousa chinensis populations are located in areas of high microplastic concentrations, a literature review was conducted to identify if both overlap. Research by Mai et al. and Li et al. identified the specific area of the river where microplastics are abundant. Further research by Zhu et. al. and Chen et al. identified the location of Sousa chinensis populations. Experimental findings from Zhu et al.'s research showed microplastics were ingested by sampled individuals. A map was created to find a correlation between microplastic and Sousa chinensis location. The results indicate an overlap in the location of both microplastics and Sousa chinensis. Further research should focus on identifying the environmental threat and adverse effects of microplastic ingestion by Sousa chinensis.

Miguel Bastos

FL - Embry - Riddle Aeronautical University

Discipline: Health and Human Services

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Abstract Name: The Effects of Finasteride on the Parity Rates of Female Drosophila Melanogaster

Finasteride has been tested for and is known to treat male pattern baldness and benign prostate hyperplasia; however, the drug could treat female pattern baldness and polycystic ovary syndrome with the proper testing and investigation. The current database on the effects of finasteride on the female reproductive system is largely unknown and divided. This study aims to investigate the effects of finasteride on the female reproductive system using Drosophila melanogaster as the model organism. The female flies in this study were fed human dosage equivalents of 0.5 mg, 1 mg, and 5 mg of finasteride, with a control group of females who consumed no finasteride. Over the course of three trials, the female Drosophila were allowed to mate with undosed male Drosophila and after 24 hours all of the flies were removed from the vial after they laid their eggs. For two weeks following fertilization, the vials were checked every 8 hours and adult flies were removed. Adult Drosophila were counted, sexed, and frozen at -80°C to preserve their RNA. This study predicts that the results will indicate that finasteride will negatively impact the reproductive abilities of females and their male offspring. A follow-up study will be conducted using an RNA sequencer to investigate changes in gene expression among experimental groups. These results will help contribute to the research body that may ultimately be used to help determine treatment protocols for female patients suffering from pattern baldness.

Riddhik Basu

NC - North Carolina State University

Discipline: Mathematics and Computer Science

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Abstract Name: The Mechanistic Association between Cognition and Alzheimer’s Disease using Machine Learning Methods

Since its discovery in 1906, Alzheimer's disease has been the most common form of dementia. More than six million Americans aged Sixty-five and older live with Alzheimer's disease, making it more important than ever. As a result, it is critical to identify the predictors responsible for the onset of the disease. The purpose of this analysis is to investigate the role of biological factors in determining the severity of cognitive impairment. To evaluate which biomarkers were most significant, we used machine-learning techniques to examine the relationship between cognition-related markers and levels of cognitive impairment. We investigated the Alzheimer's Disease Neuroimaging Initiative (ADNI) dataset which we parsed through various cohorts. Our study consists of a variety of disease markers, including performance-based neuropsychological scores, apolipoprotein E (APOE) genetic status, and demographic details such as age and level of education. Our prediction was that cognitive exams would provide the greatest statistical significance. We ran rigorous statistical hypothesis tests in all aspects of our inference, in addition to quantifying predictor effects. Analysis in our study indicated that the Clinical Dementia Rating sum of Boxes and the Mini-Mental State Exam linked with thresholding of disease progression. Furthermore, the joint effects of risk factors and cognitive tests were highly associated with the likelihood of further progression of cognitive impairment. Given the alarming rate at which Alzheimer's disease and other dementias are growing, further research is needed to evaluate the roles of biomarkers in accurately tracking disease progression for patients and those at risk for cognitive impairment.

Kaylyn Batchelor

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

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Abstract Name: Understanding the effect of estradiol treatment on the development of the pre-optic brain area in green anole lizards.

Sex differences in forebrain morphology arise during development and are often linked to hormonal changes. These dimorphisms frequently occur in regions related to reproductive behaviors. Steroid hormones, such as testosterone and estradiol have important roles in vertebrate development by producing sex-specific structures, including the copulatory system and areas of the brain. The overall goal of our experiment is to examine the effects of estradiol on the brain and copulatory system development. Specifically, this study focuses on the preoptic area (POA) of the brain. This region exhibits sexual dimorphism, with males displaying a morphologically larger preoptic brain area compared to females. Previous research establishes estradiol as having a role in masculinizing the POA in rats. Although, these findings have been displayed in rodents, there is no further research of estradiol effects on the preoptic brain area in other vertebrates such as green anole lizards (Anolis carolinensis). We hypothesize that estradiol masculinizes the POA in green anole lizard development, therefore we anticipate that female lizards treated with estradiol would exhibit an enlarged POA, resembling the size of a male POA. To address this hypothesis, we treated lizard embryos with either estradiol or vehicle control and collected tissue after hatching. We previously utilized PCR on genomic DNA to determine the sex of the hatchlings. We are currently sectioning brains to examine POA morphology of the hatchlings treated with estradiol or vehicle control to see if there are any effects of hormones on brain development. The growing understanding of estradiol in green anole lizards will promote a better prediction for how estradiol treatment could affect brain morphology in other vertebrates.

Samantha Batt

OK - University of Central Oklahoma

Discipline: Humanities

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Abstract Name: The Coca-Cola Bottle

The Coca-Cola bottle has been around since 1916, and it serves a far greater purpose than just a bottle. This particular bottle is without a doubt one of the most iconic designs in the history of product packaging. Its unique shape and timeless appeal have made it instantly recognizable around the world. It was modeled after the shape of the Kola nut, which gives it its ergonomic shape. The bottle's shape has become an iconic symbol of Coca-Cola, reinforcing the brand’s identity and making it stand out from others.

Karissa Bauer

UT - Weber State University

Discipline: Natural and Physical Sciences

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Abstract Name: Brain-eating amoeba rescue-of-infection model using drug combinations

In the United States, 157 documented cases of primary amoebic meningoencephalitis (PAM) have been recorded between 1962 and 2022. In the 60 years since the first reported case, only four patients have survived; a 97.5% fatality rate. The causative agent responsible for the highly fatal infections, is the free-living, single-celled parasite, Naegleria fowleri— or the “brain-eating amoeba.”The aquatic thermophiles are opportunistic pathogens that inhabit a wide range of environments; from poorly maintained pools, moist sediment, rivers, lakes, etc. Exposure to N. fowleri invasion is reliant on direct contact with a host’s upper nasal mucosa, and the active parasite. Rapid deterioration of neural tissues occurs shortly after infection.Today, there is no universally accepted treatment plan for treating PAM infections. The CDC has recommended an empirical approach to treatment, and suggests utilizing combination drug-therapies. Suggested drugs include Amphotericin B, Azithromycin, Fluconazole, Miltefosine, and Rifampin.To better understand and evaluate the effects of these drugs on N. fowleri, a rescue-of-infection model was applied to test the efficacy of single and combination-drug treatments, at various time points. The model utilized an immortalized HeLa cell line that was infected with the amoebae until roughly 50% cytotoxicity was observed. The rescue stage commenced with drug additions, and HeLa cell metabolism, and apoptosis levels were monitored using fluorescence viability assays and caspase-3 enzyme detection systems.Drug combinations that included Rifampin and Amphotericin B, provided the greatest protection for human Hela cells against N. fowleri infections. Data collected from this model provides deeper understanding of Naegleria fowleri pathogenicity. This knowledge will aid the development of more reliable and efficient treatments for this devastating infection.

Caroline Baumann

CA - California State University - Northridge

Discipline: Natural and Physical Sciences

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Abstract Name: Calculating Spatial Accessibility to Primary Healthcare Providers in Yucatán, Mexico

This poster examines spatial accessibility to primary healthcare facilities in the state of Yucatán, Mexico by employing the Two-Step Floating Catchment Area (2SFCA) method. Access to primary healthcare plays an important role in enhancing overall health outcomes, especially due to preventative care measures. 2SFCA is used to first calculate a provider-to-population ratio using network analysis, and then aggregate these ratios within population catchment areas. The end result is a spatial accessibility index, which is a valuable metric to evaluate relative spatial accessibility of population points to primary healthcare locations. This research helps quantify accessibility, with potential applications aiding in policy development and service planning, ultimately resulting in improved health outcomes for the population.

Gilmar Bautista Cruz

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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Abstract Name: Smart Drone Technology for Disaster Rescue in Complex Environments

In disaster-stricken areas marked by extensive destruction caused by earthquakes, individuals often find themselves trapped amid debris and structural collapse. Navigating these perilous terrains poses significant risks and consumes valuable time for rescue teams. This research introduces an innovative approach to address these challenges by proposing a novel drone technology designed to adapt its dimensions mid-flight, thus enabling efficient navigation through complex environments. This unique drone incorporates experimental "4-D" printing materials that can dynamically respond to external stimuli, allowing for unprecedented adaptability during its mission. Specifically, the drone's arms are constructed from thermoplastic polyurethane, which reacts to heat stimuli at the arm's base, facilitating mid-flight shape changes. This transformative capability enhances the drone's maneuverability in confined spaces, while the integration of 4-D printing minimizes wing components, reducing overall costs and resource requirements.

Audrey Bayne

AL - University of Alabama

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Drips and Divides: A County-Level Exploration of Water Quality and Equity

In October 2023, Michigan prosecutors announced that they were no longer pursuing criminal cases against public officials in relation to the Flint Water Crisis, which began in 2014 when the city changed its municipal water supply source from Lake Huron to the Flint River, causing water distribution pipes to corrode and leach lead and other contaminants into municipal drinking water. Flint, Michigan experiences higher-than-average levels of poverty---in 2021, 35.5% of its population lived below the poverty line compared to the national average of 12.6%. In addition, 56.3% of Flint's residents are black, compared to 13.6% of the U.S. population.This research project investigates the interplay between poverty, race, and water quality violations at the county level in the United States. Our study utilizes county-by-county data on socio-economic factors and water quality violations from the Environmental Protection Agency's Safe Drinking Water Information System (SDWIS). The primary objectives include assessing whether disparities exist in water quality violations based on poverty levels and racial demographics and examining the potential implications for environmental justice policies. Statistical analysis techniques, such as correlation, regression, and spatial analyses, will be utilized, allowing for a comprehensive understanding of the complex relationships shaping water quality across diverse communities.

Willow Beach

CA - California Baptist University

Discipline: Social Sciences

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Abstract Name: The Connection Between Self-Isolation and Mental Health in College Students

Self-isolation has been understood to be detrimental to a person's mental health. Multiple studies have found a significant relationship between anxiety and depression, and self-isolation. The present study explores the effect of loneliness from self-isolation on mental health in college students. In this study, loneliness was measured with UCLA's Revised Loneliness Scale. Depression was measured with the Center for Epidemiologic Studies Depression Scale (CES-D). Anxiety was measured with the Generalized Anxiety Disorder 7-item (GAD-7) scale. The sample included 107 full-time college students from a Christian university. A t-test, a one-way ANOVA, and a multiple regression analysis were conducted to analyze the data. The findings in this research revealed that perceived loneliness significantly predicted depression, (b2 = 0.35, p = .012). The more perceived loneliness was associated with an increase in depression controlling for anxiety in college students. In addition, there was no statistically significant difference in loneliness between males and females (t = -2.001, p = .783). Results also showed that the school year was significantly associated with loneliness (p < .05). Loneliness was significantly lower among juniors (M = 2.32, SD = 1.12) than seniors (M = 3.03, SD = 0.97). The findings emphasize the need for society and university institutions to recognize the impact of loneliness on mental health in college students. Furthermore, future implications address the need to understand how perceived loneliness can be decreased among college students.

Brooke Beall

NC - Elon University

Discipline: Health and Human Services

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Abstract Name: Comparing Genotype and Phenotype of Antibiotic Resistance Profiles of Staphylococcus Aureus Isolates from Cystic Fibrosis Patients

Cystic fibrosis, CF, is a genetic condition that affects an estimated 160,000 people worldwide . This project studies Staphylococcus aureus, S. aureus, a bacteria that is commonly present in cystic fibrosis patients. Specifically, the project is attempting to identify if there is variation between the expected and observed phenotype in regards to antibiotic resistance. Resistance is tested by exposing the S. aureus to six antibiotics commonly used to treat CF and analyzing the growth of the bacteria. A MIC assay is used to find the minimum inhibitory growth concentration (MIC) for each antibiotic and to determine if the S. aureus is resistant or sensitive based on clinical laboratory standards. The data is compared with the genotypes of the collected isolate to identify if there is a variation. So far, the data collected in this experiment indicates that variation is present and using the genotype of Staphylococcus aureus may not be a useful technique when determining treatment plans for CF. Clinicians utilize genetic testing to determine which antibiotic should be

used to treat CF, but literature on S. aureus has shown that the genes may be turned off/on which changes the observed phenotype. This shows that the treatment plan for CF may be ineffective and can be linked with the lack of clinical success in treating the condition. Therefore, our data can be used in conjunction with clinicians to help identify better ways to determine antibiotic resistance quickly in a clinical laboratory and best treat patients with these bacterial infections.

Isabella Beasley

AR - Lyon College

Discipline: Natural and Physical Sciences

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Abstract Name: Loggerhead (Caretta caretta) Disorientations on Gulf of Mexico Beaches

Sea turtles find the ocean by crawling towards the brightest horizon and moving away from sand dunes and large shadows. Their ability to find the ocean can be impacted by artificial light sources that illuminate the beach, removing natural visual cues. The Sea Turtle Conservation and Research Program (STCRP) at Mote Marine Lab has documented loggerhead (Caretta caretta) hatchling disorientations in Sarasota and Manatee counties, Florida, USA from 1989 – 2023 across five beaches that vary in size, building sizes, and population. Disorientation data were used to determine the primary hatchling disorientation direction, to quantify what caused the most disorientation events, to determine how moon phase impacts the number of disorientation events, and to identify how many hatchlings disorient from those that emerge from their nests. When disoriented, hatchlings crawled southeast across all beaches, with most attracted toward condominium building lighting. Moon phase significantly affected the number of disorientations that occurred, with the most events occurring during the fourth quarter of the lunar cycle. While the percent of hatchlings from each nest is roughly the same on every beach, the number of disorientation events is dominated by Longboat Key. Additionally, the number of events on every beach is increasing independent of the increase in the number of nests on each beach.

Hailey Beaty

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

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Abstract Name: Estradiol Influences Memory Formation Via Prefrontal Cortex Mechanisms

This project aims to study brain estradiol synthesis and prefrontal cortex (PFC) activity in memory formation, aiming to understand and treat memory decline. Memory deficits often relate to PFC dysfunction, necessitating an understanding of its role during memory formation. The hormone 17-β- estradiol (E2) regulates synaptic plasticity, enhancing memory consolidation. However, its involvement outside the hippocampus, like in the medial prefrontal cortex (mPFC), remains unclear. Letrozole, blocking E2 synthesis, impairs cognition, leading us to hypothesize that E2 synthesis in mPFC is vital for object recognition

memory. Ovariectomized female C57BL/6 mice with mPFC cannulas underwent behavioral testing in an open field box. Letrozole or vehicle was infused post-training. Testing with a novel object revealed impaired memory consolidation in letrozole-infused mice, indicating E2's essential role. We used fiber photometry to measure neuronal activity during memory formation. Mice were habituated to an open field box in which behavioral testing took place. During the training phase, mice explored two identical objects for a cumulative total of 30s. Immediately afterwards, mice received an intra-mPFC infusion of letrozole (0.025 μg or 0.05 μg/hemisphere) or vehicle. During testing, one object was replaced with a novel object. The time spent exploring each object is measured, and increased exploration of the novel object indicates intact recognition memory. Letrozole-infused mice exhibited impaired OR and OP memory consolidation. Using GCaMP, we visualized intracellular calcium changes in mice expressing the indicator in the mPFC. Initial experiments infused jGCaMP7s [pGP-AAV9-syn-jGCaMP7s-WPRE (AAV9)] (Addgene) in the prelimbic region of mPFC (AP +1.9, DV -2.1, ML ± 0.3 mm relative to Bregma) and implanted optic fibers in the mPFC of anesthetized female mice, with ongoing analysis focusing on hormonal effects on mPFC calcium activity during object recognition. Increased mPFC activity in the SHAM group during object training and testing, aligning with E2's memory-enhancing effects.

Skye Beck

TX - St. Edward's University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Mutation in the DAF-7/TGF pathway rescues dauer formation defects and changes gene expression in the brain of C. elegans.

In C. elegans, aging can be slowed by entering dauer diapause, a non-aging stage activated by inhibiting the DAF-7/TGF neuroendocrine signaling pathway, usually triggered by environmental stressors. In our laboratory, we discovered that unc-33 mutants could not form dauers in response to environmental stressors, but the mechanism behind this is still unknown. We hypothesized that mutating the daf-7 gene could rescue dauer formation in unc-33 mutants. To test this, we created unc-33;daf-7 double mutants and studied whether this new strain can produce dauers and inhibit the DAF-7/TGF pathway in response to environmental stressors. In brief, this study used synchronized young adults or dauers, in order to quantify dauer formation and examine the GFP expression driven by the daf-7 promoter. For the latter, we used the ksIs2 transgene, which codes for daf-7 promoter driving the expression of GFP. Results showed that under unfavorable environmental conditions, these animals produced dauers at similar levels as wild-type animals. Moreover, when we analyzed the activation of the DAF-7/TGF pathway, we observed that both daf-7 single mutants and unc-33;daf-7 double mutants showed GFP expression in ASI and ASJ neurons. More specifically, unc-33; daf-7 dauers and young adult hermaphrodites have an active daf-7 promoter in ASI and ASJ neurons. Additionally, daf-7(e1372) dauers and young adult hermaphrodites also showed an active daf-7 promoter in ASI and ASJ neurons. Taken together, this study supports the hypothesis that inhibition of the DAF-7/TGF pathway via the introduction of the daf-7(e1372) mutation is sufficient to rescue the dauer formation defects of unc-33 mutants. Last, the mutation daf-7(e1372) alone or in an unc-33 mutant background results in the activation of the daf-7 promoter in ASJ neurons, a feature underlying behaviors such as males seeking mates or hermaphrodites avoiding the pathogenic bacteria Pseudomonas aeruginosa.

Cora Becker

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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Abstract Name: Analysis of the effect of real time geometric alterations on the motion of a self-diffusiophoretic bent rod

Microrobots, microscopic entities that can be used to accomplish biomedical and environmental remediation tasks, primarily use two modes of swimming: mechanical and chemical. Mechanical swimming involves altering the microrobot's geometry to induce motion, while chemical swimming employs reactive patches to establish a concentration gradient that the microrobot can move along via diffusiophoresis. In this work, we use slender body theory and mobility relations to assess how geometric asymmetry, surface activity, and hinge articulations affect the motion of a bent rod actuator. Using the intuition gained from trajectory simulations, we plan to explore ways to implement a control scheme that can determine the necessary parameters for a bent rod actuator to move along a predetermined trajectory. We determine the bent rod actuator trajectories in the zero Reynolds number limit using mobility relations. Mobility relations allow us to calculate the velocity of a bent rod actuator due to applied forces and torques generated through diffusiophoresis and hinge articulations. We first study bent rod actuator motion due to only diffusiophoresis. We find that the trajectories of the bent rod actuator are always circular. We then study the bent rod actuator motion due to only hinge articulations and find that the bent rod actuator trajectories trace circular arcs. The length of the arc is dependent on length asymmetry and the amplitude of the hinge articulations. We conclude by studying the motion of the bent rod actuator with both chemical and mechanical modes of swimming. The trajectories traced follow curved trajectories, where the specific shape depends on the geometry and flux profile of the bent rod actuator. Our findings offer valuable insights into the relationship between mechanical and chemical modes of transport at the microscale, presenting a new way for the rational design and control of microrobot motion.

Emma Becker

TX - Texas Woman's University

Discipline: Health and Human Services

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Abstract Name: Stationary Lower-Body Movement System to Mitigate Muscle Atrophy in Spaceflight

Upon landing on Mars, astronauts need to possess the requisite muscle strength to exit the spacecraft, setup the habitat, and explore. Currently, NASA is evaluating the Miniature Exercise Device as a countermeasure to muscle atrophy for long-duration travel. Limitations exist in the implementation of lower- body

movements that target specific musculature. Thus, the addition of a supplementary device targeting these muscles is needed. To address lower limb atrophy during deep-space missions, we designed a compact, lightweight device that incorporates pneumatic principles and airflow restriction to provide varied resistance. The device was originally designed in three-dimensional modeling software (Solidworks Premium, Waltham, MA). Components included: a boot, leg brace, ball valvie, clevis mounting bracket, rod clevis end, and two double acting pneumatic cylinders. Testing included measurements of force, muscle damage during exercise, and finite element analysis (FEA). To measure the retraction and extension stroke, a force plate and cable machine was utilized, with a mean force for both, up to 537.9 N and peak force of 1,116.1 N. For exercise tesiting, ten sets of 10 repetitions (at 136 N) and 10 sets of 5 repetitions (at 538 N) were performed. Serum concentrations of creatine kinase, a biomarker of skeletal muscle damage, were measured via a blood sample before vs. after exercise. Greater muscle damage for an aerobic-only trained female (108 vs.324 U/L) vs. a physically active male (93 vs. 97 U/L) was measured. For FEA testing, at a constant amplitude of 293 N, run for 1 million cycles, the boot and bracket can withstand approximately 38,050 and 14 million cycles, respectively. Approximately 7.143% damage was incurred after 1 million cycles. In conclusion, we fabricated and tested a compact device that provides the capability for resistance and aerobic exercise countermeasures to address lower-limb muscle atrophy in microgravity, especially during long-duration spaceflight.

Hailey Beilke

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

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Abstract Name: Analysis of Pencil Graphite Electrodes for a Cheaper Alternative to Paraffin Impregnated Graphite Electrodes in Electrochemical Experiments

Pencil graphite electrodes (PGEs) are increasing in popularity due to their commercial availability and electrochemical characteristics in comparison to PIGEs (paraffin impregnated graphite electrodes) PIGEs are commonly used in certain applications, such as ion-transfer studies focused on modeling cellular membrane transport; however, there are disadvantages associated with them. PIGEs require purchasing graphite rods and preparing them through time-consuming fabrication steps. It is also difficult to determine if the paraffin has completely infiltrated the graphite pores. We describe the fabrication of PIGEs which are then tested using electrochemical techniques, namely SWV (square wave voltammetry) and CV (cyclic voltammetry) in solutions of potassium bromide, chloride, iodide, and ferricyanide. Contact angle and microscopic analysis were also performed on the PIGEs to confirm paraffin impregnation. The electrochemical data was then compared to SWV and CV data using PGEs to determine their utility in electrochemical experimentation. Initial results indicate that PGEs are electrochemically similar to PIGEs and can offer a cheaper alternative for electrochemical experiments. However, in some experiments, unexplained peaks in the analysis indicate possible electrode contamination. Further testing of leaching from PGEs and scanning electron microscopy imaging could help determine the cause of these unexplained results.

Leslie Bejaran Solorio

CA - Dominican University of California

Discipline: Humanities

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Abstract Name: The Evolution of the Mexican Healthcare System: Exclusion and Inequities

In the 1917 Mexican Constitution, Article 123 Section Number 14, health became an occupational right in which the employer paid for sickness and injuries, a right advocated in the Mexican Revolution. Despite this, it was not until 1943, with the creation of Instituto Mexicano del Seguro Social (Mexican Social Security Institute), that it became a reality. Following the creation of social security, other programs were established for federal workers (Institute for Social Security and Services for State Workers), oil workers (Mexican Petroleum Company), and the armed forces (Ministry of National Defense and Secretariat of the Navy). Even then, the new healthcare system was not for everyone, generally leaving out informal laborers. There were varying degrees of quality and access to healthcare within subsystems. In 1983, a more meaningful attempt was realized to include everyone and provide healthcare access for all Mexicans. A 1983 amendment to Article 4 of the Constitution added that "Every person has the right to health protection. The law will define the ways and means for access to health services and will establish the concurrence of the Federation and the federated entities in matters of public health…" This led to subsequent healthcare reforms in the hope of a quality, equitable, and efficient universal health system in Mexico. The reforms attempted to unite and improve the health sectors, such as the Sistema Nacional de Salud (National Health System), the Programa de Reforma del Sector Salud (Health Sector Reform Program), and Seguro Popular (Popular Insurance), but many increased divisiveness and inequality. By piecing together this long history of reform, this paper analyzes the overall strategy and effectiveness of the Mexican Healthcare System, specifically focusing on the more contemporary reforms from 1983 to 2003; ultimately concluding that the Mexican healthcare system remains divided and inefficient.

Hillani Bekele

UAE - Zayed University

Discipline: Health and Human Services

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Abstract Name: Nutrition Literacy and the Consumption of Unhealthy Fats & Sugar-Sweetened Beverages Among University Students in the UAE.

The drastic increase in ultra-processed food and sugar-sweetened beverage (SSB) consumption is one of the greatest factors contributing to a global epidemic of non- communicable diseases and obesity. With the rising prevalence of obesity in the United Arab Emirates (UAE), nutrition education is one of the few strategies to bring about the lifestyle change among the youth. However, conflicting results exist in the literature on whether nutrition literacy leads to improved dietary behavior. As such, this study aimed to examine the association of nutrition literacy with the consumption of unhealthy fats and sugar-sweetened beverages among university students in the UAE. A cross-sectional study design with self-administered questionnaire was conducted on a sample of 409 university students in the UAE, aged between 18 to 30 years old, using a convenience and snowball sampling strategy. The mean nutrition literacy score of participants was found to be 37.8 ± 8 out of 55. There was no difference in nutrition literacy based on gender, BMI, emirate of residence, employment, monthly income, and degree level. However, marital status, nationality, age, and ethnicity were associated with nutrition literacy. The findings showed that higher nutrition literacy is associated with less percentage intake of fat ($p=0.004$), but daily cholesterol intake ($p=0.174$) and consumption of SSB ($p=0.058$) were not significantly associated with nutrition literacy. The findings suggest

that students translated their nutrition literacy in terms of reducing their total fat intake, but there was a gap between nutrition literacy and the consumption of sugar-sweetened beverages and daily cholesterol. This magnifies the importance of nutrition literacy in promoting healthy eating habits, while also underscoring the fact that more awareness campaigns or interventions regarding sugar-sweetened beverages are required. Further should examine the effective intervention strategies that reduce the intake of SSBs among college students with a representative sample.

Bethanie Belisle

MN - University of Minnesota - Morris

Discipline: Social Sciences

Authors:
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Abstract Name: Erasing or Creating History: The Causes of Confederate Statue Removal

During the global protests that followed the killing of George Floyd by Minneapolis police on May 25th, 2020, protesters vandalized and tore down statues and monuments. Local governments and private organizations removed nearly a hundred Confederate Statues in 2020. There were over 700 Confederate statues and monuments in the old Confederate areas of the US at the end of 2021. With many Confederate statues still erected in public, one can wonder why some Confederate statues get torn down by protesters and governments while others remain. What determines which statues stay in the public eye versus those removed? In a set of case studies comparing twelve Confederate statutes, this paper explores whether high levels of conservative ideology led to statue retention and whether public prominence led to statue removal. The research was conducted by exploring secondary sources, including records of the statues' origins, newspapers, and voting records. The study of six removals and six retentions shows that the removal of a Confederate statue depends on the level of support for the democratic party in recent elections and high public awareness of the figure represented in the statue. Retained statues are regarded as local heroes without public prominence and are located in highly conservative counties. This preliminary study opens up the opportunity for a more systematic study in the future, discussing a trend of systemic injustice and the destruction of controversial art.

Bethanie Belisle

MN - University of Minnesota - Morris

Discipline: Social Sciences

Authors:
#1 Bethanie Belisle

Abstract Name: Erasing or Creating History: Mapping Controversial Statue Removal

This study undertakes the comprehensive task of mapping and scrutinizing the removal of controversial statues across the United States. Its primary objective is to discern potential linkages between the elimination of these statues and anti-racist movements. The research methodology involves the meticulous compilation of a dataset encompassing statues removed between 2000-2023. This dataset covers details including geographical location, removal date, cited reasons, and any associated protests or activist efforts. Through a systematic analysis of patterns and trends within this dataset, the study aims to unearth correlations and potential causative associations between statue removals and the evolution of anti-racist movements. The

discoveries from this research endeavor are poised to yield profound insights into the intricate societal dynamics surrounding the elimination of controversial statues. Furthermore, it will illuminate the role played by anti-racist activism in influencing public discourse and the formulation of policies on historical representation. By shedding light on these intersections, this study contributes significantly to comprehending how historical symbols are contested, negotiated, and redefined in contemporary American society.It is important to note that despite exhaustive efforts, some instances of statue removals may not have been documented or accessible through online sources, and time constraints have limited the number of statues found. Additionally, the dataset is living and will continue to be updated as time passes but will not show in these results.

Pranav Bellannagari

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Pranav Bellannagari

Abstract Name: Electromyographic Signal Processing in the Development of a Novel Bionic Rehabilitative Device

The development of a novel bionic device, the Biochair, addresses the significant societal challenge posed by rehabilitation for conditions like Osteoarthritis and post-stroke impairments, which affect millions in the United States. Traditional rehabilitative solutions, such as physiotherapy and robotics, often face limitations due to high costs and time constraints. The Biochair emerges as a cost-effective, efficient, and patient-controlled solution for rehabilitation exercises. It features two adaptable leg-holding support plates, controlled by an integrated system comprising an Arduino microcontroller, motor drivers, and stepper motors. These sensors are placed on the patient's quadricep muscle and are critical for detecting the minute electrical activities of skeletal muscles, which are then amplified and filtered to guide the device's movements. The amplification process is engineered to boost signal strength without introducing noise, utilizing high-precision amplifiers which is crucial in maintaining the fidelity of the EMG signals for accurate interpretation. The filtration of these signals is equally important, involving sophisticated band-pass filters that isolate relevant muscle activity frequencies from background noise. The EMG sensors, operating within a frequency range of 20 to 450 Hz and with a sensitivity threshold of 10 to 500 μV, are pivotal in detecting the subtle electrical activities of skeletal muscles. This integration of advanced EMG sensors and tailored signal processing techniques has resulted in a successful initiation of the system, with the chair demonstrating expected operation. The movement of the leg from a vertical (0 degrees) to a horizontal position (70 degrees) is effectively facilitated by the Biochair. The Biochair not only enhances the efficacy of rehabilitation exercises but also holds the promise of making rehabilitative care more accessible and user-friendly. Its development represents a significant advancement in assistive bionic technology, offering a novel solution that could benefit millions with mobility impairments.

Pranav Bellannagari

CA - San Jose State University

Discipline: Mathematics and Computer Science

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Abstract Name: A Cross-Regional Machine Learning Study to Enhance Predictive Accuracy in Forest Fire Analysis

Forest fires pose a significant environmental challenge globally, leading to substantial loss of wildlife and millions of acres of forest cover and wildlife loss. This study presents a comprehensive machine-learning analysis of forest fire factors in two distinct geographical locations, Algeria and Portugal. The data, sourced from the UC Irvine dataset repository, encompass several critical features contributing to forest fire risks. The study's methodology involves an in-depth examination of data spanning with key variables including temperature, relative humidity, wind speed, rainfall, and various indices from the Fire Weather Index. The analysis was conducted separately on datasets from Algeria and Portugal. The machine learning models selected, Snap Boosting Machine and XGB Classifier, achieved an impressive accuracy of approximately 99% for the Algerian dataset. In contrast, the model's performance on the Portuguese dataset was notably lower, with an accuracy of around 60%. This discrepancy could be attributed to the skewed distribution of the output variable towards 'no fire' cases in the Portuguese dataset. To enhance the robustness of the findings, the two datasets were merged, resulting in a combined dataset with similar and balanced features. The combination of data led to a significant improvement, with the accuracy of the predictive model increasing to approximately 71%. Notably, variables such as temperature and relative humidity emerged as prominent factors(100% and 45%, respectively) in determining fire likelihood. To further assess the impact of combining the datasets, a comparative analysis of the ROC Curves before and after the merge of the dataset was conducted. In conclusion, this study sheds light on the critical factors influencing forest fires in different geographical contexts and demonstrates the efficacy of combining datasets to improve machine learning model performance. The findings have significant implications for predictive modeling in environmental studies in the context of forest fire risk assessment.

Bhavya Bellannagari

NY - Columbia University

Discipline: Mathematics and Computer Science

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Zaki Shaikh

Abstract Name: Implementing Image Processing Tools to Control Plasma Jet Scanning Trajectories Over Wounds

The acceleration of wound healing relies on the utilization of reactive oxygen and nitrogen radicals (RONS), which can be supplied by exposing the wound surface to an impinging DBD plasma jet. In order to scan wounds, a 2D traversing system housing a DBD plasma jet operating at voltages 5-10 kV (10-40 kHz) was developed. In the current study, we optimized the operation of the traversing system by precisely controlling its scanning area, focusing exclusively on a wound image. To achieve this, MATLAB libraries were employed to image the wound surfaces and demarcate the wound boundaries using a rectangular box. An image processing program was developed and offered the flexibility of automated boundary setting or manual control using a cursor to mark the final boundaries. Subsequently, the coordinates of the rectangle were transferred to the 2D traversing system software to guide the plasma jet to the targeted wound area. Images at various stages of healing, displaying distinct color contrasts between normal skin and the wound, were utilized. The programming steps included reading the image, converting it into RGB color space, creating a binary mask for red pixels, and determining the maximum and minimum row and column indices of the red pixels. The boundary box was then overlaid, and the size and orientation of the box were adjusted to fully cover the image. Within the marked wound area, a zigzag path pattern was generated to ensure comprehensive scanning by the plasma jet. Finally, the coordinates of the box were determined and relayed to the microprocessor controlling software to accurately position the plasma jet over the targeted wound area.

The details of the image processing and 2D control of the traversing system, along with a video, will be presented.

Audrey Bellingham

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Audrey Bellingham

Abstract Name: Paula Scher: Paving the way

Abstract Paula Scher is an American born graphic designer who has completely shaped the way we view brands and advertisements today. Her unique outlook on the world around her has opened up so many new possibilities around her. This essay will take you through the struggles and perseverance of a young woman looking to make a career for herself through bounds of judgment in light of an amazing success story. Paula Scher has paved the way for ambitious young women looking to push boundaries and pursue careers in graphic design.

Ana Bello Marín

FL - University of Central Florida

Discipline: Social Sciences

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Dr. Nikola Mirilovic

Abstract Name: "Examining the Impact of Historical Legacies on Contemporary Anti-Americanism in Latin America"

The Latin American region is often cited as a prime example of historically rooted and deeply embedded opposition to the United States. In theory, the extensive record of American foreign policy interference and the suppression of state sovereignty provided grounds for historical legacies tied to these events to ingrain themselves in national culture. There is a rational assumption that is frequently made that individuals who witnessed American intervention first-hand could be marked by these experiences. This thesis aims to explore whether historical legacies are indeed a significant predictor of negative evaluations of the U.S. By exploiting cross-country variation in the years and types of cases of American meddling, this study tests the empirical significance of the relationship between legacy effects and anti-Americanism at the individual level of analysis. Based on the existing literature, we would expect those who received more exposure to intervention to express stronger anti-American attitudes. To quantify the potential effects, ordered logistical regression analyses are conducted at both the regional and country level using data from Berger et al. (2015) on cases of CIA intervention and public opinion data from the 2020 Latinobarometer survey. Interestingly, the results show that exposure to intervention is a significant predictor of anti-Americanism, but not in the expected direction. The analyses in this study indicate that individuals with less exposure tend to rate the U.S. more unfavorably than individuals with more exposure. Subset analyses and results are further discussed.

Ryan Belmont

CO - Regis University

Discipline: Natural and Physical Sciences

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Abstract Name: Mantled howler monkeys modify activity and spatial cohesion in response to seasonality

Climate change shifts seasonality, increasing the length of dry seasons across various habitat types which decreases precipitation, consequently impacting wildlife who rely on stable seasonal patterns. Howler monkeys in tropical rainforests rely on consistent seasonality for food. We investigated mantled howler monkeys' response to seasonality at La Selva Research Station, Costa Rica by comparing their activity and spatial cohesion across seasons. We predicted that howler monkeys would rest more, feed less, and locomote less during the wet season compared to the dry season, due to increased nutritional resources. We also predicted they would be more spatially cohesive during the wet season as greater food availability precludes the need to spread apart to obtain resources. We collected data on howler monkey activity and spatial cohesion at La Selva using instantaneous focal sampling during the dry season (November 2018-February 2019: 225 hours of behavioral data) and the wet season (May-June 2022 and 2023: 376 hours). As expected, monkeys spent significantly more time feeding in the dry season (14.1%) than the wet season (7.9%), although they spent more time locomoting in the wet season (6.3%) than the dry season (4.8%). As predicted, the mean distance between nearest neighbors was higher in the dry season (2.8m) than the wet season (2.5m). These results suggest that lower nutritional yields of dry seasons require increased feeding to meet energy requirements while high yields of the wet season allow energy expenditure on locomotion to search for preferred foods. The wet season's resource abundance allows howler monkeys to be more spatially cohesive due to the decrease in competition for resources. Since many primate species rely on stable seasonality, these results suggest that primates across the tropics will likely need to modify their activity and spatial cohesion patterns as climate change continues to increase the length of dry seasons.

Emiliano Beltran

TX - The University of Texas at San Antonio

Discipline: Mathematics and Computer Science

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Abstract Name: An Overview of the Main Components Implemented in Effective Teacher Professional Development Programs for Computer Science Educators

Recent research findings concerning the rates of different demographics' enrollment in higher education STEM programs suggest there continues to be a prevalence of Latinx underrepresentation, specifically in Computer Science. Therefore, as an attempt to locally tackle the low rates of Latinx college enrollment in the field of Computer Science, the CS4SA (Computer Science for San Antonio) teacher professional development (PD) program was developed. CS4SA is intended for in-service secondary teachers interested in

becoming certified to teach Computer Science and develop initiatives that will prompt their respective students to become interested in CS with the aim of increasing Latinx college enrollment among a large, urban, predominantly Latinx public school district in South Texas. Moreover, the program prepares teacher participants to become advocates for and leaders of CS education through an intensive year-long Programming and Culturally Responsive Teaching (CRT) Bootcamp with an emphasis on computer programming fundamentals using the Java programming language. This literature review focuses on the program's approach towards implementing effective teacher PD which was achieved through seven main components: content focused material implemented throughout the program, incorporation of active learning, support for collaboration, use of models of effective practice, coaching and expert support for teacher participants, offering of feedback and reflection forums, and sustained duration. These components were most commonly noted across several report findings regarding effective teacher PD for Computer Science educators and were all incorporated into the CS4SA program. This literature review provides an overview of the program's implementation of effective teacher professional development and highlights how the program aided teacher participants in embracing CRT as well as shifting their teaching styles based on the learnings achieved throughout the program's duration. The findings of this literature review are expected to be discussed among the CS4SA team to further efficiently develop the program's structure for potential future cohorts.

Bionca Benard

CA - University of California - Los Angeles

Discipline: Humanities

Authors:
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Abstract Name: "Interrogating Whiteness in The Handmaid's Tale Franchise"

Margaret Atwood's 1985 novel The Handmaid's Tale depicts a future where the US government has been overthrown by a militarized totalitarian theocracy and the fertility of women is treated as capital. Atwood's novel is typical in that a white worldview masquerades as the universal human perspective. Calling attention to this aspect of Atwood's narratives denaturalizes the way white racial experience remains unracialized. This project contemplates the absence of non-white characters in The Handmaid's Tale. The treatment of women's fertility as capital was a cornerstone of American slavery, resultantly, in the Black female experience. Hulu adapted the novel into a television series in 2017 with a multiracial cast. However, the diversity remained cosmetic as the issue is that it casts people of color without including the racial implications involved in these instances. Toni Morrison's theory of American-Africanism critiques this action of white authors removing Blackness and/or the Black essence from events to universalize these events. Atwood continued this dystopian storyline in her 2019 novel, The Testaments, including Hulu's newly raced characters, with the same result. Analyzing the characterization of women in the franchise, I consider how the creation of dystopian/utopian worlds relies on the selectivity of racial representation to reinforce the white literary canon. My analysis contends that neither the Hulu adaptation's multiracial casting, nor Atwood's appropriation of racial diversity, displaces the white dystopia of her 1985 novel. "Interrogating Whiteness" will investigate the literary and cultural mechanisms by which whiteness persists as the dominant standard of aesthetic imagination. Examining The Handmaid's Tale as a literary, televisual, and cultural spectacle argues that the structure of white futurism resists genuinely inclusive discourses.

Janessa Benavides

TX - San Jacinto College

Discipline: Education

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Abstract Name: From Fear to Safety: Unveiling the Safety Dilemma in Schools and the Quest for Solutions

In recent years, a growing number of students have grappled with feelings of insecurity in schools, facing challenges such as mental health issues, school shootings, and bullying. This surge in problems, particularly the increasing frequency of school shootings, has heightened concerns, generating a pervasive fear that has transformed the school experience into an apprehensive ordeal. Notably, 28 states, including Texas, permit teachers or school staff to carry firearms, adding a layer of complexity to the issue. Shockingly, guns have emerged as the leading cause of death for children in America since 2020, claiming the lives of 4,300 children in that year alone.This alarming situation prompts essential inquiries into the evolution of school safety measures over time, the effectiveness of 21st-century interventions in reducing violence, bullying, and cyber threats, and the existing gaps that urgently require attention. Our investigation focuses on key themes: cyberbullying, mental health in schools, and gun violence in schools. By scrutinizing these critical aspects, we aim to provide insights into the current state of school safety, evaluating the effectiveness of existing measures and identifying areas that demand targeted interventions. As students navigate an increasingly complex and challenging educational landscape, understanding and addressing these issues are paramount for fostering a secure and conducive learning environment.

Katharine Bendel

MN - St. Catherine University

Discipline: Natural and Physical Sciences

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Abstract Name: Developing an Optimized Clean-up Method and Contaminant Assay for Mass Spectrometry-based Proteomics

During proteomic studies, the build-up of detergent contaminants has been known to damage LC-MS (liquid chromatography-mass spectrometry) systems by washing away LC packing materials and contaminating MS instruments with polymers that are difficult to remove. These contaminants have been shown to reduce data quality as samples contaminated with sodium dodecyl sulfate (SDS), a detergent commonly used in cell lysis to extract proteins, showed a decrease in the quantity of peptides identified as well as retention time shifts during LC-MS analysis. Existing methods of testing for SDS and similar detergents include the ProFoldin NanoGram SDS Assay Kit and the Hayashi test, however, these techniques had relatively high limits of detection and required a large sample input. Due to these limitations, a new contaminant testing method, ContamSPOT, was developed that had higher sensitivity, used practical amounts of sample, and gave rapid results. This method was also shown to be simple, inexpensive, and able to flag multiple contaminants common in proteomics. The lower limit of detection for SDS was determined to be 0.0004% using ContamSPOT, a significant improvement compared to the 0.002% advertised sensitivity of the ProFoldin NanoGram SDS Assay Kit. ContamSPOT was further applied to quantitatively compare contaminant

removal of established sample clean-up methods, specifically SP2 (single-pot, solid-phase-enhanced sample preparation) and trap resins, previously observed to cause significant sample loss and ineffectively remove contaminants, respectively, to liquid-liquid extraction (LLE) with ethyl acetate, a proposed method of SDS removal. LLE via ethyl acetate was found to be a greener, less expensive, and more effective method of removing SDS from contaminated samples compared to SP2 and trap resins, as LLE removed 99% of 0.1% SDS while recovering 93% of peptides.

julie benhoff

NY - SUNY Buffalo State College

Discipline: Visual and Performing Arts

Authors:
#1 Julie Benhoff

Abstract Name: Celebrating and Embracing Small-Town Americana: Taking a Step Away from Urban America

In a world increasingly affected by urban sprawl and industrialization, this artistic project delves into the celebration and encapsulation of the Small-Town Americana through eight landscape paintings in the Buffalo and Mohawk Valley Region. Done in oil paint in the Plein Air technique, each artwork strives to capture and highlight the authenticity and charm of these towns in hopes of striking nostalgia and mood within viewers. Four of the eight paintings were done at various historical locations in Buffalo, New York, like The Canalside, Riverworks, The Cobblestone District, and Glen Park. The remaining four were done in various towns and villages in the Mohawk Valley Region, like Herkimer, Schuyler, and Clinton. All of the paintings were completed through the method and process of plein air painting, the act of painting outside where the subject matter is in full view. Plein air painting implies site and time specific. This technique requires artists to work quickly and efficiently to capture the changing light, colors, and atmosphere of their surroundings. It is arguably the best way to capture a scenery for what it truly is in that moment. Inspirations and references for this project were taken from the American painters, Edward Hopper, George Inness, and Fairfield Porter. All three painted either rural or urban landscapes with great use of composition, mood, and atmosphere. Although Buffalo is deemed more urban compared to the counties in Mohawk Valley, numerous similarities are present when comparing the two. This series of landscape paintings not only celebrates the visual beauty of a small town, but also serves as documentation of the town's history, spirit, and community. As an artist who focuses on painting figures, this project allowed me to enhance my landscape skills, therefore making it beneficial for a professional portfolio.

Savana Benitez

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
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Abstract Name: Exploring Peer Role Models' Influence on First-Generation College Students' Academic Success.

Over the past decade, undergraduate enrollment in U.S. post-secondary institutions declined by 15%.

Diverse, underrepresented student populations now exhibit greater enrollment in U.S. universities, prominently including Black, Latinx, and Asian individuals, along with a rising number of first-generation college students. Despite this, disparities persist in graduation rates between BIPOC and first-generation students compared to their White and continuing-generational student counterparts. Studies reveal that first-generation students face distinct challenges in transitioning from high school to college, compounded by socio-economic, ethnic, and identity-related factors. These difficulties contribute to a 23.5% overall dropout rate, significantly higher than continuing-generation students. Factors such as race, gender, and income intertwine with decreased persistence among first-generation students at 4-year institutions. While sociodemographic traits partly explain this disparity, they only account for a fraction of the issue compared to students with college-educated parents. This research aims to investigate the influence of peer role models on the academic success of first-generation college students. Understanding these dynamics, including the influences of nonparental role models, grit, self-efficacy, and academic motivation, is crucial in retaining and supporting this student retention within higher education. This study's focus on nonparental role models aims to shed light on an underexplored area of influence. By examining how nonparental role models relationships impact academic outcomes, this research seeks to offer insights into strategies that can support the success and retention of first-generation students, addressing disparities and fostering inclusive higher education environments. Keywords: first-generation college students, non-parental role models, college retention, grit, academic motivation, academic self-efficacy.

Braya Benjamin

IN - Indiana University Bloomington

Discipline: Natural and Physical Sciences

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#4 Skylar Wappes
#5 Jonathan Raff

Abstract Name: Sunlight Photolysis of Nitrate in the Presence of Iron-Bound Organic Matter

In the Raff laboratory, one of our main focuses is atmospheric chemistry regarding air pollution. Two key pollutants are nitrogen dioxide (NO2) and ozone (O3), which constitute a huge majority of all air pollutants in our atmosphere. The rationale behind investigating these particular pollutants is due to the wide range of respiratory related illnesses associated with prolonged exposure to poor air quality, which can also result in death. Globally, over 99% of the world population inhabits areas that have high exposure to diminished air quality (World Health Organization). Although air pollution has been heavily researched for many years, nitrous acid (HONO) is another key contributing pollutant that is incompletely understood. For this reason, we conducted a study that explores the sources and mechanisms of HONO. Our hypothesis is that HONO production is enhanced when nitrate photolysis occurs in the vicinity of catechol and oxalate with iron.

Manal Benjelloun

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
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#3 Patrick Elia
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Abstract Name: Do Demographic Characteristics Predict Creativity? An Exploration of the Relation between Creativity and Gender, Sexual Orientation, and Religion

The current study investigates the relation between creativity and demographic characteristics. Methodologically, we gathered survey-based data from a sample of 103 undergraduates from a large university in Southern California. These participants were asked to respond to a creativity question where they needed to write a short, original story, and also were asked to report their demographic characteristics, including gender, sexual orientation, and religion. A group of subject matter experts evaluated the short stories for creativity using a 1-5 scale; at least two subject matter experts evaluated each story. Results indicate that contrary to our hypothesis, there was no significant correlation between creativity and demographic variables. When interpreting the absence of a significant correlation between creativity and demographic characteristics, it is important to acknowledge the limitations inherent in this study. Implications and future directions will also be discussed.

Brittany Benner

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Role of FGF2 mRNA 5′ UTR in cap-independent translation initiation

The FGF2 gene encodes the basic fibroblast growth factor which controls cellular growth, proliferation, and cell signaling. Under normal conditions, FGF2 mRNA is translated via cap-dependent translation. However, under certain stress conditions, an internal ribosomal entry site (IRES) reportedly bypasses typical regulation switching to cap-independent translation. Cancer cells overexpress FGF2 ultimately leading to tumor growth. Mechanistically, the reported switch from cap-dependent to cap-independent translation remains poorly described. In order to understand the regulation of the FGF2 IRES under cellular stress conditions, we investigate the secondary structure using the SHAPE-MaP chemical probing strategy under different chemically-induced stress factors. Here we describe our experimental strategy and present a secondary structure model of the FGF2 mRNA 5′ UTR built using gently extracted total RNA from the A549 human lung carcinoma cell line. We observe a complex arrangement of nucleotides throughout the targeted region (nucleotides 2-426). We compare the cell-free SHAPE reactivity profile with reactivity data from live cells using reagents 5NIA. Prior studies show that FGF2 uses four upstream CUG start codons which are activated in transformed and stressed cells. We present our initial reports on stress-induced cells, where we compare SHAPE profiles to identify the effect of stresses such as hypoxia, nutrient starvation, and heat shock. We aim to elucidate structural mechanisms corresponding to the effects of stress on FGF2 translation control. Lastly, we describe a workflow for future experiments involving DMS-MaP, a strategy for direct nucleotide base-pairing analysis, and RNP-MaP, an RNA-protein interactomics strategy to study the influence of IRES-transacting factors under stress conditions.

Dylan Bennett

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

Authors:
#1 Dylan Bennett
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#3 Paula Jackson

Abstract Name: Short-Term Effects of a Prescribed Burn on the Soil Bacterial Microbiome in an Area Under Restoration for the Longleaf Pine

The longleaf pine (Pinus palustris Mill.) is a pyrophytic conifer that fronts one of the more endangered ecosystems within the Southeastern United States. This ecosystem is dominated by a matrix of herbaceous grasses and forbs in which pine trees are embedded, and which serve as propellants for fire, a necessary component and natural regulator for the ecosystem. While there is extensive knowledge on the importance of fire within the longleaf pine ecosystem, not much is known about the impacts of fire on the soil microbiome associated within this ecosystem. This study aims to investigate the immediate and short-term effects of a prescribed burn on the bacterial soil microbiome of a restoration area for the longleaf pine, located in the Piedmont region of Georgia. Soil samples from Paulding Forest Wildlife Management Area were collected from randomized plots before and after a prescribed burn (one day after, one week after, three weeks after, and two months after the burn) in spring of 2023. DNA was then extracted from samples using commercially available kits and concentrations of DNA extracted from soil were quantified using a Nanodrop spectrophotometer. DNA samples were sent to a commercial lab for the identification of bacteria. Pre-burn results indicate that Actinobacteria, Acidobacteria, and Proteobacteria dominate the soil microbiome. We predict there will be a noticeable difference in bacterial richness and a shift within the composition of the community of bacterial families within these phyla depending on the time since the burn. These analyses provide a connection between the soil bacterial microbiome of the longleaf pine and ecological succession after fire. This study is part of a longer-term study of the longleaf pine and its soil microbiome concentrating on the relationship between the different bacterial taxa, the above ground dominant herbaceous species, and environmental factors.

Catherine Bennett

NY - Colgate University

Discipline: Natural and Physical Sciences

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Will Russel

Abstract Name: Social and Ecological Determinants of Antimicrobial Resistance in Africa: A Systematic Synthesis of Epidemiological Evidences

BackgroundAntimicrobial Resistance (AMR) is one of the greatest global health problems posing a threat to human, animal, and environmental health alike. While the association between various factors and AMR is being increasingly researched, there is a substantial lack of understanding of the social and ecological determinants in developing nations. This review fills these knowledge gaps by synthesizing existing evidence

on the social and ecological determinants of AMR within the African population.ResultsTwenty-four studies were selected based on predefined criteria from PubMed. 54.16% (n=13) and 20.8% (n=5) of the studies reported on ecological and social determinants of AMR, respectively. Six (25%) studies documented both social and environmental determinants of antimicrobial resistance (AMR).The most commonly reported ecological determinants of AMR included water source contamination by drug-resistant bacteria either through irrigation systems for agriculture, storage for cooking, or farming practices. Of the social determinants analyzed, education level, individual knowledge, attitudes, and practices toward AMR, and community size were most closely associated. ConclusionOur review demonstrates the importance of social and ecological determinants of AMR among the African population. The findings reported in this review may be valuable to researchers, policymakers, clinicians, and those working in low-income countries to implement AMR prevention programs through a holistic approach.

Ty Bennett

IL - Northwestern University

Discipline: Engineering and Architecture

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Taeyoung Lee

Abstract Name: Non-Traditional Recumbent Tricycle Steering

This research focuses on developing a steering system for recumbent tricycles, specifically designed to improve accessibility for individuals with limited upper body mobility. The study evaluates various sensors to effectively translate human motion into precise steering control. A touch sensor, characterized by its 10° interval precision, was identified as the most efficient, providing quick response and high accuracy, while avoiding issues such as overshooting or settling time. This is in contrast to the joystick, which demonstrated excessive sensitivity and lower precision. The integration of mechanical engineering and computer science in this research presents significant implications for recreational therapy and accessibility. It offers innovative solutions that not only enhance the functionality of recumbent tricycles but also contribute to the broader field of assistive technology. The findings of this study can be used as a starting point in advancing the design of accessible recreational vehicles, emphasizing the need for multidisciplinary approaches to address mobility challenges and improve the quality of life for individuals with physical limitations. This research highlights the potential of adaptive technologies in creating inclusive environments and empowering individuals through improved access to recreational activities.

Gideon Bennett

GA - Kennesaw State University

Discipline: Education

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Gideon Bennett

Abstract Name: Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the

Experiences of International College Students

International student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years (Donohue et.al, 2021). The onset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before (Borgstrom & Mallon, 2022). Of growing concern is the rising mental health crisis that is sweeping through higher education which deserves an urgent response, especially for international students navigating unfamiliar academic and cultural terrains (Lee et al., 2021). International students are currently facing dire financial constraints, food and housing insecurity, and many other challenges that further complicate their college experiences (Duke et al., 2021). For international students, their college transitions are considerably different from traditional students. Specifically, international students' college transitions are muddied by their various high school experiences in other countries, assimilation difficulties, and living sometimes hundreds of miles away from home. Further, the grief, loss, and trauma experienced by international college students during the pandemic warrant special attention as we contemplate the resources and support required for their successful matriculation and degree completion (Sirrine et al., 2021). The lingering remnants of grief and trauma from the pandemic continue to impact the college experiences of international students and their ability to successfully navigate their academic and professional goals. Hence, through this qualitative study, our research explores the lived experiences of international college students. Specifically, our research question investigates the extent to which grief and trauma resulting from COVID-19 have influenced the educational journeys of international students. The goal of this research is to provide an opportunity to explore and identify strategies for better supporting international students as they navigate the complexities of their academic journey, fostering an inclusive and nurturing environment that promotes their academic and personal growth.

Sania Benoi

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
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Abstract Name: LASIK EYE SURGERY AND MENTAL HEALTH

Laser-Assisted in Situ Keratomileusis (LASIK) surgery is a widely performed refractive procedure aimed at correcting vision problems by reshaping the cornea, thereby improving light refraction onto the retina. Few studies have examined the potential relationship between LASIK eye surgery and patient suicide as pain post-surgery can lead to major depressive disorder (MDD) in patients in the United States. Although LASIK surgery is effective, there are certain potential side effects to be aware of, namely dry eye syndrome and neuropathic corneal pain. Individuals who undergo LASIK refractive eye surgery experience persistent ocular pain, potentially linked to neuropathic mechanisms, which may contribute to extended discomfort in some patients, that may lead to preoperative depression. According to American Academy of Ophthalmology they highlight that roughly 30% of LASIK patients experience dry eye symptoms post-surgery, peaking around three months and typically subsiding within a year. This literature review analyzes several studies evaluating contrast sensitivity changes post-LASIK using the CVS-1000E unit, Hospital Anxiety and Depression Scale (HADS) for emotional states, and Neuropathic Pain Symptom Inventory Modified for the Eye (NPSI-Eye) to assess ocular pain. These implications are crucial for both patients and healthcare professionals, mainly ophthalmologists to make an informed decision for individuals considering LASIK eye surgery. Patients should be aware of potential risks and how they may affect their mental health after the procedure. This study aims to investigate the possible link between major depressive disorder (MDD) and post-LASIK side effects such dry eye and neuropathic discomfort.

Lizzy Bensen

MN - University of Minnesota - Duluth

Discipline: Humanities

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Abstract Name: Intersectional Influences of Experienced Stigma on U.S. Sex Workers

Sex work is a stigmatized occupation, as sex workers challenge societal and moral norms. Based on intersectional theory, we conceptualized sex work stigma (SWS) as shaped and exacerbated by overlapping marginalized identities. Thus, the first objective was to explore the consistency of experienced SWS across gender and sexual experience. Additionally, research indicates that there are four domains in which SWS originates: community, law enforcement, healthcare, and family. Although SWS varies across these domains, little is known about how gender and sexual experience impact each domain. Therefore, the second objective was to explore gender and sexual experience differences across each domain of SWS.A total of 494 U.S. sex workers completed the four-factor Sex Work Experienced Stigma Scale and a demographics questionnaire assessing gender and sexual experience. Results revealed a significant multivariate effect of sexual experience, such that those with any amount of same-sex experience reported greater SWS than did those with exclusively other-sex experience. In the healthcare subscale, men reported experiencing significantly more stigma than did women. Additionally, the interaction between gender and sexual experience was significant for the law enforcement subscale, such that men with same-sex experience reported greater stigma than did women with same-sex experience. No gender differences were identified among those with only other-sex experience.These findings indicate that sexual experience has a greater impact on experienced SWS among U.S. sex workers than gender, suggesting that when compounded with the stigmatized trait of engaging in sex work, sexual experience carries more weight than gender. Additionally, in the healthcare and law enforcement domains, multiple stigmatized identities resulted in heightened experiences of SWS, suggesting that those in positions of authority may treat sex workers differently based on intersectional identities. Implications for sex workers' well-being and avenues for healthcare and law enforcement sensitivity training will be discussed.

Jessica Benson

CA - University of California - San Diego

Discipline: Social Sciences

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Abstract Name: Word Learning and Relational Reasoning in Typically-Developing Children and those with Autism Spectrum Disorder

The shape bias is a well-studied word-learning mechanism that young children use to extend novel labels to objects of the same shape, and children who develop this bias are able to learn object names more effectively during their first years of language development. Previous research has suggested that children with Autism Spectrum Disorder (ASD) do not develop a robust shape bias (Tovar et al., 2019) and that children with ASD may not depend on shape for word learning (Potrzeba et al., 2015). Other work has drawn connections

between word learning and more general reasoning abilities (Hoyos et al., 2016), but this link has not been investigated in a neurodivergent context. Here, we seek to (1) further document differences in shape bias between typically-developing children and children with ASD; and (2) examine the relationship between shape bias and relational reasoning across children expressing a range of behaviors associated with ASD. In the present study, 4-year-olds with and without a diagnosis of ASD will complete three tasks: a Relational Match-to-Sample task and a scene analogy task used to measure relational reasoning, and an object sorting task used to measure the strength of the shape bias. The Autism Quotient is a parent questionnaire which will determine each child's number of ASD-related traits. Correlational analyses will then be conducted between ASD-related traits, degree of shape bias, and relational reasoning performance in order to gain further insight into one particular aspect of children's noun learning and its relationship with abstract reasoning.

Angel Bentsil

MD - Howard Community College

Discipline: Mathematics and Computer Science

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Abstract Name: A Multiple Regression Analysis of Health Care Access in Least Developed Countries

In a world of technological advances and breakthroughs in all aspects of life, healthcare is an area that has seen some of the greatest changes in the past century. For some, accessibility has increased and the ability to attain primary and specialized care has never been easier. However, others, specifically those in developing countries, have been somewhat left behind in these advances. Availability and accessibility to health care are vital to every person's existence, no matter where they live in the world. This research aims to quantify healthcare access in lower-income countries by analyzing the number of physicians and comparing them to different socioeconomic rates for 46 of the world's Least Developed Countries (LDC). According to the United Nations Department of Economic and Social Affairs, a country is considered an LDC by the gross national income of that country, the human asset index, as well as their economic and environmental vulnerability. The data in this research is being collected from the following sources; the World Health Organization, United Nations, World Bank, and Central Intelligence Agency. The information in this research is based on several factors present in each country including average income per year, median age, number of hospital beds per thousand, neonatal mortality rate, average years of education, and life expected from birth. Using multiple and linear regression, this data is charted and analyzed to ascertain any trends that exist between the number of physicians and the factors listed above.

Nicholas Berenson

NC - North Carolina State University

Discipline: Natural and Physical Sciences

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Abstract Name: Urbanization and Community Forestry in Nepal: Assessing Changing Forest Dynamics and Livelihoods

Rapid urbanization is significantly altering the landscape of Nepal, particularly affecting forest dynamics and community forestry (CF). This study investigates the impacts of urbanization on forest-dependent livelihoods in Nepal, emphasizing the changing socio-economic dimensions of rural populations. The increasing replacement of forest-based products, like fuelwood, with alternatives such as LPG gas, necessitates an in-depth understanding of current and evolving dependency on CF. This study will assess the extent of livelihood dependence on forests by focusing on three primary dimensions within CF: cash income from forest products' sales, LPG usage, and fodder utilization. A 'forest reliance index' will be procured based on the parameters defining livelihood dependence on forestry, the index is designed by the varying degrees of dependence on CF among rural and peri-urban communities. Data were gathered through random sampling of twelve households in the peri-urban district of Kavre and a broader random sample from rural districts of Pyuthan and Salyan. Factors including district population size, travel distance between urban center and the Community Forestry User Groups (CFUGs), and population density will be analyzed to refine the forest reliance tool. Moreover, values and income households obtained from community forests are tested for systematic variance between urbanization and market integration.Expected findings from this study will be instrumental in future research, contributing to the assessment of environmental goods and services provision by CFUGs, understanding patterns of out-migration, land-use decisions, social capital dynamics, and the impact of external shocks like the COVID-19 pandemic. There were further insights suggesting adaptive community forestry policies, strategizing energy transitions, focusing on community capacity building, and tailoring interventions based on the unique characteristics of peri-urban and rural communities. By elucidating evolving social dimensions of CF and the associated livelihood options available to local populations, this research aims to guide the future trajectory of CF in Nepal.

Jordan Berezowitz

KY - University of Kentucky

Discipline: Engineering and Architecture

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Abstract Name: Copper Oxide Nanoparticles Induce DNA Damage in Endometrial Cancer Cells

Chemotherapeutic resistance across many types of cancer is one of the greatest complications to cancer therapy and results in few treatment options for patients plagued with this disease. The vital demand for innovative anti-cancer drugs and drug delivery systems arises from these issues, revealing the importance that research on anti-cancerous compounds has on effective care for patients. Endometrial cancer is the most common gynecological cancer worldwide and is commonly treated using carboplatin, a platinum-based drug. Carboplatin resistance and unequitable access to treatment for endometrial cancer patients validates the need for a non-invasive form of endometrial cancer therapy. It is proposed that copper oxide nanoparticles can be used as an alternative to carboplatin when encapsulated in a polymeric nanoparticle for use as a drug delivery system. Copper oxide nanoparticles pose the potential as an anti-neoplastic compound due to Cu2+ ions demonstrating the ability to induce reactive oxygen species leading to double stranded DNA breaks ultimately resulting in apoptosis. Through viability assays, endometrial cell lines all showed sensitivity to copper oxide nanoparticles; however, trends were not identified across all cell lines that were tested. Using this information, Western Blot analysis was used to identify specific expression levels of apoptotic proteins, DNA repair proteins, and protein markers when DNA is damaged. Western Blots involved the treatment of cells in 24-well plates with varying concentrations of copper oxide nanoparticles for 24 hours. Gel electrophoresis separates proteins and primary antibody complexes. The differences in the expression levels

of these proteins after cells are exposed to copper oxide nanoparticles can indicate the mechanism of toxicity within the different cell lines, ultimately explaining the differences in viability.

Henry Berger

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

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Abstract Name: Comparing Inhibitory Control: Emotional vs. Neutral Stop Signal Tasks

Response inhibition (RI; the ability to stop an unwanted ongoing response) has historically been studied utilizing only non-emotional stimuli. Current literature needs a direct comparison of RI using emotional vs. neutral stimuli. To better understand how RI is affected by emotionally charged, real-world conditions, compared to dry, neutral conditions we are implementing the traditional Stop Signal Task (SST; standard tool of RI assessment) along with an Emotional Stop Signal Task (ESST; modified version of the SST). In an online study, 250 participants will complete self-report measures of experienced symptoms relating to several psychological disorders and complete three Stop Signal Tasks: utilizing neutral stimuli (neutral face), utilizing emotional stimuli (angry face) of the same modality and context as the neutral face task, and a control task utilizing neutral stimuli (upward arrow). We expect to find a significant increase in stop signal reaction times (SSRT; the primary index of RI deficit in the SST and ESST) in the emotional condition, indicating more pronounced difficulty in RI. Error commission and omission rates thus far have been higher than expected overall, but more so with the emotional task than neutral, further indicating decreased inhibition ability in the emotional condition. We hypothesize a decrease in RI with participants reporting experiencing clinical symptoms compared to those reporting no symptoms, demonstrating larger deficits in RI when symptoms are greater in number and/or severity. These results would suggest that much of the previous work on RI using only the neutral SST, although in-depth and informative, can shed limited light on the true experience of people's inhibition abilities in the real world.

Henry Berger

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

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Abstract Name: Attention Networks and Attention Bias in Social Anxiety Disorder

Attention bias (AB) toward threat has been studied as a primary cognitive process underlying social anxiety disorder (SAD) with mixed results. Recent research suggests that AB is dynamic and fluctuating rather than static and stable, and the concept of attention bias variability has been proposed (ABV; Naim et al., 2015; Zvielli et al., 2015). Little is known about the relationship between attention networks and ABV in SAD.

This study aimed to examine the relationship between attention networks, AB, ABV, and SA symptoms. The 89 participants of this study and completed three SA symptom self-report questionnaires, as well as two computerized attentional tasks: A dot-probe task indexed an AB score, and the attention network task-short version (ANT-S), computed three attention network indices (Alerting, Orienting, and Executive Control). Additionally, two types of ABV indices were calculated using Zvielli et al. (2015) and Naim et al. (2015) approaches. The AB index was positively correlated with the two of the three SA symptom measures, and marginally correlated with the Orienting component of the ANT-S. Only the Orienting component of the ANT-S was correlated with SA symptom measures. While the two ABV scores were inter-correlated, they were not significantly correlated with SA symptoms. Findings demonstrate a positive correlation between AB and SA symptoms, confirming previous research that greater attentional vigilance toward threat is related to higher levels of SA. Furthermore, the Orienting component of attention network was positively associated with SA symptoms, indicating that the cognitive ability to selectively allocate attention toward certain stimuli is relevant to SA. ABV was not linked to the severity of SA, indicating that ABV may reflect a different aspect of higher-level attention control, as compared with the AB index reflecting attentional vigilance. More research is needed to establish how ABV is associated with existing AB indices and anxiety symptoms.

Theodore Berger

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

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Abstract Name: Epoxyketone-Based Peptide Derivatives Are Highly Selective and Potent Inhibitors of the Plasmodium falciparum Proteasome

Malaria, caused by Plasmodium species, sickens nearly 250 million people globally and leads to 619,000 deaths yearly. Of these deaths, 77 percent are children under 5 years of age. New and more efficacious agents to treat this devastating disease are urgently needed. Here, the synthesis and activity of potent and highly selective epoxyketone-based inhibitors of the malaria parasite proteasome subunit are reported. Key to two of these compounds' activity is an inverted binding model through the introduction of a D-amino acid at the P3 position and a 2,4-difluorophenylalanine-based epoxyketone warhead at the P1 position. In an effort to assess and improve inhibitor half-life and pharmacokinetic profile, P4 capping components were varied, and beta-amino acids were introduced at the P2 and P3 positions. Pharmacology, synthetic schemes, expected outcomes, biochemical and biological data, as well as future plans will be discussed.

Lillian Bergman

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

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Abstract Name: Dietary selectivity in picoplankton capture by the sponges Xestospongia muta and Niphates digitalis

Suspension feeding is an essential feeding mode in the marine benthos, with roles in the cycling of organic matter and other nutrients that helps to support high species diversity on coral reefs.The ability of sponges to efficiently remove organic matter from numerous sources in the water column contributes to their roles in nutrient cycling and dominance on Caribbean coral reefs. In this study, we examined the temporal variability and species specificity of prokaryotic picoplankton capture by two dominant sponge species in the Florida Keys. Incurrent and excurrent water were sampled from individuals of Xestospongia muta and Niphates digitalis on three nonconsecutive days, and prokaryotic community composition was evaluated using 16S metagenetics. Analysis of these communities revealed a consistent dietary “core” of taxa consumed by both species, as well as additional distinctions between each species. These results suggest that sponges may target specific taxa within the picoplankton community, providing insight into individual species’ contributions to nutrient cycling on coral reefs.

Anetzy Bermudez Torales

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

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Abstract Name: The Functional Dynamics of Cohesin in Living Cells

Cohesin is a protein complex within the nucleus of eukaryotic organisms that is involved in the structural maintenance of DNA and regulating gene expression. It is highly conserved and is made up of 4 protein subunits: SMC1, SMC3, SCC1, and SCC3. Important questions remain about how these subunits are localized in living cells and how dynamic they are compared to one another. Here we seek to visualize the functional dynamics of the individual subunits of the cohesin complex within budding yeast cells. The experimental practices of PCR, Gel Electrophoresis, and Transformation are to be used in order to image live yeast cells at single-molecule resolution. The expected results of the experiment include being able to fluorescently label the subunits to track and compare their dynamics in their environment. Our findings about cohesin in budding yeast cells will further inform experiments concerning complex organisms and how their cellular activities are organized in space.

amparo bernabe

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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Abstract Name: Housing Design for Cataract Visual Impairment

The project aim is to create a single-family house design to provide a family member suffering from a cataract vision impairment with enhanced accessibility, comfort, and aesthetic environments. The design purposes are to make comfortable and safe living spaces and accommodate all family members' needs and necessities by considering their occupations and daily lifestyles.A Cataract is a cloudy area in the lens of the eye, which can cause blurry or dim vision, sensitivity to light and glare, difficulty seeing at night, and seeing colors as faded or yellowish. As societal perspectives evolve, there's a growing emphasis on creating environments that accommodate diverse needs. Many case studies and research findings highlight how contemporary architects and designers are rethinking traditional norms and employing cutting-edge technologies to create more inclusive house design. For instance, voice-activated devices, tactile interfaces, and spatial recognition technologies can be integrated into house designs to provide users with greater ease of navigation.Based on the research findings, the design solutions of this project are controlled lighting throughout the home, along with rolling blinds to control natural light in the house. Also, kitchen cabinetry is push to open to create a safer and practical environment, cabinet colors and wall colors are contrasting colors for facilitated visibility. Another design feature is grab bars in necessary areas such as bathroom and shower. Lastly, a large open space and symmetrical floor plan was used for easy navigation throughout the home, using a logical floor plan connecting the primary bedroom next to the primary bath, following the primary closet and lastly the laundry room.In conclusion, this single-family house is an inclusive and enhanced home for anyone with cataract vision impairment.

Theresa Marie Bernal

CA - California State University - Los Angeles

Discipline: Health and Human Services

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#2 Leila Rahnama

Abstract Name: Knowledge, Opinions, and Perceived Barriers toward Research among Undergraduate CSULA students

Background: Research can present undergraduates with valuable tools and knowledge that can be used in future settings. This study aims to assess California State University, Los Angeles (CSULA) undergraduates' knowledge, opinions, perceived barriers towards research, and reasons for their lack of involvement in research.Methods: This cross-sectional study was conducted among the undergraduate students of CSULA. The required information was obtained through a self-designed questionnaire in Qualtrics. Participants were asked to answer 15 multiple-choice and 2 matrix-style questions on their demographics, knowledge, opinions, and perceived research barriers.Results: A sample of 49 students voluntarily participated in this study. 79.6% of participants were first-generation university students coming from their immediate families. To understand students' interest, we observed that 57.1% (n=28) of participants had not participated in a research study, and 77.6% (n=38) of participants were unaware of the campus research opportunities. General knowledge of research among students varied; however, it showed potential. Most students exhibited positive attitudes toward research, with 73.5% (n=36) of participants agreeing that research is interesting and beneficial for their future and 87.8% (n=43) understanding research's value. 44.9%(n=22) consider research stressful, and 40.8 (n=20) find that the uncertainty of starting research was a commonly perceived barrier. Conclusion: Our sample of undergraduates showed positive attitudes towards research, although students were nervous about starting research and finding research stressful, which were barriers to engaging with research. Therefore, students' positive attitudes towards research can be developed into better training systems.

Rachel Berns

CA - Chapman University

Discipline: Interdisciplinary Studies

Authors:
#1 Rachel Berns

Abstract Name: Pasta and Politics: A Taste of Culinary Xenophobia in Italy

Italy has become a common “landing country” for many European and Asian immigrants, creating a perception of invasion that has led to cultural reactionism masked in the reinforcement of “traditional cuisine.” For so-called traditional foods to endure, they must continually be reinvented, bearing different meanings and social values throughout time and space while accumulating rich, cultural baggage that serves as a powerful marker of identity in a given society. This project explores the role of traditional cuisine in Italian national identity and pride, and the subsequent historical culinary antagonism maintained in widespread attitudes toward ethnic cuisine in Italy. Through an analysis of primary and secondary literature, complemented by qualitative field observations in the Italian cities of Perugia and Modena, several instances of culinary discrimination are discussed within the political, social, cultural, and historical complexities of preserving tradition while also accommodating diversity, highlighting an interplay between nostalgia and xenophobia that we can almost taste. Key factors such as food legislation, the tourism industry, and evolving attitudes among young generations are considered to yield a dynamic picture of the current perceptions of ethnic cuisine in Italy. Despite lingering biases, there is hope for a future of culinary coexistence and integrative celebration of non-Italian foods in Italian culture, driven by young individuals’ openness to diverse tastes and traditions.

Hannah Bernstein

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Hannah Bernstein

Abstract Name: How Apple Made Computers More Accessible Through Design

The computer company, Apple, created one of the first home computers that was accessible to a wide range of people. By utilizing user-first design and embracing simplicity, Apple created a product that virtually anyone could use. Apple employee, Don Norman, argued that simple design is easier for market consumers to understand. Designers, such as Susan Kare, implemented these ideas into the design work that made Apple’s graphics so appealing. It is difficult to fully appreciate these design choices that have become so commonplace and expected in modern computers. To create context as to why Apple was such an improvement on the technologies that came before, this paper will outline the history of the computer and the evolution of its design. This history will begin with punch card and terminal computers, move onto the computer mouse created by Douglas Englebart, transition into the research facility Xerox PARC who honed these ideas, and finally end with Apple’s adoption of the technology and their own version of improvements. The computer evolved from clunky mouse adaptations and confusing GUIs into the seamless usability that people have grown to expect. By outlining the history of this experimentation, it becomes clear what a vast improvement Apple made to the computer’s usability. Apple applied graphic design principles to a product whose aesthetics had never been considered important. By making the computer less enigmatic and more visually appealing, Apple created a product that people felt comfortable using. Apple’s changes to the computer demonstrate the power of design to fundamentally change how people view and interact with a product.

Peter Berry

WI - University of Wisconsin-Oshkosh

Discipline: Natural and Physical Sciences

Authors:
#1 Peter Berry
#2 Nadia Kaltcheva

Abstract Name: Demonstrating Stellar Magnitude Using Lasers and Polarizers

Stellar magnitude can often be a difficult concept to visualize, as it is a non linear scale based on human perceptions of stars. Seeking to model this in a classroom setting, this paper details a physical demonstration of this concept of stellar magnitude. Said demonstration is achieved by taking Malus' Law, which states that for polarized light, passing through a polarizer effects the lights transmitted intensity according to the relation where Θ is the angle between polarizer and the plane polarized light. Because a difference of 1.0 magnitude correlates to a 2.512 difference in luminosity, we can use this relation in tandem with Malus' Law to generate a list of associated angles given IO is equal to one and I, the relative intensity, is equal to . Thus, we can show . From this equation we can set up the polarizers in front of the already polarized laser light with the angle of the polarizers set to the angle generated from the previous equation. This setup demonstrates the stellar magnitudes one through six as visual points of light. This demonstration has applications to both show students in heavily populated areas the visual appearance of stellar magnitude, and its setup can function as an opportunity to show the applications and physics of Malus' Law, Polarizers, and Laser light. Everything done has been achieved using PASCO equipment, which is common lab equipment found in many schools.

Lakrisha Berry

OK - University of Central Oklahoma

Discipline: Mathematics and Computer Science

Authors:
#1 Lakrisha Berry

Abstract Name: From Tacos to Functions; Understanding Functions and Relations with Tacos Abstract

Intro to proof writing courses are commonly a students first look at logic and more abstract ideas. These concepts are extremely important but can be difficult to grasp. While some texts use venn diagrams for concepts with sets, there are few visualizations used outside of these and those that are tend to be abstract themselves. Our goal was to create effective visuals using graphic design techniques along with the psychology of learning to create images that will increase understanding of topics in intro to proof-writing classes. By using tacos as fun overarching metaphors it's easier to see the relationship between these more abstract concepts. This talk will focus on the images developed for functions and relations. The images use color coordination and typography rules to make the concepts visually stimulating and easy to comprehend. A cartoon-like aesthetic makes the images more welcoming for students. While these initial visualizations were drawn with Intro to Proof Writing courses in mind, I believe these visuals can help anyone who is interested in understanding fundamental concepts pertaining to functions.

Timothy Berthiaume

FL - Jacksonville University

Discipline: Visual and Performing Arts

Authors:
#1 Timothy Berthiaume

Abstract Name: Planets in the Stars: The Line Between Inspiration and Stealing Through the Music of John Williams

Similarity is not equivalency. The line between stealing and inspiration in music is ambiguous and controversial. John Williams is a film composer who wrote music that created suspense in Jaws, wonder in E.T Extra Terrestrial, and adventure in the Star Wars franchise. The music within Star Wars rejuvenated the symphonic orchestra in film scoring, due to its grand and epic nature. However, scholars and fans alike have pointed out striking similarities in Williams' scoring to works of past composers, claiming that he was stealing the musical motifs, melodies, and even rhythms. Like Richard Wagner, Williams demonstrates his technical ability by creating "leitmotifs", for each of his characters that not only were unique in their setting, but were adaptable to the situation that they were presented in. Williams uses these motifs to create emotions and tell unique stories. When using similar rhythms to his predecessors, like Gustav Holst, Williams composed distinctive melodies in the foreground. He created tonality and form that had audiences humming his tunes when exiting the theater. Though similar in orchestration, Williams also created virtuosic colors that set out from the rest. Whether it is creating a piece that uses similar melodic lines, or even chord structure, in music, the transformation of previous composers' music is crucial to making a new and innovative piece. Williams adopted previous ideas and created his own style and mark on history.

Avriza Bestafa

CA - University of California - San Diego

Discipline: Engineering and Architecture

Authors:
#1 Sirasit Prayotamornkul
#2 Yajuan Li
#3 Lingyan Shi

Abstract Name: Investigating age retardation and metabolic dynamics regulated by metformin in Drosophila with multimodal imaging

Aging is a progressive deterioration of physiological functions associated with alterations of lipid metabolism. The convoluted mechanism of changing lipid metabolism renders complexity in the investigation of the role that lipids play during aging. Metformin, a biguanide drug used as a treatment for type 2 diabetes mellitus (T2DM), exhibits anti-aging effects through the inhibition of enzymes of the mitochondrial respiratory complex I, consequently activating the AMP-activated protein kinase (AMPK). Despite the prevalent prescription of metformin, the age retardation potential of the drug remains understudied, especially at the subcellular level. Unprecedentedly, we applied a multimodal optical imaging system of deuterium oxide (D2O)-probed stimulated Raman scattering (DO-SRS) and two photon excitation fluorescence (2PEF) microscopies to non-invasively visualize the spatiotemporal lipid metabolic dynamics and optical redox status in the fat body tissues of metformin-treated Drosophila. We observed that metformin significantly prolonged the lifespan of flies while reducing de novo lipogenesis through the upregulation of autophagy and fatty acid oxidation. Moreover, metformin not only rescued the flies from oxidative stress, but subcellular analyses of lipid droplets also revealed that metformin impacted lipid saturation. For the first time, our novel label-free molecular visualizing imaging technique demonstrates the ability to study metabolic activity in situ, providing the insights into the mechanism correlating the anti-aging effect of metformin to its regulation of lipid metabolism.

Vanessa Betancourt

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
#1 Vanessa Betancourt

Abstract Name: "The Choice is Our Identity"

My work explores my identity as a Colombian-American artist. Growing up, I always felt trapped between American and Colombian cultures. I was born in the U.S and was raised in American culture but I have Colombian blood running through my veins. I always struggled with identity during my youth and still do to this day. I feel that growing up I have been so Americanized which is nothing I am ashamed of but makes me feel as if I am losing touch with my roots. Out of my family “lineage”, my family is the most Americanized in the sense that we all speak English and haven’t visited our motherland in years. I’ve had moments where my cousins tell me I am not Colombian enough because I barely speak Spanish, and moments where my grandmas, aunts, and family friends laugh and joke about me being so quiet because I struggle to communicate with them. My father became a U.S. citizen when he decided to join the military 28 years ago, and my mother just got her citizenship a few years back so she has broken “Spanglish”. How she feels about her English is exactly how I feel about my Spanish, and I feel this is something many individuals can relate to. For my piece, I wanted to make a self-portrait using oil pastels and acrylic paint in a variety of colors as it portrays the colors you see in Colombia within the streets and buildings. I also incorporated flowers, traditional foods, and the Colombian flag since it is a big part of our identities. With this piece, I felt inspired by the love I have for my roots and wanted to show it is something I will never give up and will take with me for generations of my family line.

Jakyia Bethea

NC - Winston-Salem State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jakyia Bethea

Abstract Name: Perflurooctane Sulfonate Exposure Duration on Hepg2 Cells

Perfluorooctane sulfonate is a type of PFAS chemical that due to its health concerns has been phased out of production from 2000 to 2015. Although PFOS is no longer being produced, the chemical is still found in surface water and soil, so it is still an active health concern due to its long half-life, and bioaccumulation in humans. While the adverse effects of PFOS on liver health have been reported, limited research has investigated the relationship between PFOS exposure duration and hepatic cellular outcomes. The objective assess the effect of varying PFOS exposure duration on oxidative stress markers and lipid accumulation in HepG2 liver cells. HepG2 cells were cultured in William’s E medium on collagen coated tissue culture plate. Cultured HepG2 were exposed to PFOS at concentrations five concentrations over different exposure durations ranging from 48 hours to 96 hours. Oxidative stress markers including Reactive oxygen species production and antioxidant capacity were assessed. ROS was measured using 2',7'-dichlorodihydrofluorescein diacetate assay kit. Total antioxidant capacity was determined using a commercial Oxiselect antioxidant assay kit and uric acid served as standard. All experimental data were analyzed using

JMP software. Our results showed that duration of PFOS exposure significantly influenced oxidative stress levels in HepG2 cells. PFOS exposure at 24 hrs, and 48 hrs led to transient increase in ROS production. Exposure to high PFOS concentration at 96 hours resulted in sustained oxidative stress characterized by elevated ROS levels and decrease antioxidant capacity. PFOS duration was positively correlated with intracellular lipid accumulation. The study findings demonstrate the role of PFOS exposure duration in modulating oxidative stress and promoting steatosis. Prolonged PFOS exposure exacerbates oxidative stress and increased lipid accumulation indicative of steatosis. These preliminary findings emphasize the importance of considering exposure duration when assessing PFOS-related hepatic effect and therefore requires further studies.

Victoria Bevien-Guevarra

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Victoria Bevien-Guevarra

Abstract Name: How Louise Fili Changed Design

Louise Fili is an inspirational graphic designer who inspires many young designers. Her Italian background and delicious food inspire her work. She shows designers that they can incorporate their favorite things into their work and create something new.

Jonak Bhagawati

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
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Sushant Chiramana

Abstract Name: Development of a Temporal Space Debris Population Calculator

As more and more rockets, payloads, and satellites are being launched into space, the increased risk of Space Debris in the Low Earth Orbit is becoming a growing problem. This poses a risk to future launches as adjustments in mission control have to continuously be made in order to avoid any disasters that deal with debris collision. Furthermore, technology is limited to detecting space debris of only a limited range of size. To be able to plan safer future launch missions, the purpose of the research is to come up with a digital calculator that is able to evaluate the population of debris in the LEO (Low Earth Orbit) at a desired time stamp. The input can include a timestamp from the past, present as well as future. As an output, the population of debris in the LEO at that timestamp will be displayed. The output for the past and present input will be extracted from a compiled data from existing calculators, while the output at a future date input will be a prediction evaluated using a MOCAT model. To make the research efficient, the work is being conducted in two teams. Team 1 at Iowa State University is working on extracting data from several existing calculators such as SpaceTrack, Celestrek, and DISOSWEB. Team 1 compiles, arranges, and sorts the extracted data into a matrix and sends it to Team 2, working at the Massachusetts Institute of Technology. Team 2 takes the

compiled data and uses it to create a MOCAT model to create a simulation. This helps predict the possible number of debris in the LEO at a given time in the future. In collaboration, a calculator is created that is able to evaluate the population of debris at any given time - past, present, and future.

Krishna Bharadwaj

IA - University of Iowa

Discipline: Natural and Physical Sciences

Authors:
#1 Bharadwaj Krishna
#2 Lauren Conroy
#3 Paul Sereno

Abstract Name: CT segmentation on Indian Abelisaurid

The use of CT segmentation has been used widely in paleontology. Through segmentation of fossil scans we can look at bones not physically available to us, we can look at parts of the bone hidden in the interior of the fossil. For example, we can take a detailed look at an isolated tooth. In an actual fossil this tooth could be concealed by other parts of the fossil and would require possibly damaging the fossil to look at. Using segmentation, we can simply segment only the tooth, giving us a detailed 3D image of the tooth for research. To do segmentations we used software, 3D Slicer, using the newest version. Using a 3D slicer, we plan to segment the skull material of an Indian abelisaurid, Indosuchus. Originally described by Huene and Matley in 1921, Indosuchus has proven to be taxonomically difficult to classify, as its material was very fragmented. Indosuchus has an overlap of skull material with two others Indian abelisaurids, Rajasaurus and Rahiolisaurus, which were described in 2003. We believe that these three species may be the same, however Rajasaurus and Rahiolisaurus have no shared skull bones present. Indosuchus contains the bones that both the other species possess. Due to this we hope that Indosuchus can be the “Rosetta stone” for comparing these various species. We have scan data of Indosuchus material, which is why we are pursuing segmentation. We hope that through this comparison of overlapping material in these three species we can further develop our understanding of abelisaurid phylogeny.

Joshua Bhasera

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
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Abstract Name: Attitudes Towards Mental Illness across Black and White College Students

This study examined attitudes toward mental illness across gender and ethnicity in a sample (N=73) of black (n=22) and white (n=51) undergraduate psychology students attending California State University, Fullerton (CSUF), located in Orange County (OC), California. Participants completed an online survey including the Beliefs Towards Mental Illness (BTMI) scale, which focuses on Dangerousness, Poor interpersonal and social skills, and Incurability. Hypotheses were that (H1) black v. white and (H2) male v. female students

would express less positive attitudes toward mental illness. H1 was partially supported. A significant difference in the predicted direction was found for Dangerousness ($F(1,72)= 7.392, p= 0.008$), whilst no significant differences emerged for Poor interpersonal and social skills and Incurability. H2 was not supported, with women perceiving the mentally ill as displaying Poor interpersonal and social skills ($F(1,72) = 11.331, p= .001$) more so than men, and no significant gender differences were found for Dangerousness and Incurability. Whilst only 2% of the OC population and 2.2% of the CSUF student population is black, black hate crimes comprise over 50% of reports. Many hate crimes are committed by those who blame mental illness for their actions, and with ethnic minority victims, this may increase negative views of those who suffer from mental illness. These findings may further illuminate ethnic minority communities of those suffering from mental illness and help to identify misperceptions of mental illness in these communities.

Dhruv Bhatt

CA - Stanford University

Discipline: Natural and Physical Sciences

Authors:
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#2 Emily Trimm
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Abstract Name: Identifying Mechanosensing Pathways In Artery and Vein Endothelial Cells

Coronary artery bypass graft (CABG) surgeries redirect blood flow from an obstruction in a vessel in order to maintain correct blood flow with the cardiovascular system. CABG procedures typically use a graft from the saphenous vein or radial artery. 5-7 years after a CABG procedure saphenous vein grafts have a patency of 75-86%, whereas radial artery grafts have patencies of 90-98%. Reductions in vein patency are due to thrombosis, intimal hyperplasia, and atherosclerosis. However, on a cellular level, these changes could be initiated by mechanosensors (sensors on endothelial cell surfaces that detect changes in shear stress experienced by the cell). Thus we hypothesized that the differences between arterial and venous endothelial cell responses to fluid shear stress mitigated by mechanosensors could contribute to earlier venous patency reduction in arterial settings. To test this we constructed an experiment in which we could precisely control the levels of shear stress experienced by vein and artery endothelial cells and observe morphological changes in terms of cell elongation and polarity. This was done by using the IBIDI flow and orbital shaker machines to provide shear stress levels of 5 and 25 dyne to the cells. After cells had been underflow for 24 and 48 hours they were removed, fixed, and stained for GM130 (golgi), DAPI (nucleus), and VECAD (cadherin membrane marker) to conduct cellular polarization and elongation analysis using FIJI. In addition, a qPCR was conducted to determine gene expression differences between Artery and Vein Endothelial cells. It was determined that Arteries were able to polarize under 25 dyne and 5 dyne conditions while veins showed little polarization under 5 dyne. In addition, both KLF2 and KLF4 were found to be upregulated in Artery ECs under shear stress while the same was not the case in Vein ECs.

Shamik Bhattacharya

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Model Averaging Toolbox for Enhanced Climate Change Projections: Methodology and Implementation

Climate change modeling is a complex endeavor that requires the integration of multiple climate models and observations to enhance the accuracy and reliability of predictions. In this research proposal, we present a novel toolbox designed to facilitate the averaging of climate models, resulting in an ensemble of predictions. Our approach incorporates the Bayesian Model Averaging (BMA) methodology, along with other techniques, to address the challenge of model averaging and improve the precision of climate change projections. The proposed model averaging toolbox encompasses various techniques, including BMA (as utilized in the 5th National Climate Assessment), the Sanderson approach (as employed in the 4th National Climate Assessment), and the MSE (Mean Squared Error) methods. These techniques are utilized to estimate model weights, calculate model averages, and compare the predictions generated by the multi-model ensemble against observed data. Furthermore, the toolbox allows for the identification of optimal sets of model weights that can be utilized for post-processing. Notably, the toolbox includes a model independence estimation, an important metric that has gained prominence in recent model averaging methods. By utilizing the obtained model weights, researchers can evaluate the skill and independence of each climate model. Existing model weighting approaches often rely on predefined criteria to assess model skill and independence, which can limit forecast flexibility and accuracy. In contrast, our suggested toolbox offers users a wide range of alternatives for the model weighting problem, enabling them to effectively address diverse climate change investigations.

Shubhan Bhattacharya

NC - North Carolina School of Science and Mathematics

Discipline: Interdisciplinary Studies

Authors:
#1 Shubhan Bhattacharya

Abstract Name: MalDrone: An Automated System to Detect and Treat Malaria Mosquito Habitats

Malaria is a life-threatening disease transmitted to humans through bites of infected female Anopheles mosquitoes. It is prevalent in tropical and subtropical regions, and despite global efforts to control and eliminate it, malaria remains a public health challenge, with an estimated 247 million cases in 2021. Further climate changes in temperature, humidity, and rainfall have an impact on important factors that dictate the transmission of malaria. In 2023, the US recorded the first home-grown malaria cases in decades. Effective control strategies include larval source management at breeding grounds to reduce mosquito larvae, thus reducing the population of adult malaria mosquitoes. However, assessing and treating potential malaria mosquito habitats is difficult and costly. Project MalDrone aims to develop an automated system to detect potential larval habitats for Anopheles mosquitoes and deploy an automated drone to treat these habitats. It is known that malaria mosquitoes breed in vegetated bodies of water. We used hyperspectral data from Landsat-8 or Sentinel-2 to detect malaria habitats. We developed an automated system that could be updated every eight days to segment areas of aquatic vegetation within a specific area. From there, waypoints can be input into an automated drone, equipped with a variable-speed sprayer system, deployed to treat the habitats. Currently we are working on creating a solar based wireless power transfer landing pad as well as an automated refilling station for the larvicide. Maldrone has a huge potential to impact the health of millions worldwide due to its low-cost, easy-to-use, and efficient approach to detecting and treating malaria mosquito habitats, thus reducing the spread of malaria.

tingkai bian

WI - University of Wisconsin-Eau Claire

Discipline: Business and Entrepreneurship

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Abstract Name: Cybersecurity disclosure and internal control deficiencies

Cybersecurity disclosure has received a lot of attention in recent years following the release of the U.S. Securities and Exchange Commission's (SEC) cybersecurity disclosure guidance on October 13, 2011.1 This study aims to examine whether good internal controls and internal control deficiencies can improve cybersecurity at public companies. The purpose of this study is to examine whether good internal controls can improve the cybersecurity of publicly traded companies. The study focuses on the relationship between internal control deficiencies and cybersecurity disclosure. Also, this study provides recommendations to the management of listed companies on how to improve internal control systems and prevent cybersecurity incidents. Deficiencies in the internal controls of public companies are weaknesses and failures in internal controls - the policies, procedures, and systems in place to ensure the accuracy and reliability of financial reporting, safeguard assets, and prevent fraud and waste in public companies. In the fall of 2011, the SEC issued enhanced financial statement disclosure guidance. The guidance specifies that "the increased frequency and severity of cybersecurity incidents experienced by SEC registrants requires new disclosure obligations that focus on cybersecurity risks and actual cyberattacks." On March 9, 2022, SEC Chairman Gary Gensler issued a statement on mandatory cybersecurity disclosure for public companies, stating that cybersecurity disclosure should be ongoing and should be mandatory, which can help investors effectively assess the analysis to help public companies reduce losses. Based on the fact that the SEC has not yet passed the proposal of mandatory disclosure of cybersecurity information by listed companies, this project will study the relationship between cybersecurity disclosure and internal control deficiencies of the company, and put forward suggestions and management methods to help listed companies to improve their internal control system and cybersecurity information leakage.

ava bibisi

NY - Siena College

Discipline: Education

Authors:
#1 Ava Bibisi

Abstract Name: The Students Outside the Box

While students across the nation with learning disabilities rely on parents and administrators to create specialized education plans for them, there is a lack of individualization within programs and school systems. This study is an attempt to investigate the special education programs throughout the nation and how individualized programs can be implemented into school systems and benefit a student’s growth in the classroom. The researcher reviewed the literature on past special educational programs and their effect on student success, as well as the importance for a student centered education. Through the implementation of detailed and enhanced IEPs, along with customized educational plans limiting the removal of a student from

the classroom with their peers, the success of students with learning disabilities has been proven to increase. The researcher plans to deliver recommendations to educators and directors in special education on how to best place students with learning disabilities into the classroom setting while also effectively creating a personalized plan that delivers the services needed early enough to see the maximum amount of student growth. These results will be a good model for the future creation of educational plans as students with different backgrounds and needs come into the school systems.

Brandon Bickley

VA - Virginia Polytechnic Institute & State U

Discipline: Natural and Physical Sciences

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#1 Brandon Bickley
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Abstract Name: Investigation of a Novel Insecticide Target for the Control of Disease Vectors and Agricultural Pests, the Insect Type-B Muscarinic Acetylcholine Receptor

Insecticide resistance threatens the continued efficacy of compounds currently used to manage disease vectors and agricultural pests. Moreover, it is important that insecticides have high specificity towards the targeted species to protect the health of humans and the environment. We are investigating the insect Type-B muscarinic acetylcholine receptor (mAChR-B), a G-protein-coupled receptor (GPCR), as a potential target for insecticide development. Although approximately one-third of all pharmaceuticals have a mode of action involving GPCRs, few insecticides exploit these receptors as targets. Additionally, no commercial insecticide targets mAChRs, despite the success of compounds interacting with other components of the insect cholinergic system. It appears that the Drosophila melanogaster mAChR-B is pharmacologically distinct from mammalian mAChR subtypes; therefore, insecticides targeting the insect mAChR-B may exhibit low toxicity in mammals. To gain functional insight into the role of the mAChR-B in the insect nervous system, we performed electrophysiology of the central nervous system (CNS) in D. melanogaster larvae in which mAChR-B expression was decreased using in vivo green fluorescent protein interference (iGFPi), an RNA interference method targeting a GFP tagged receptor. Pilocarpine, an agonist of mAChRs, had a biphasic effect on CNS firing rate, where high concentrations (10 μM) increased firing rate, while low concentrations (0.1 μM) decreased it. Knockdown of the receptor with iGFPi curtailed pilocarpine's biphasic electrophysiological effect. Consistent with our electrophysiology results, iGFPi reduced the toxicity of injected pilocarpine in adult D. melanogaster. We are developing a heterologous expression system to screen small molecule libraries for chemistries acting at the mAChR-B. While we make use of D. melanogaster as a genetically tractable model organism, we hope to move our results into disease vectors and agricultural pests and ultimately develop the mAChR-B as a novel insecticide target.

Eulandria Biddle

WI - Alverno College

Discipline:

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Mikki Ray

Abstract Name: From Zero to Sixty: The rapid evolution of a comprehensive research program to recruit and retain diverse women in STEM

The Alverno College Mary Ellen Powers research fellowship program was inspired by a pioneering Milwaukee businesswoman who believed strongly in expanding access to STEM education to women from historically underrepresented groups. We began in 2015 with three students and one faculty mentor. Our formal program launched in 2018 with a Wisconsin Louis Stokes Alliance for Minority Participation grant and institutional support. Using awards from NSF, USDA, NASA, and private donor funding, we now support an average of 18 students per summer (2020-2023), about 10 faculty research mentors, administrators, and an evaluator. Our program is built around community-based research experiences that make use of partnerships with Milwaukee community organizations. We are unique in our focus on providing students with research experiences early in their undergraduate education. We recognize that not all students can participate in off-campus research so the program also includes research experiences customized for advanced students and helps them develop independent research. Our aims are to increase STEM identity, build confidence, and create competitive researchers ready for subsequent off-campus research experiences at RO1 institutes. Since 2018, we have supported 89 total student research fellows (63 unique student fellows) and participants have a 95% persistence rate in the college. We have built-in weekly lab meetings and a professional development curriculum. Students are required to present their work at an on-campus research symposium and we have developed a cohort model of travel that has been very successful in encouraging our student research fellows to attend and present their work at regional and national professional conferences. We will present our program model, how we scaled up and grew the program, data on STEM identity, our current work expanding the program to serve students entering college, and the opportunities and challenges we face as we work toward sustainability.

Gabriella Biello

DC - American University

Discipline: Education

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Abstract Name: Addressing the Impact of Sexual Education on the Mental Health of College Students

This research delves into the dynamics of sex education training in colleges within the Washington Metropolitan Area, examining both student perspectives as well as insights from professionals involved in sexual education programs. Acknowledging the interconnected nature of education and mental well-being, our investigation answers the question: to what extent does a lack of sexual education and misinformation

surrounding the topic lead to the declining mental health of youth in the Washington Metropolitan Area? The study is structured around two main components: the experiences of students who have undergone sex education training and the perspectives of professionals actively engaged in facilitating sex education programs. For the student-focused segment, the research addresses students' initial reactions to their college's sex education and consent training, evaluating the perceived helpfulness and comfort levels associated with the training environment. It further explores the impact of education on confidence in handling uncomfortable sexual situations, awareness of institutional resources for sexual misconduct, and attitudes toward discussing sensitive topics such as sex, sexual assault, sexuality, and gender expression. The professional-oriented section of the study investigates the structure and goals of sexual education programs within institutions, identifying potential shortcomings and evaluating student responses. Professionals' opinions on the effectiveness of the programs, including their preference for student-led instruction, are examined. The research also explores limitations within these programs and seeks suggestions for improvements without constraints. The ultimate goal of this study is to uncover what makes a quality sexual education for college students, with a specific focus on its potential impact on mental health. Through understanding the strengths and weaknesses of existing programs, we aspire to identify key factors that can enhance the overall well-being of students.

Allison Biggs

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Allison Biggs

Abstract Name: Again & Again: Memorials in Wake of School Shootings

School shootings are a concept most Americans seem to be eerily familiar with. Gun violence is reported as the leading cause of death for children and teenagers. Despite the first major shooting occurring over 24 years ago, lack of gun control remains an ongoing issue. With policymakers refusing to enact change and others demanding the Second Amendment be upheld, the battle for reform remains never-ending. The massacre at Columbine brought cries for gun control into the light of mass media, in addition to publicizing the victim’s memorials. This study examines the memorials of Columbine, Virginia Tech, & Ulvalde as trauma sites, commemorated through powerful visual art to represent and remember those who have been lost to the epidemic of school shootings. This research is critical, considering the increasing gun violence in American schools.

Stephanie Bigham

TN - University of Memphis

Discipline: Interdisciplinary Studies

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Abstract Name: The Impact of Sex and Diet on the Development of Metabolic Syndrome

Introduction: There are many different diets that may contribute to the development of metabolic syndrome. Metabolic syndrome is a cluster of conditions that increase a person's risk of cardiovascular disease. One aspect of metabolic syndrome is insulin resistance, which affects 7.3% of males and 6.6% of adult females. Muscle comprises 40% of the average body mass and helps to control insulin sensitivity. Purpose: The purpose of this experiment was to determine how different diets alters the progression of insulin resistance in males compared to females. Methods: Mice were fed one of three diets; Control (20% fat, 20% protein, and 60% carbohydrates (18% sucrose), High Fat (45% fat, 20% protein, and 35% carbohydrates (18% sucrose), or High Sugar (60% carbohydrates (60% sucrose), 20% protein, and 20% fat. Glucose tolerance test was conducted at 0 weeks, 6 weeks, and 12 weeks. Fasting insulin was measured in a subset of animals at weeks 6 and 12, and HOMA-IR was calculated. RNA was isolated from the skeletal muscle and RT-PCR was run for Gult4 and Igf1 genes. Results: The male high fat diet group at 12 weeks had higher insulin, blood glucose, and HOMA-IR compared to all other groups. HOMA-IR was elevated in the HF males at 6wks, while no change was seen in the HS or female groups. There was no difference in gene expression of Gult4 and Igf1. Conclusion: These data suggest that females may be protected from insulin resistance regardless of diet, and it may be regulated independently of muscle Glut4 and Igf1 expression.

Kimberly Biladeau

WA - Central Washington University

Discipline: Health and Human Services

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Abstract Name: Fueling Strategies in Ultra Trail Runners

It has been suggested that ultra trail runners may fail to meet hourly carbohydrate intake guidelines during training and competition due to improper knowledge around fueling for performance. Runners may experience pressures to maintain a low body mass, body dissatisfaction, belief that lower body weight improves performance, and lack of knowledge around fueling strategies. The consequences of this can include poor performance, increased gastrointestinal stress, and an increased risk of Low Energy Availability (LEA). PURPOSE: The purpose of this study was to examine self-reported fueling habits during training and competition in male and female ultra-trail runners. METHODS: Cross-sectional study where participants completed a Qualtrics survey including 45 questions. Questions subjects included: age category, self-classified runner type, weekly running mileage, primary race type, and carbohydrate intake practices during training and racing. Trail runners between the age of 18-40 (n=1,899; males: n= 510, females: n=1,445). Questions regarding carbohydrate intake during training and competition were compared to current evidence-based recommendations. RESULTS: 45.6% of male and 47.6% of female reported fueling with carbohydrates during their workouts. 47.5% of males and 45.2% of females reported sometimes fueling with carbohydrate during workouts. 7.1% of female athletes and 6.9% of male athletes reported not incorporating any carbohydrates into their workouts. 25.7% of male and 36.2% of female ultra-trail runners reported intentionally restricting their energy intake during easy training days. 35.9% of males intentionally train in a fasted state, while only 19.7 % of females reported training in a fasted state. CONCLUSION: General recommendations for carbohydrate consumption during exercise lasting 1-2.5 hours and > 2.5 hours are 30-60g/hr and 60-90g/hr, respectively. However, ultra-endurance and other elite athletes should seek individualized guidance from sports dietitians to ensure that they meet necessary energy requirements to avoid LEA, and subsequently reduce the risk of disordered eating.

Marc Bindzus

MN - University of Minnesota - Rochester

Discipline: Natural and Physical Sciences

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Abstract Name: Exploration of Microbial Contamination and Antibiotic Resistance within Rochester, MN Community Farms

Our study explores potential fecal contamination and antibiotic resistance within agricultural soil in community gardens in Rochester, Minnesota. The significant presence of the healthcare industry due to Mayo Clinic may contribute to an increased prevalence of antibiotic resistance in the environment. Antimicrobial-resistant strains of bacteria can be found in most hospital waste, which can contaminate local soils. Hospital wastewater and wastewater from near-associated communities contain elevated antibiotic-resistant bacteria. Within Rochester, the wastewater is routed into the local waterways, which are further downstream used for irrigation. Additionally, the presence of animals within these community farms may further contribute to antibiotic resistance. Farm animals may be subject to antibiotic treatments, contributing to elevated antibiotic-resistant bacteria that get introduced into the environment via their waste. Antibiotic-resistant genes can be spread among bacteria through horizontal gene transfer if located on the plasmids, increasing the spread of antibiotic resistance. Our study focused on the agricultural soils of The Village Community Gardens, a local nonprofit aimed at food sovereignty and the provision of land and resources for culturally relevant food growth. We collected soil samples from three distinct garden plots. From these samples, we 1) compared microbial community counts and 2) investigated microbial antibiotic resistance for enrofloxacin, chloramphenicol, ampicillin, and spectinomycin. We anticipated that the soil collected from the farm with sheep actively walking about would contain the greatest antimicrobial-resistant bacterium. We were surprised to discover that the garden plots used for large-scale agricultural purposes contained the most antimicrobial resistance. The third plot was the oldest community garden housed centrally within Rochester on a church's property and contained the least observed antibiotic resistance. Ultimately, our findings will be informative to the public and our community partner, potentially leading to further investigation into the domain and changes in environmental policy and antibiotic stewardship in Rochester, MN.

Gavin Bingham

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Calm Down: How to Improve Undergraduate Student Performance

In recent decades, undergraduate students are progressively experiencing more stress. It is reported that stress negatively affects students' academic achievement; however, the connection between the two is still unclear. There are a multitude of both perceived and physiological factors that can influence stress levels, such as depression, anxiety, and coping skills. The objective of our study was to identify these factors and their influences on undergraduate student stress and GPA. The study was conducted in a renowned, research-heavy university in the Deep South with a primarily white population. Participants were interviewed using validated tools such as the Perceived Stress Scale (PSS), Generalized Anxiety Disorder scale (GAD), Patient Health Questionnaire (PHQ), and the Brief COPE test at the start of the 2021 fall semester to assess perceived stress levels. Student GPA was also collected as a self-reported variable. Increased anxiety and depression were significantly correlated with increased perceived stress. Coping skills such as self-distraction, denial, behavioral disengagement, venting, and religion positively affected perceived stress, while active, instrumental support and acceptance decreased perceived stress. Student GPA was negatively modified only by those that practiced venting as a coping mechanism. University-reported GPA, rather than self-reported, should be used in future analysis. Further studies should be conducted to identify the most significant sources of increasing undergraduate student stress, specifically regarding students' coping skills.

Brian Binoti

NJ - Bloomfield College

Discipline: Interdisciplinary Studies

Authors:
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Abstract Name: How AI can responsibly coexist with the profound aspects of the human experience emphasizing respect for human dignity and the complexity of human cognition.

Large Language Models such as ChatGPT, Claude AI, and others have the potential for incredible amounts of good, but their unleashing on the world has raised a multitude of social and ethical concerns. For, as yet, it cannot be guaranteed that the multifaceted nature of humans and the understanding of human cognition can be accurately implemented into large language models and artificial intelligence (AI). Indeed, given that the "hard problem" of human consciousness is still up for debate, the question of AI intelligence raises the stakes in terms of how we understand human subjectivity - especially in terms of empathy, ethics, and choice. This presentation advocates that educators in tech and AI development engage with philosophy of mind scholarship, given that the hard problem highlights the gap in our knowledge when it comes to explaining the subjective aspect of consciousness- this necessitates interdisciplinary collaboration. Indeed, human traits such as emotions, empathy, intuition and most especially, ethical reasoning, go far beyond mere data-driven decision-making. The emotions and thought processes humans experience are inherently unique, so attempting to fully recreate such complexities in a genuine manner may be a fool's errand. For instance, AI models programmed to have empathy do not have a choice whether to produce such emotions, so the true essence of such emotions have been stripped. My presentation will discuss how today's undergraduates in AI development need philosophical training - from René Descartes to David Chalmers - to understand the subtitles of human consciousness, empathy and ethical decision-making. Philosophical training will alert today's students in tech to the limitations of objective, third-person perspectives - and the subjectivity of real human experience which affects choice, empathy, and human interaction.

Nicholas Birschbach

WI - University of Wisconsin-Milwaukee

Discipline: Engineering and Architecture

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Abstract Name: Energy Efficient AI on Embedded Systems

Big data is becoming the future of the computing world and Artificial Intelligence (AI) is more widely used to process such data. It is impractical to always centralize the vast amount of data collected from certain applications to cloud servers, such as autonomous transportation and advanced manufacturing. Due to privacy concerns, limited network bandwidth, and response delay, there is an urgent demand to process the data where it is collected, for which AI on embedded systems is a promising solution. However, embedded systems lack the computing power required to run computationally intensive AI algorithms, such as deep neural networks. Some embedded systems are battery-powered and can hardly support complex AI learning in the long term. Using accurate low-power AI models becomes imperative to process large datasets, especially on resource-constrained devices such as smartphones, medical equipment, and industrial robotics. To address these challenges, our project aims to simplify the AI model training on embedded systems, while maintaining the desired model accuracy with Federated Learning (FL). FL trains AI models on decentralized embedded devices without exchanging the local data samples held by devices. The updated model parameters are sent from devices to the central server, where they are aggregated with the contributions from other devices to collaboratively train the global model. This iterative process continues, allowing the model to learn from diverse and distributed datasets for improved accuracy and generalization. In addition, this project investigates the scarcity of computing power and memory space in embedded devices to balance the tradeoff in model complexity, number of connected devices, and dozens of other factors to achieve efficient and accurate FL. Finally, a comprehensive FL testbed is developed to validate the proposed AI simplification methods, consisting of a central server and multiple embedded devices conducting image processing tasks based on the collected real-world data streams.

Alexandria Black

KY - Morehead State University

Discipline: Education

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Abstract Name: Experimental Comparison of Simulated Decay Curves using Dice and Centicubes: Implications for Teaching Radioactivity and Half-life

Radioactive decay is taught in Kentucky high schools (NGSS HS-PS1-8), where students learn about nuclear properties and radiometric dating. Given that materials and experimental radiation equipment can be expensive, many analogical hands-on radioactive decay experiences have been proposed and described in the literature.Centicubes have been a common manipulative in elementary and middle school classrooms. Due to their availability, simplicity, and low cost, we propose a novel way to use centicubes to illustrate radioactive decay rates. However, by having unconventional surface features, it is not clear whether centicubes will simulate randomness like dice do.The study statistically examined the use of centicubes as a simpler, low-cost alternative to dice to teach radioactivity lessons in Kentucky. The researcher implemented acarefully controlled set of 20 trials each modeling radioactive decays with short, medium, and long half-lives with both

centicubes and dice. A Chi-square goodness-of-fit test compared their various exponential best-fit curves to empirically demonstrate the extent of their similarity.The researcher found that for the long half-life trials, while the dice curve was statistically similar to the expected one, the centicube curve was significantly different from both the expected and dice ones. For the medium and short half-life trials, all three curves were statistically similar. It was concluded that if teachers are interested in the decay curves and half-life estimates, then both centicubes and dice will provide them. However, teachers who are interested in accurately representing the randomness aspect of nuclear decay should use only the centicube's "flats" and "holes" decay modes. During the Spring 2024 semester, this study will be expanded by exploring the role of release height in the decay rates of the centicube "tip" decay mode, and by testing pseudo-centicube objects made with dice and small metallic spheres.

Benjamin Black

NC - North Carolina State University

Discipline: Engineering and Architecture

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Abstract Name: Development of Scalable Manufacturing Processes to Improve Solar Panel Efficiency

In response to a growing demand for sustainable energy sources, the utilization of solar energy has increased. Within the US alone, solar capacity has increased at an exponential rate with an addition of 10.9 gigawatts (GW) in 2022 alone. While these solar panels enable the ability to harvest solar energy, their efficiency decreases as the temperature of the solar panel increases (loss of 0.5% in efficiency with a 1℃ increase). This decrease in efficiency has driven researchers to explore cooling technologies. One area of interest is the use of thin films to achieve passive cooling by infrared radiating into space. These thin films use micro/nanotextured surfaces that possess high emissivity in the atmospheric window while allowing visible and near-infrared light to the solar panel beneath. By reflecting wavelengths of light that solar panels do not use to generate energy, the overall surface temperature of the solar panel will be decreased. Previous researchers have been able to demonstrate a decrease in surface temperature by 4-14.95℃ using thin films for passive radiative cooling. However, the current manufacturing methods require high levels of precision, are expensive, and are not easily scalable. In this research, we demonstrate a low-cost, rapid, scalable manufacturing process for thin films using a manufacturing method known as forward roll coating. The photonic thin films are composed of a polymer base (PDMS) and SiO2 nanoparticles. These materials were chosen due to their high and mid IR emission, which refracts non usable light. Furthermore, the nanoparticle addition increases the viscoelasticity of the composite and enables the creation of a micro/nanotextured surface during roll coating. The surface topography promotes the thermal infrared radiation emittance. When facing direct sunlight in the summertime at noon, the manufactured coatings demonstrated a 3.5°C temperature decrease without a loss of solar panel efficiency.

Aiden Black

FL - University of West Florida

Discipline: Mathematics and Computer Science

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Abstract Name: Towards the Generation of Learning Objects with Generative Artificial Intelligence

This paper describes an on-going research on the use of generative artificial intelligence (GAI) in generating learning objects. Learning Objects are digital or non-digital artifacts, which can be used, re-used or referenced to augment or enhance the learning process. Examples of these presentation slides, images, text, surveys, quizzes, and hands-on exercises. The unprecedented availability and capability of GAI tools in recent years brings us to consider how their technical capacities and abilities can bring about effective and useful learning objects. We first explore the published literature to survey the work that has been in the field of applied GAI to generate learning objects. Next, we provide a review of their technical features and closely look at the distinctive features of the tools used in various GAI models. The focus of this research is to develop a method of utilizing freely available GAI tools to expedite the generation of learning objects and to evaluate their effectiveness. Specifically, we seek to optimize the utilization of these AI-generated learning objects for active-learning applications and learning best practices.

Reno Blackmore

UT - Utah Tech University

Discipline: Natural and Physical Sciences

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Abstract Name: Deciphering Synergy: Pterostilbene and Dabrafenib in Melanoma Treatment

Melanoma, the most lethal type of skin cancer, is characterized by a BRAF mutation in nearly 60% of diagnoses. Dabrafenib is a current treatment option for patients with this mutation; however, resistance often develops within a few months of initiation. To enhance treatment effectiveness, combination therapy is frequently employed. This study seeks to augment the therapeutic impact by combining Dabrafenib with Pterostilbene, a naturally occurring molecule with inherent anti-cancer properties, through the utilization of A375 cells, a cell line known to contain the relevant BRAF mutation. Independently, we have determined Dabrafenib and Pterostilbene have IC50 values of 8 nM and 40 mM, respectively, in these cells. However, our data indicates a synergistic effect between Dabrafenib and Pterostilbene at concentrations of 2 nM and 25 mM, respectively. Future investigations aim to reveal the mechanism of synergy through a comprehensive analysis of the relevant cell signaling pathways associated with each molecule's mode of action. Additionally, our lab has synthesized a novel derivative of Pterostilbene, whose anti-cancer properties have not yet been characterized. Therefore, future studies will also aim to establish an IC50 for the novel Pterostilbene derivative and assess the potential synergy of the derivative in combination with Dabrafenib through the development of a combination index by utilizing isobologram analysis. By comprehensively characterizing the synergistic effects of Pterostilbene with Dabrafenib and utilizing novel Pterostilbene derivatives, this research contributes valuable knowledge to the field, paving the way for more targeted and effective therapeutic interventions in melanoma treatment.

Autumn Blackwell

MD - Towson University

Discipline: Natural and Physical Sciences

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#5 Jaelyn McCracken

Abstract Name: Genetic Variance and Predisposition for Angina Pectoris

Angina pectoris is characterized by chronic chest pain due to imbalances in myocardial supply and demand. Stress, pollution, climate and drug and alcohol abuse are environmental factors that may increase one's risk for developing this condition. Angina affects millions of people worldwide and the likelihood of developing angina increases with age. Failure to properly prevent, diagnose, and treat the condition has led to complications for many patients. Despite the prevalence of angina, little is known about the role genetics play in the condition. The purpose of this study is to look for genes that may contribute to the development of angina by conducting a genome-wide association study (GWAS) using a diverse population from the All of Us Research Program. Data analysis was preformed using R in a Jupyter Notebook environment while GWAS was performed using Hail. GWAS for a sample cohort of 50,689 study participants displayed one variant, rs373255264, with a p-value of 5.427x10-6. GWAS for full cohort of 245,388 study participants displayed one variant, rs6601018, with a p-value of 3.960x10-6. Both GWAS displayed outlier variants on chromosomes 5 and 20. No variants reached a significance threshold of 5x10-8 in GWAS of sample cohort, nor GWAS of full cohort of participants with angina as the outcome. This study suggests genetics may play a negligible role in the development of angina and environmental variables, such as stress, may be more important. However, the role of genes as modifiers of disease under specific environmental pressures has not been tested in this study and cannot be ruled out. A better understanding of gene-environment interactions and epigenetics in angina may lead to more personalized and effective treatments.

Nyla Blagrove

GA - Spelman College

Discipline: Natural and Physical Sciences

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Abstract Name: Investigating the Effects of ARID1A Knockdown on Cardiomyocyte Differentiation

Congenital heart disease (CHD) is an umbrella term for heart defects that affect around 1% of births each year. Though CHD is the most common birth defect, little is known about the genetic cause due to a lack of experiential data correlating patient mutations to defects in heart development. Genes associated with the development of CHD are still being discovered. One gene, ARID1A, encodes protein ARID1A which is a bona fide tumor suppressor in cancer and plays a role in neural crest development. ARID1A was shown to have high expression in early heart development and decrease into adulthood, selectively controlling differentiation of second heart field cardiac progenitor cells into beating cardiomyocytes. We hypothesized that knockdown of ARID1A during human-induced pluripotent stem cell (hiPSC) differentiation to

cardiomyocytes, alters differentiation efficiency and cell state outcome. We employed hiPSC encoded with a doxycycline- inducible dCas9-KRAB cassette and guide-RNAs that targets the transcription start site of ARID1A. We will quantify changes in ARID1A expression using quantitative polymerase chain reaction (qPCR) to test the efficiency of the knockdown. We will evaluate differentiation by tracking a cardiomyocyte specific MYL7-GFP reporter by fluorescence- activated cell sorting (FACS). By establishing this line, we hope to further characterize the role of ARID1A in heart development.

Barrett Blake

UT - Utah Valley University

Discipline: Engineering and Architecture

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Abstract Name: Mosques Through Different Lenses: Perceptions Across Cultures and Religions

This research project aims to explore the relationship between an individual's cultural and religious background and their perception of mosque architecture and experiences. Given the lack of understanding about the nature of mosques among non-Muslims, it is essential to investigate these perceptions to promote greater public awareness and interfaith understanding.The research methodology employs two approaches. First, it analyzes Nader Ardalan's work, "The Visual Language of Symbolic Form: A Preliminary Study of Mosque Architecture," to identify common architectural characteristics in mosques. This analysis is correlated with a survey to compare common elements of mosque architecture to respondents' associations with the elements incorporated in mosque architecture. It is expected that the elements that most individuals associate with mosques are likely those that are most common.Second, an online survey assesses the influence of cultural, ethnic, linguistic, and religious backgrounds on individuals' perceptions of mosques. The survey covers familiarity with mosques, statements about mosque experiences, and demographics. Statements regarding mosque experiences are derived from Lindsay Jones' book The Hermeneutics of Sacred Architecture: Experience, Interpretation, Comparison. Demographic questions include religion, ethnicity, and primary household language. Respondents are recruited through QR codes on the Utah Valley University campus, religious groups at universities, and online forums for diverse religious traditions. Responses from those who practice Islam are expected to align more closely than those from non-Islamic backgrounds.In summary, this research shows that some architectural features in mosques are likely to be universally recognized due to their commonality. It also highlights a strong connection between an individual's background and their understanding of Islam, mosque aesthetics, and expected mosque experiences. These findings can inform mosque design by promoting the use of recognizable architectural elements and can contribute to fostering interfaith awareness and understanding, ultimately supporting harmonious coexistence among diverse communities.

Joseph Blakely

CA - Dominican University of California

Discipline: Health and Human Services

Authors:
#1 Joe Blakely

Abstract Name: How Financial Status Affects Food Decisions in Households of Marin City

This research addresses disparities in food decision-making among households in Marin City by examining their food spending habits after covering essential bills. Understanding how these households allocate resources for food is crucial for developing targeted interventions to improve food security and health outcomes. Utilizing qualitative methods, semi-structured interviews, this study explores the spending patterns and decision-making processes related to food expenditures among households in Marin City. The sampling method ensures diversity in income levels and family structures. Ethical considerations are prioritized, ensuring informed consent and confidentiality for participants. The study focuses on residents of Marin City,

specifically targeting low-income households with a median income of $76,148 and a poverty rate of 8.9%. Thematic analysis of interview data will reveal insights into the impact of food spending on nutritional habits and overall well-being. Recruitment involves collaboration with community organizations and social service agencies such as Marin City Community Center. Preliminary analysis reveals that food decision making is primarily done by the female head of the household. Her thought process depends heavily on income level, especially when fluctuations in income are severe, seasonality, and discounts available at the time of purchase. Further thematic analysis will uncover additional patterns in the data. In conclusion, this study seeks to deepen our understanding of food access disparities and spending behaviors among households in Marin City. By illuminating these insights, it aims to inform targeted interventions and policies aimed at addressing food insecurity and fostering better health outcomes in this community.

Robert Blankenship

CA - California State University - Long Beach

Discipline:

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#1 Robert Blankenship

Abstract Name: Collaborative Reading in the Literary Humanities: Imagining Laboratories With Christa Wolf

Undergraduate research can accomplish much of what ungrading aims to do—metacognition and intrinsic motivation. Grades are never even part of the discussion. Projects naturally continue beyond the confines of the semester. No one is required to do it. The lack of punitive measures allows for risk taking and learning from mistakes. However, resources and infrastructure for undergraduate research in the Humanities is lacking. The lack of funding is an obstacle to be sure, but it isn't the only one. A culture of collaboration is also missing. Collaboration is rarely part of our scholarly training at any level. In order to collaborate, we need a co-laboratory. But the Humanities doesn't have much in the way of good models for labs. In an effort to create such a model, I have worked with undergraduate researchers through the McNair Scholars Program, the Undergraduate Research Opportunity Program, the Learning-Assisted Employment Program, and the Mellon-Mays Undergraduate Fellowship Program. All of these researchers and I have worked on projects related to the East German writer Christa Wolf. Studying the works of Wolf with undergraduate researchers offers a way to think about this problem because Wolf herself depicts and critiques practices of the lab sciences while also being very open about the study of human subjectivity and experience-laden prose. Wolf's writings not only constitute an interesting corpus to study, they also provide guidance for imagining the possibilities of collaboration in the Literary Humanities.

Annie Blevins

AR - Lyon College

Discipline: Humanities

Authors:
#1 Annie Blevins

Abstract Name: Dueling Characters: Femininity and Identity in Dolores Prida's "Coser y Cantar"

Cuban-American playwright, Dolores Prida's play "Coser y Cantar"(1981), explores the story of a bilingual woman in New York City and how her self-perception evolves over the course of an extended monologue. The two main characters in the play are, in fact, the woman herself, both "She" and "Ella." These two

characterizations allow the protagonist to grapple with her own identity as she code-switches between both Spanish and English: while “She” mainly speaks English, “Ella” speaks Spanish. Research has focused on how the two characters reflect femininity and adhere to the societal gender roles set for them. This research delves into how these gender roles coincide with Prida’s use of “Spanglish” in the play. The display of femininity from She and Ella and their use of “Spanglish” exemplify cultural representations and expectations of women navigating both Latinx and American cultures. Through the application of linguistic and cultural theories of Spanglish, this research analyzes Prida’s use of “Spanglish” and the gender roles of the protagonists She and Ella to explore how although each self represents a different version of the same woman caught between two cultural expectations of herself, the feminine struggle is present in both.

Alexander Blevins

KY - University of Kentucky

Discipline: Engineering and Architecture

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#2 Philip Lee

Abstract Name: Integration and Optimization of Hybrid Renewable Energy Systems for Kentucky EV Charging Stations with PV and Green Hydrogen Energy

With the growing interest in adopting both commercial and residential electric vehicles (EV), the assessment of PV-powered EV charging stations is required to achieve energy sustainability in Kentucky. PV solar panels generate energy during the daytime and provide a clean, renewable energy source. However, due to the variable and intermittent nature of PV-generated power, integrating green hydrogen conversion with the excess PV energy is promising due to the higher energy density of hydrogen and ever-increasing lithium prices. Whenever we need to use the stored hydrogen, we could use hydrogen fuel cells to access the hydrogen. This way would allow clean energy to be used during the night-time.In this study, we investigated the feasibility of hybrid energy systems charging EV stations in Kentucky using PV and green hydrogen through Artificial Intelligence (AI) augmented simulations. Based on our past studies, we also predict the amount of PV solar energy and green hydrogen energy in Kentucky using Python and other AI tools. Predictions can be used with the average energy consumption to get the amount of excess energy that can be converted into hydrogen energy. The energy conversion efficiency would also have to be used to find out how many hybrid renewable energy systems are necessary to supply all the power in the sampling areas.Through electrolysis, we can use a hydrogen electrolyzer to produce hydrogen from water molecules. The excess solar energy would be used to power the electrolyzer, and the hydrogen produced would be stored. After that, we can use a fuel cell that stores hydrogen to provide electricity to the entire house. Using these such energy sources would still be clean and renewable, having much less influence on the environment than many other energy sources. It would maximize PV solar panel efficiency by reducing the amount of wasted energy.

Bailey Blewitt

DE - University of Delaware

Discipline: Social Sciences

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Abstract Name: Betrayed by the Blue: Intimate Partner Violence and Institutional Betrayal by the Criminal

Legal System

Building on the research on institutional betrayal and the criminal legal system, this paper asks the question: What types of institutional betrayal do victims/survivors of intimate partner violence experience when they report to the police? Previous research documents a multitude of help-seeking behaviors that survivors of intimate partner violence engage in; most commonly they engage the criminal legal system (CLS). Thus, when this institution betrays the trust of those dependent on them by being negligent or prosecutory, this is called institutional betrayal. Considering historical and present shortcomings of the criminal legal system when pertaining to survivors of intimate partner violence, this research strives to elucidate and describe the types of institutional betrayal that victims/survivors of IPV experience when they report their abuse to the CLS. The analysis is based on in-depth interviews with 11 women impacted by intimate partner violence who sought help from the CLS. Four themes emerged: (1) indifference by criminal legal system actors (2) being criminalized by criminal legal system actors, (3) The benefits of 'insider status', and (4) Having to be "in the system" to use the system. It is crucial that we recognize the inconsistencies and mistreatment within our current criminal legal system in order to better protect and support victims and survivors of IPV equally and effectively. The paper concludes with policy recommendations that, if implemented, would reduce the institutional betrayal that victim/survivors experience at the hands of the CLS.

Gretchen Block

MO - Missouri State University

Discipline: Humanities

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Abstract Name: Representation of Older Women in Horror Films

Older women in horror films and television shows are often portrayed as the villain with their age being their most frightening feature. This can be seen in newer horror media where the old woman has the more chilling scenes in comparison to their male counterparts, such as "The Visit," and the villainization of the Mother in "Barbarian." The theme of taking an iconic villain often portrayed as an older woman, and making a prequel where the character is younger has become a staple in the entertainment industry in recent years. This can be seen in Disney movies and the popular movie "X," with its prequel "Pearl." This paper will analyze popular horror media that demonstrates the ageism present in the film industry. It will apply the feminist theories of Kathleen Woodward and others in order to analyze the portrayal of older women in horror movies. As well as look back at historical examples to determine the origins of these patterns.

Aislinn Bloom

MD - Towson University

Discipline: Natural and Physical Sciences

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#3 Kathryn McDougal

Abstract Name: Genetic Analysis of Circadian Rhythm and Cancer Correlation

Circadian rhythm is the internal clock that constitutes the basis for the sleep/wake cycle. The regulation of circadian rhythm works in a positive feedback loop with various genes, called canonical clock components (CCC) genes. The disruption of CCC genes can be caused by both genetic and environmental factors, leading to negative implications such as insomnia, sleep apnea, diabetes, and potentially cancer. As of 2007, the International Agency for Research on Cancer (IARC), declared circadian rhythm dysregulation due to night shift work a likely carcinogen after studies showed this abnormal schedule correlates to cancer development and progression. This study aims to elucidate the relationship between sleep disorders and the risk of cancer and explore the role of genetics in this relationship. To conduct this research, analysis was done on participants in the All of Us Research Program by analyzing individuals based on demographic and electronic health record data with the utilization of R in Jupyter Notebook. Hail was used to perform a genome-wide association study (GWAS) on a diverse dataset of 138,335 individuals with cancer diagnosis as the outcome. The findings indicate that there is a significant correlation between sleep disorders and cancer, based on the prevalence of having a sleep disorder and cancer (p-value = 2.2e-16), current age (p-value = 2.2e-16), and diagnosis first of a sleep disorder in comparison to diagnosis first of cancer (p-value = 8.265e-9). The top SNPs identified from the GWAS were Chr1:152355935; p-value = 6.008e-18, Chr3:15456835; p-value = 5.988e-17, Chr3:123348018; p-value = 8.595e-16, Chr12:132618993; p-value = 1.024e-16, Chr16:67436424; p-value = 5.160e-17. However, no significant hits were found around CCC genes. A greater understanding of the connection between sleep and cancer may lead to prevention measures personalized to the patient and more effective treatment options.

Allison Blount

TN - Trevecca Nazarene University

Discipline: Natural and Physical Sciences

Authors:
#1 Allison Blount
#2 Geri Traver
#3 Michael Freeman

Abstract Name: Appropriate Preclinical Model of Radiation-Induced Pulmonary Injury?

Background: Standard of care for stage III NSCLC involves concurrent chemo-radiation therapy followed by immune checkpoint blockade. The radiation dose administered is 2 Gy a day, 5 consecutive days a week, for 6 weeks. Unfortunately, up to 20% of patients develop life threatening pulmonary pneumonitis/fibrosis. While a number of preclinical studies focus on related sequelae, the majority do not include chemotherapy or immune checkpoint blockade. Furthermore, the radiation protocols in these studies employ large single acute doses (eg.,16 Gy or larger). An important, unanswered question is whether fractionated irradiation also initiates an early inflammation response.Methods: A calibrated ionization chamber was used to establish the dose rate for a 300 kVp/10mA, X-ray machine. Mice were divided into cohorts: A) mice injected with vehicle, sham irradiated, and then injected with control IgG antibody; B) mice injected with vehicle, the thorax administered 5 Gy a day for 5 consecutive days, and then injected with control IgG antibody; C) mice injected with the chemotherapy agent carboplatin, the thorax administered 5 Gy a day for 5 consecutive days, and then once a week for 4 weeks injected with PD1 antibody. Other than the thorax, the remainder of the body was shielded with 3 cm of lead. 18F-FDG PET/CT imaging was used to quantify pulmonary inflammation response.Results: The 18F-FDG PET/CT analysis revealed that relative to control cohort A, mice in cohorts B and C did not experience an inflammatory response. Rather, there was a statistically significant decrease in the 18F-FDG signal, indicating a diminished presence of inflammatory cells. Conclusions: Early pulmonary inflammatory responses are dependent on the dose per fraction and the number of fractions administered to the lung. More research is needed to determine if large acute irradiation models are appropriate for studying radiation-induced pulmonary injury.

angel Boardley

MD - Hood College

Discipline: Natural and Physical Sciences

Authors:
#1 Angel Boardley

Abstract Name: ERGi-USU Selectively Inhibit ERG Positive Prostate Cancer through ATF3 mediated Ferroptosis

Introduction: Prostate cancer (PCa) is the second leading cause of cancer deaths among men in the United States.Approximately 50% of patients with PCa harbor an oncogenic TMPRRS2- ERG gene fusion in their primary tumor and35% of patients with metastatic castration resistant prostate cancers have the gene fusion. We have identified a potentsmall molecule inhibitor, ERGi-USU-6 salt derivative 7b, that selectively inhibits the growth of ERG positive tumor. Thissmall molecule inhibitor is also effective in inhibiting the growth of benign and cancerous mouse prostate organoidsexpressing TMPRSS2-ERG (ERG positive organoids). To gain insights into the cancer-selective properties of ERGi-USU-6salt 7b we evaluated pathways associated in ERGi-USU induced inhibition.Methods: The biological activities of salt derivative 7b, were assessed in hormone- refractory metastatic tumor derivedERG positive prostate cancer cell line, VCaP along with organoids. We monitored the pathways associated in themechanism of drug action through immunoblot assays and ferroptosis related analyses in response to 7b treatment.The normal primary endothelium derived HUVEC cells were used as normal control due to the normal endogenous expressionof ERG in endothelial cells including HUVEC.Results: Cell growth and immunoblot analysis indicated the inhibition of ERG positive prostate organoid upon ERGi-USU treatments resulting in the downregulation of ERG and RIOK2 protein levels. The cell cycle analyses, pathway mapping by protein assessmentand ferroptotic assays suggests that salt derivative 7b treatment inhibits the ERG positive prostate cancer through ferroptosisalong with RIOK2 inhibition.Conclusions: Our results showed that the ferroptosis inducer ATF3 gene is involved in the cancer-selective activity of ERGi-USU-6 salt derivative 7b. Further, based on our observations we hypothesize that ferroptosis, the iron-dependent form ofprogrammed cell-death, may be the mechanism of cancer selective activity of salt derivative 7b.

Alia Bogan

IN - Indiana University Purdue University Indianapolis

Discipline: Interdisciplinary Studies

Authors:
#1 Alia Bogan

Abstract Name: Women’s Involvement in the Economy

The research asks what the barriers to global female participation in the formal economy are (because this sector offers more stability, regulated work hours, and higher pay) by analyzing ten variables affecting women’s abilities to participate in the workforce: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, pension, and education, and governmental representation.The objective is to build a proposed model to help increase women’s economic participation. Eighteen different nations are analyzed based on their scores from annual reports by the World Bank which assesses laws and regulations on women’s economic participation. The research analyzes differences within and between regions in order to find a generalizable result. The literature review involved researching the population, gross domestic product, average annual wage, employment rate, long term unemployment rate, and labor force participation rate

among females and males within each nation. The research found that women's education rates and women's governmental representation are major factors affecting their economic participation.

Abrianna Bohn

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Abrianna Bohn

Abstract Name: The Notion of Escapism in Anime and Catholicism

In this essay, I discuss the concept of escapism in anime culture and Catholicism in the United States. This comparison is made by examining the characteristics of “fandom” given that the fandom serves to construct physical or virtual communities based on common interests and activities. These virtual communities are reproduced through moral storytelling that recycles the same general principles, including supportable protagonists and easily understandable morals, and the use of specific imagery and aesthetics. The reproduction of these principles, whether through visual or written language, creates a market value of escapism a follower can achieve. The study is based on artistic examples referencing the King James version of the Bible, and anime Attack on Titan and Jujutsu Kaisen. The Bible and the two anime both have visual and thematic structures constructed by images. Imagery is fundamental to anime---there is no anime without images. In Catholicism however, imagery is one of the forms to present stories of the Bible, but they are not inherent to the Bible. This research is important in analyzing the sociological effect on our society in which we cling desperately to forms of storytelling. The storytelling is used as an escapist method to cope with the stresses of our society. This form of escapism is, comparatively to Catholicism, what qualifies anime as a modern pseudo-religion.

Abrianna Bohn

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Abrianna Bohn

Abstract Name: We Bleed Red, White, and Blue: American Imperialism through National Colors of Central American Societies

Among the over two hundred established countries in the world, thirty of them have official national flags with the colors red, white, and blue, reflecting the colors of the US flag. Scholars discuss this phenomenon by focusing on the design, the availability of supplies (dyes) at the time of their design, the psychology behind color, or “globalization.” The question posed in this study is to what extent the use of white, red, and blue was each country’s choice or a result of the U.S. imperialism. To answer this question, I will utilize color studies and scholarly research on the national political histories of Puerto Rico, Costa Rica, and Panama between the 19th and 21st centuries. These three countries are well-known for U.S. interference disguised as allyship, with Puerto Rico continuing to be a U.S. unincorporated territory. I will argue that the use of red, white, and blue colors in national flags, while not necessarily indicative of the U.S. imperialistic agenda, reflects American expansionist ideology into the region.

Garrett Bohrnstedt

VA - Liberty University

Discipline: Natural and Physical Sciences

Authors:
#1 Kyle Harris
#2 Alan Gillen
#3 Gibson Huff
#4 Garrett Bohrnstedt
#5 Abby Piddock

Abstract Name: Endoparasites Induce Differential Hemodynamics in Mosquito Fish

Mosquito fish (Gambusia holbrooki) are commonly found in local freshwater habitats and are highly regarded as an effective biocontrol agent for unwanted mosquito larvae. While an effective biocontrol, G. holbrooki and many kinds of freshwater fish are afflicted by various parasites (e.g. Blackspot). Blackspot is a disease caused by Schistosome-like parasites (flatworms) such as Uvulifer ambloplitis. U. ambloplitis cercariae attach to the muscle tissue of the fish, transform into black spot metacercaria, and secrete a hyaline cyst around themselves. The host fish deposits black pigment around the cyst and the parasite is visible as a black spot. While it is understood that this parasite changes the behavior (reproductive and shoaling) of Gambusia, it is not clear how the Cercariae/Metacercaria life stage may sub-lethally affect other life history patterns. This project investigated the circulation rates of G. holbrooki with and without blackspot by observing red blood cells (RBC/min) within the central capillaries in the tail region of 40 total fish (30 without blackspot & 10 with blackspot) at 100X magnification. Results indicated a significant difference in RBC counts of fish afflicted with blackspot in comparison to G. holbrooki free of blackspot. This information can be used to better understand the physiological effects of blackspot on Mosquitofish and how its infestation may impact the fish’s ability to be an effective biocontrol.

Christine Bokutu

TX - Midwestern State University

Discipline: Education

Authors:
#1 Christene Bokutu
#2 Brisa Jimenez
#3 Kelly Medellin
#4 Stephanie Robles
Brisa Jimenez

Abstract Name: Work Smarter, Not Harder: Utilizing AI to Enhance Elementary School Lesson Plans

Lesson plans are created by teachers to guide the implementation of instruction to ensure the learning environment includes components of high-quality lessons such as; accommodations for children with special needs, technology, meaningful connections for students, a pacing guide, developmentally appropriate assessments, and much more. Creating high-quality student-centered lesson plans can be a difficult and time-consuming process for many educators, and having access to instantaneous planning tools could be a beneficial way to support teachers. The purpose and aims of this project were to investigate artificial

intelligence (AI) platforms built for teachers, analyze the tools they provide for educators, and synthesize the benefits and limitations of using AI for lesson planning. With the introduction of open AI like ChatGPT, the way many professionals utilize technology for job efficiency is changing, including for teachers. There is a strong correlation between teachers' competencies in creating learning environments and student performance, and open AI platforms built for lesson planning can be a tool that supports educators in creating engaging activities and positive environments for students. There is a lack of current literature on using AI in lesson planning in elementary school settings. Therefore, in this research project, we generated elementary school plans using identical keywords on different AI lesson-planning platforms and used qualitative document analysis as our research methodology to analyze the lesson plans generated by the AI platforms. In this session, we will explain the findings from the reflective document analysis, discuss how AI can be a useful tool for educators in planning engaging lessons and in building teacher capacity and self-efficacy, and identify that there can be some limitations like access, affordability, and planning for diverse populations.

Ihita Bolisetty

VA - Virginia Commonwealth University

Discipline: Mathematics and Computer Science

Authors:
#1 Ihita Bolisetty

Abstract Name: Predicting Serious Cardiac Events from Noisy PPG Signals Using Intelligent AFib Detection

Placing up to 6 million individuals at risk yearly, atrial fibrillation (AFib) remains one of the strongest undetected indicators of heart failure or stroke. A previously self-developed model—Pulse—was employed to detect AFib episodes from extremely noisy PPG signals—an optical metric of atrial oxygen saturation measured in smartwatches. The Pulse framework consists of transfer learning (transfer of weights for better weight initialization), dual tasking (simultaneous assessment of the two related tasks of signal quality and AFib detection for increased performance), and threshold verification (clustering signal segment predictions for confirmation of true AFib instance). Pulse achieved high precision (97.77%) and recall (98.08%). However, there is limited research exploring the use of PPG signals in predicting more life-threatening cardiac conditions (related to AFib) because the PPG waveform does not reveal significant cardiac medical developments. This research introduces a novel multi-model approach to reconstruct unbiased ECG signals from noisy PPG signals to predict multiple severe cardiac events (i.e. stroke, cardiac arrest, myocardial infarction, syncopal events, and transient ischemic attack). The framework consists of a convolutional denoising autoencoder (CDAE) to generate denoised PPG signals, a linear transform model to construct unbiased ECG signals from denoised PPG signals (ECGreconstructor), and a CNN (CardiacPredictor) to predict the risk of occurrence of various cardiac events by constructing 3D features of AFib events (detected by Pulse), heart rate variability (HRV), and the reconstructed ECG signals (from ECGreconstructor). The CDAE resulted in a loss of 0.46% in clean signal reconstruction. The CardiacPredictor CNN successfully utilized the reconstructed ECG signals and performed with an average of 87.78% recall and 92.38% specificity among all tested severe cardiac events. This comprehensive prediagnostic tool can be implemented in a wide array of smartwatches for real-time assessment of AFib events to alert patients of their cardiac health.

Abigail Bolt

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:

#1 Abigail Bolt
#2 Brian Reiss
#3 Jundi Liu
#4 Mobina Amrollahiboyouki
Brian Reiss

Abstract Name: Predicting and Optimizing Workers' Trust Toward Autonomous Vehicles in Manufacturing Plants

This study aims to model, predict, and enhance the human subject's trust regarding Human-Autonomous Guided Vehicles (AGVs) interaction in manufacturing plants. The integration of Automated Guided Vehicles (AGVs) in manufacturing is seen as a significant advancement, offering advantages such as flexibility, space efficiency, safety, and cost reduction. Thus, as AGVs are envisioned as essential to the future of manufacturing, establishing trust in these autonomous systems becomes crucial for their successful collaboration with human workers in factory settings. The research team constructed a 3D virtual manufacturing plant that will serve as the setting for the experiment. The team will conduct human-in-the-loop experiments to collect subject data from interacting with the AGV. During the experiment, the subjects will walk on an omnidirectional treadmill to provide the experience of walking around a manufacturing plant, and they will be given the task of moving a virtual toolbox in the virtual world. Participant eye gaze, location, headings, moving speed, and task completion time will all be collected during data collection. The participants will also be asked to rate their trust in the AGV. Overall, the team aims to collect data from 200 participants. Using the collected data, the research team will then develop and test algorithms to predict worker's trust toward the AGV. Additionally, the research team will perform statistical analysis to discover relationships between human worker's decision-making and their trust. The results from this analysis will then be used to develop an optimization framework to allow the AGV to adapt its behavior to the worker's trust.

Daria Bonds

NC - Winston-Salem State University

Discipline: Natural and Physical Sciences

Authors:
#1 Daria Bonds
#2 Olusegun Ariwodola
#3 Sarah Adjei-Fremah, Ph.D

Abstract Name: Genx Chemical Exposure Alters Mitochondria Membrane Potential and Function in HepG2 Cells

Per and Polyfluoroalkly substance (PFAS) have gained attention due to their persistent in the environemnet and potential health implications in humans. GenX is an alternative to the predominant PFAS types PFOA and PFOS. While the health effect of PFOA and PFOS have been studied, limited research exists on the impact of GenX exposure on cellular process. Mitochondria are vital organelles responsible for energy production and play a crucial role in maintaining cellular homeostasis. This study aimed to investigate the effect of GenX exposure on mitochondrial membrane potential and functionality. HepG2 cells were cultured in William's E medium (10% fetal bovine serum (FBS), and 1% Penicillin-Streptomycin) on Collagen coated plate. Cultured HepG2 at 80% confluence were treated with varying concentrations of GenX (10 nM, 50nM, 100nM, 1000nM) and untreated cells (control group) and were incubated (37oC, 5% CO2) at two exposure durations (48 hours and 96 hours). Mitochondrial functionality was assessed through several assays including measuring ATP production, ROS levels, antioxidants status and mitochondrial protein level. Membrane potential changes were monitored using JC1 fluorescent probe. All experimental data were analyzed using JMP software and statistical significance was at p<0.05. Our results showed a reduction in mitochondrial

functionality following GenX exposure at higher concentrations and 96 hours duration. The ATP production rate significantly decreased in PFOS (1000nM) exposed cells for 96 hrs than 48 hrs cells and control group suggestion impaired energy production. An increase in ROS production and reduction in antioxidant capacity were observed indicating potential oxidative stress. GenX exposure was significantly associated with decreased mitochondrial membrane potential indicating a potential disturbance in mitochondria integrity. These findings highlight the potential mitochondrial toxicity of GenX and potential impact on cellular health and overall homeostasis, and therefore warrants further investigation to elucidate the underlying mechanism of long-term GenX exposure on cellular and systemic health.

Katherine Bonsell

MT - Montana Technological University

Discipline: Natural and Physical Sciences

Authors:
#1 Katherine Bonsell
#2 Yihuan Gao
#3 Xiaobing Zhou

Abstract Name: Integrating Multiple Geophysical Methods to Investigate Groundwater Flow Direction at the Old Works Golf Course, Anaconda, Montana

The Old Works (East Anaconda) Development Area Operable Unit (OWDAOU) site is located adjacent to the town of Anaconda, Montana. Warm Springs Creek is the area's principal drainage, flowing east through the site. The site contains large volumes of milling and smelting wastes, fallout from smelter emissions, and other debris that originated from smelter operations at the Upper and Lower Works and the Washoe Reduction Works. The Environmental Protection Agency (EPA) placed this site on the Superfund National Priorities List in 1983 to address metals contamination in soils, surface water, and groundwater. Extensive investigations and cleanup activities have been performed over the past 40 years, including construction of the Old Works Golf Course in 1994. The golf course was built on top of mine waste capped by lime rock and soil, and waste materials were also incorporated into design features of the course. The study’s objective is to locate groundwater and groundwater flow direction at the Old Works Golf Course to provide guidance for groundwater remediation before it flows into Warm Springs Creek and then Upper Clark River. Induced polarization tomography (IPT) and seismic refraction tomography (SRT) were performed along three lines running perpendicular to a sloped surface at the site to identify potential groundwater flow paths. Preliminary results show three locations with potential north to south groundwater flows. These results will be used to determine locations for a more detailed self-potential (SP) survey with high special resolution to more accurately characterize the subsurface groundwater flow patterns. The self-potential survey will be performed in Spring 2024. The findings of the full study could inform further groundwater contamination investigation at the site and provide guidance for future groundwater remediation before it flows into the Warm Springs Creek.

Piper Booker

PA - Allegheny College

Discipline: Humanities

Authors:
#1 Piper Booker

Abstract Name: Liberty University & Lynchburg, Virginia: A Town Captured for Jerry Falwell

Jerry Falwell Sr. (1933-2007), host of the televangelist show The Old Time Gospel Hour and the founder of the Christian Right organization The Moral Majority, was a controversial figure from the 1970s up until his death in 2007. While being known as a leader in the Christian Right, Falwell also founded Liberty University, an evangelical institution located in Falwell's hometown of Lynchburg, Virginia. Since the beginning of the institution, Liberty University was meant "to capture" Lynchburg in the name of God. In his book, Capturing A Town for Christ, Falwell states in no uncertain terms that he is "determined to reach every person in town with the gospel." Today, it is clear that Falwell's goal has been achieved: Lynchburg has been "captured for Christ." When not buying stock in declining businesses to revitalize them, Liberty University hosts entertainment attractions like the Halloween attraction 'Scaremare' and their popular Snowflex Centre on top of Candlers Mountain. In A 'Biography" of Lynchburg, M. Andrew and David M. Holowchak rhetorically ask whether Liberty University will "eventually swallow up Lynchburg and make it an evangelical city of its own." Their passing inquiry is significant as it acknowledges what many scholars have overlooked: the growing implications of Liberty University's take over (capturing) of Lynchburg. I will show how well-known scholarly investigations into Falwell's legacy have consistently failed to connect the city of Lynchburg and Liberty University as part of his overall economic interests. By recognizing this codependency between Falwell, Lynchburg, and Liberty University, I contend that we can better understand how "capturing a town for Christ" also meant building a Christian empire for Falwell.

Foster Boom

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Foster Boom
#2 Gabby Braatz
#3 Megan Honn

Abstract Name: Enhanced Bioactivity of Titanium Implants through Silicide-Bioglass Coatings

In recent years, the field of biomedical engineering has seen significant advancements in the development of biomaterials for implantable devices and tissue engineering applications. Titanium (Ti) and its alloys have gained widespread popularity due to their excellent mechanical properties, but they have low bioactivity (fusion with bone tissue). In this study, we propose a novel approach to enhance the bioactivity of Ti implants and integration of titanium within the human body by coating the titanium surface with bioactive glass, mediated by a titanium silicide layer. The experimental methodology involves depositing a silicide coating on titanium substrates using a combination of reactions with eutectic salts, a reducing agent (such as magnesium), and heat. Then, bioactive glass is grown onto the metals using a general sol-gel method. Analysis is accomplished using scanning electron microscopy (SEM) and X-ray diffraction (XRD) to assess the morphology, phase composition, and surface properties. We show that the interfacial silicide coating on titanium significantly enhances adhesion of bioactive glass, thus improving the biocompatibility of titanium, whereas bioactive glass has little affinity and cannot be grown onto bare titanium. The results of this study have the potential to contribute to the development of improved biomaterials for orthopedic and dental applications, where a strong and stable bond between the implant and surrounding tissue is crucial for long-term reliability and benefit.

Connor Bopst

MD - University of Maryland College Park

Discipline: Business and Entrepreneurship

Authors:
#1 Connor Bopst

Abstract Name: Russian Wealth and the War with Ukraine: Evidence from the Bank for International Settlements

This paper uses public bilateral deposit data released by the Bank for International Settlements to analyze the effect of the start of the Russia-Ukraine war in February 2022 on Russian wealth held abroad. I find a sharp increase in cross-border deposits held by Russian nonbank counterparties of over $22 billion, or 66%, from quarter 4 of 2021 to quarter 1 of 2022. This increase in deposits fully subsided by quarter 2 of 2022. I quantify the size of the spike in deposits and document the exemplary nature of the Russian spike, finding that $17 billion of the increase is attributable to Russian deposits held in the US. I then show that a spike in Russian deposits is not observable in other advanced economies that are known to have exposure to Russian counterparties, such as the UK, Germany, and Switzerland. I advance a few possible explanations for why the spike is only seen in the the US, and the implications of this finding for better understanding responses to the sanctions implemented by advanced economies in Europe and the Americas. There are also implications for the use of the BIS data to observe how wealth stocks respond to policy changes.

Megan Bordner

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Megan Bordner

Abstract Name: Psychiatric Misdiagnosis of Women in the Early 20th Century: A Scientific Exploration

In the early 20th century, scientific perspectives regarding psychiatric care for women were shifting to a more factual and scientific basis. However, constructs of women's mental health remained shadowed with historical concepts like "hysteria" and "madness". The disparity in attitudes towards men and women's mental health seemingly created a large gap between diagnosis and treatments in each group. For example, doctors argued that "men are only rarely hysterical" and pushed for outdoor exercise, while women were instructed to strictly avoid all physical activity. In the time when the term hysteria is based on from the name of the uterus to which a woman's mental condition was attached, symptoms such as cramps, moodiness, or independence from the husband could all be classified as "hysteria." The amount of which this condition was misdiagnosed remains unclear.Using a scientific approach, this project will be formatted as an investigative podcast based on the archival collection Diary of an Unidentified Nurse, 1930s, at the University of Kentucky Libraries Special Collections Research Center. Focusing on the incidence of misdiagnosis, research will explore early 20th century diagnoses of female patients. Meanwhile, the podcast will contain interviews from experts in the field of psychiatry, shining a light on women's mental health regarding diagnosis and treatment. The purpose of this research is to mitigate bias while scientifically developing conclusions regarding a significant period of development of psychiatric treatment for women. The piece concludes with the enduring impact this history has on contemporary perceptions of mental illness in women today. This research contributes to unraveling any misunderstandings regarding women's mental health, providing insights that resonate with the evolving landscape of modern healthcare.

Liam Bordoni

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
#1 Liam Bordoni

Abstract Name: Coping

Just after my 16th birthday, I entered the darkest period of my life. I've never been one to know how to deal with my emotions, and, in the past, had let them consume me to a point where I felt that I had lost my identity and value for life. Fortunately, I soon after discovered my passion for piano and creating music, using it as a way to express those emotions that I otherwise struggled to control. In this piece, I aim to highlight the power of coping through non-traditional outlets, specifically music, and how music can be incorporated into the world of visual art. I do this through oil painting on canvas, displaying a somber self-portrait, representative of my destructive emotional consumption, surrounded by a vibrant audio file visualization from an original composition. As sister mediums, music and visual art have always been very closely related, influencing one another time and time again. As a musical artist, now entering the visual art scene, I want to make it my goal to push the envelope of music's presence and importance in the art world. Utilizing the contrast between a grayscale portrait, and an incredibly saturated background, I hope to convey the severity of the role that music plays in my life, and I aim to continue exploring unique ways to incorporate music into future visual artworks.

Ryan Boston

WI - University of Wisconsin-Eau Claire

Discipline: Mathematics and Computer Science

Authors:
#1 Ryan Boston
#2 Naeem Seliya

Abstract Name: Machine Learning for Evaluating Disaster Tweets

This research explores the application of Natural Language Processing (NLP) in analyzing disaster related tweets to enhance crisis management efficiency. Utilizing a dataset of over 7,600 tweets, this study conducts a comparative analysis of three empirically well-known machine learning models: XGBoost, CatBoost, and Random Forest. We aim to determine which model most effectively classifies tweets into the disaster and non-disaster categories. The dataset underwent extensive preprocessing, including text normalization, stop word removal, and lemmatization. Feature extraction was performed using CountVectorizer of the scikit Python package, thus, tailoring the dataset into numerical format for our case study machine learners.The methodology encompassed a detailed configuration and hyperparameter tuning of each of the three models, followed by an implementation of a majority vote ensemble technique to potentially enhance predictive performance. The models were evaluated through stratified k-fold cross-validation (k = 5), focusing model evaluation on the following performance metrics: accuracy, precision, recall, and F1-score. Our empirical results indicated minor differences in the performance of the individual models, making them comparable to this dataset. The ensemble approach demonstrated a general, improved overall performance, with a performance score of about 80% for the F-1 metric.The study provides insights into the efficacy of different machine learning models in processing disaster-related social media data and underscores the potential of using ensemble techniques in the domain. The conclusion of our research has practical implications for enhancing disaster response and management strategies. The research contributes to the broader understanding of NLP applications in the data-centric exploration of disaster-related modeling and analysis. The uniqueness of our work is the novel combination of the three machine learners in an ensemble setting,

which to our knowledge, has not been done with this dataset. Future work will explore deep learning with the case study data and other datasets.

Natalie Bowen

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Natalie Bowen

Abstract Name: The Romanticization of Human-Vampire Relationships: How 'Twilight' and 'The Vampire Diaries' May Prime Teenage Girls to Accept Dating Violence and Abuse

The first literary vampire can be traced back to 18th century Germany, with Johann Wolfgang von Goethe's poem "Die Braut von Korinth," but the stereotypical features of a vampire are traditionally accredited to Bram Stoker's Dracula. Modern vampires, such as Edward Cullen and Stefan Salvatore of the Twilight and The Vampire Diaries series respectively, have managed to win the hearts of teenage girls all across America with their sex appeal and charismatic nature. According to Bandura's Social Cognitive Theory, individuals learn new behaviors by modeling and imitating the actions of those around them. This comprehensive literature review investigates the connection between the human-vampire relationships in Twilight and The Vampire Diaries and teenage girls' acceptance of dating violence and abusive behaviors from intimate partners. This study aims to examine how both Twilight and The Vampire Diaries create popular modern vampire narratives that may promote harmful messages to female youth regarding future romantic relationships. This analysis of peer-reviewed studies finds that harmful gender stereotypes and literary tropes are used on both female and male characters, the vampires exhibit manipulative and predatory behaviors, and the idea of true love overpowers the abusive behaviors of Edward and Stefan in the eyes of young girls, possibly creating a link between sex and violence. The findings of this study display a positive correlation between exposure to media violence and acceptance of dating violence among teenagers, as well as a positive correlation between exposure to sexually-oriented television and both the acceptance of the sexual double standard and earlier sexual timing expectations in relationships. New vampire media is still being produced, so it is important to understand what messages are being portrayed to teenage girls and how exactly these messages are altering their values regarding love in heterosexual relationships.

Zoe Bowers

IL - Eastern Illinois University

Discipline: Social Sciences

Authors:
#1 Zoe Bowers

Abstract Name: Recruitment Strategies of College Admission Counselors

My proposed research project is designed to identify strategies used by college admission counselors to recruit students, techniques utilized to identify and avoid bias, and ways to overcome barriers to student success, paying specific attention to social reproduction processes. I recently conducted semi-structured, open-ended interviews with five college admission counselors where participation was entirely voluntary. Each counselor belongs to a different racial and ethnic group and recruits in a unique region. During each interview, the counselor was asked a series of questions regarding their recruitment strategies of prospective

students in their designated recruiting region. They also elaborated on their reasons for wanting to recruit in their region, what their typical conversations consisted of, and how they ensure successful recruitment of students from diverse backgrounds. The interviewees were recorded with a digital voice recorder and a complete transcript will be produced from each interview. The final results obtained from the interviews will now be interpreted in my analysis through an open coding process using qualitative analysis data software.

Ethan Bowers

OR - Corban University

Discipline: Mathematics and Computer Science

Authors:
#1 Ethan Bowers
#2 Megan Boes
#3 Robert Driver
#4 Lacey Gilmore
#5 Evan Hedlund
#6 Michael McGovern

Abstract Name: Chromatic Polynomial of Generalized Petersen Graph

A graph G is a set of vertices together with a collection of edges, in which each edge corresponds to a pair of vertices. Vertices which share an edge are called adjacent. A proper coloring of a graph is a function from the set of vertices into a finite set of colors such that any two adjacent vertices are assigned distinct colors. The number of proper colorings of a graph using k colors is denoted P(G,k) and given by a polynomial, called the chromatic polynomial of G. Some explicit formulas for chromatic polynomials of special cases of graphs exist. However, explicit formulas for most graphs are unknown. All other graphs rely on a recursive formula involving deletion-contraction, which is computable only in polynomial-time.Here we present a method for computing chromatic polynomials for a special class of graphs which only requires linear-time. We have applied our method to both cycles and Generalized Petersen graphs, in hopes of addressing a conjecture. We expect our method can be extended to the graph Cartesian product of a cycle with many other reasonable graphs. It is left to be explored whether our method extends to more general Tutte polynomials.

Anna Bowman

WI - University of Wisconsin-Parkside

Discipline: Natural and Physical Sciences

Authors:
#1 Anna Bowman
#2 Angie Rayniak

Abstract Name: Sorption of Anionic Dye Alizarin Red S from Solution by Carbonate Mineral Dolomite

The dye Alizarin Red S (ARS) is used in histology to stain and locate calcium deposits in tissue samples, and in geology to identify carbonate minerals in thin section. Improper disposal of excess dye solution imposes a threat on water supplies. This study explores the potential of one selected carbonate mineral (dolomite) for dye sorption, which would facilitate proper dye disposal and mitigate contamination risk. Additionally, decomposition products of dolomite, the result of temperature-related processes occurring at 800° Celsius (magnesium oxide and calcite) were utilized and tested for their sorption efficiency as well. This earth

material was chosen due to its availability and low cost in comparison to synthetic alternatives. This study is designed to determine the rate of ARS sorption under specific conditions such as varying initial concentration, ionic strength, temperature, and time. Samples were prepared in duplicate to verify accuracy and precision of resultant data. Data was collected primarily via ultraviolet-visible (UV-vis) spectroscopy analysis of supernatant solution, to quantify the amount of dye absorbed by the dolomite/ heated dolomite. X-ray diffraction (XRD) and Fourier-transform infrared spectroscopy (FTIR) were used as analysis methods for the mineral component of each sample. XRD and FTIR data is currently being analyzed and as such, results and conclusions are anticipated in the near future. From UV-vis spectroscopy analysis alone, heat-treated dolomite was shown to be more effective in the removal of ARS dye – it ultimately was able to absorb higher concentrations of dye than raw dolomite a majority of the time. Specifically, based on the Langmuir sorption affinity parameter, heat-treated dolomite showed an increase from 1 L/kg to approximately 40 L/mmol: 40 times increase in efficiency compared to raw dolomite. Funding for this research is partially supported by the Freshwater Collaborative of Wisconsin and a WiSys Spark Grant.

Charlotte Boyer

FL - Jacksonville University

Discipline: Social Sciences

Authors:
#1 Charlotte Boyer

Abstract Name: Can You Catch a Conspiracy Theory?: Critical Thinking to Dispel Conspiratorial Belief

Conspiracy theories are defined as a secret plot designed by two or more powerful actors, most often associated with the government. They are considered misinformation to the media and have become a cultural phenomenon that can sometimes prove malicious in their intent. While having ideation of an alternate reality can help to rationalize and justify the powerful actors' behavior, conspiracy theories are corrosive in both society and personal relationships. Often being the cause of violence and contributing to the propagation of prejudice in society, Conspiracy theory ideation is becoming a growing public health concern, causing distrust for government, health professionals, and authority. Conspiratorial thinking has been shown to correlate with lower levels of education. However, we do not know the causes, and beliefs can be malleable as we learn critical thinking skills. In this study, researchers will be asking two questions: Is critical thinking able to dispel conspiratorial belief and, is there a correlation between conspiratorial thinking and a persons religious or political affiliations? To investigate these hypotheses, I have devised a pre-test and post-test study with an intervention exposing the experimental group to new critical thinking skills. First, all subjects will receive the Conspiracy Mentality Questionnaire, the Centrality of Religiosity Scale, and demographic questions such as political affiliation. Participants will then be given the 27-question Critical Thinking Toolkit. The experimental group will read critical thinking skills, while control group participants will receive a reading on study skills. After reading, all participants will receive The CMQ questionnaire again. We live in an age where technology can give misinformation, and it is up to us to decipher reality from conspiracy. This work can help determine conspiracy theory as a mindset. This research aims to understand how education assists in weakening conspiracy theories and how a conspiratorial mindset can be changed.

Emily Boyer

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:

#1 Emily Boyer
#2 Lisa Tamres
#3 Jeong Eun Kim
#4 Jennifer H Lingler

Abstract Name: Return to One-Year Follow-Up For a Longitudinal Research Study After Disclosure of Amyloid Scan Imaging Results

Purpose/Background: Disclosure of biomarker testing for Alzheimer's disease (AD) is increasingly common, yet little is known about the effect of learning these results. Positive amyloid PET imaging may indicate a diagnosis of AD for individuals with cognitive symptoms and indicates risk level of developing AD in others. For such individuals, longitudinal follow-up for assessment of possible progression is critical. This preliminary analysis examines the rate of return for follow-up visits after participants from a longitudinal study of AD learn their scan results.Methods:Sixty participants from an Alzheimer's Disease Research Center (ADRC) had amyloid PET Imaging and learned their scan result. Return for follow-up cognitive assessment was tracked by the ADRC. A Chi-Square test of independence was used to examine whether amyloid status was associated with return for a one-year follow-up at the ADRC.ResultsParticipants were 62% Male, 93% White and averaged 70 years of age. Diagnoses at scan were 15% cognitively normal, 35% mild cognitive impairment , and 55% dementia. Mini Mental State Exam scores averaged 24.63 (range 12-30). Just over half (53.3%) were amyloid negative and 46.7% were positive.Chi-square test indicated no significant relationship between amyloid result and return at one-year follow-up.ConclusionIn this sample there was no relationship between whether individuals learned that they had amyloid plaque and whether they returned for follow-up one year later. This indicates that knowledge of one's amyloid status does not seem to affect adherence to recommendations for continued follow-up. A limitation of this preliminary data is the high proportion of already known dementia participants as individuals with MCI or normal cognition might be more affected by a positive for amyloid scan result. Keywords: Biomarker, Alzheimer's Disease, Result Disclosure, Retention, Amyloid, PET Scan

Madison Boyer

NC - Elon University

Discipline: Visual and Performing Arts

Authors:
#1 Madison Boyer
#2 Lauren Kearns

Abstract Name: A Dance-Based Movement Intervention to Address Scoliosis in College Dance Students

Purpose: The purpose of this project is to examine if an integrated modern dance-based movement intervention could also be beneficial in reducing the Cobb angle in the participants spine, improve strength and flexibility, assist with pain, and increase overall mental well-being and compare it with a strict Pilates regiment. A dance movement practice that combines yoga, Bartenieff Fundamentals, and modern dance could be a unique and enjoyable way for dancers to not only address their curvatures, but practice what they love in a healing way.Literature Review (Background): Dancers with scoliosis are more prone to back and knee injury than non-scoliotic dancers as well as a doubled risk of sustaining dance injuries (Wong 2022). Pilates has been researched for its efficacy in decreasing the Cobb angle in patients (Kim and HwangBo 2016) and decrease lumbar and curve thoracic curves (González-Gálvez et al. 2020).Methods: This IBR approved project was a five-week movement intervention was composed of 20-minute interventions once a week. The participants were divided into three groups: Pilates Group, Movement Intervention group, and control. Cobb angle was be measured using a Scoliometer for pre-screening and post-screening. They also filled out pre and post questionnaires regarding daily pain, dance experience, and scoliosis history. They gave feedback of the interventions after they were done.Results Participants who were in the Pilates intervention and the

movement intervention noted a decrease in physical tension. Participants in the movement intervention noted a greater feeling of relaxation Participants in the Pilates intervention had a decrease in Cobb angle by an average of 0.89 degrees. Participants in the control group and the movement intervention group did not have any decrease of Cobb angle. Self-perceived rankings of daily back pain decreased by an average of 1, based on a 1-5 pain scale, in the movement intervention group.

Alyse Bradley

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Alyse Bradley
#2 Kristine Morris

Abstract Name: The Lived Experience of Medical Interpretation on Ad Hoc Interpreters: A Phenomenological Study

Purpose The purpose of this qualitative study was to better understand the lived experience of adults who served as ad hoc interpreters (AHIs) in healthcare settings. An AHI is defined as any untrained person who serves as a language interpreter for another person/group of people. AHIs are sometimes referred to as Language Brokers in the literature. Background Although many studies discourage the use of AHIs in healthcare due to the risk of translation errors, the use of AHIs remains common. Existing literature on the lived experience of AHIs is largely focused on children who often report feeling conflicted and uncertain about the role. This study explored how adults, many of whom also interpreted as children, described their experience serving as an AHI. Methods Semi-structured Zoom interviews were conducted and common themes analyzed. Participants had to meet the following requirements: AHI experience in a healthcare setting in the past 5 years, 18 years of age or older, Texas Woman's University (TWU) student/faculty/staff member, access to a Zoom-capable device, and sufficient English speaking skills for the interview. This study was approved by the Institutional Review Board (IRB) as an exempt study. Results The interviews revealed that participants felt motivated to translate rather than obligated to do so. AHIs reported that the experience differed based on their familiarity with the person they were translating for. Many participants who translated as children reported feeling more comfortable serving as AHIs as adults due to greater experience and maturity. Several participants reported that their pursuit of healthcare professions was heavily influenced by their service as an AHI.

Curtis Bradley

CA - Cuesta College

Discipline: Mathematics and Computer Science

Authors:
#1 Curtis Bradley

Abstract Name: Trigonometry, Planar Geometry, and Location by Trilateration with Unknown Stations

The work presented here shows how triangles and trilateration can be used in solving both abstract and applied problems. Trilateration is the process of locating an object using distances to three known points or stations. Satellites and other devices are usually involved in such a process, which allows for applications as commonly used as GPS, GIS, etc. An issue arrives when the locations of, or even the distances between,

these stations are unknown. For example, a satellite orbiting the Earth will be moving, making it hard to locate. The work introduced here presents a solution to such an issue in the context of two open problems published by the New York State Mathematics Teachers Journal, proposed by Bernerd G. Hoerbelt. The problems involve three stations of unknown location. The solution presented here uses circles centered at the stations to find the intersecting point, similar to GPS trilateration, and uses various mathematical techniques, such as revolving substitution and solving fourth degree equations. Another open problem is from the American Mathematical Association of Two-Year Colleges, proposed by Michael Ecker. This problem involves creating a hexagon of a known side length, and then inscribing hexagons recursively inside of it, asking when the perimeter will meet a certain threshold. The solution presented here uses mathematical tools such as trigonometric identities, converting series from recursive to explicit expression, and solving exponential equations. This problem is more abstract in nature, but utilizes important mathematical tools. Both solutions involve the use of analytical reasoning as well as geometric descriptions and visualizations

Jared Bradshaw

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Jared Bradshaw

Abstract Name: Subconscious Comprehension of Structural Forms: An Eye-Tracking Study

This research seeks to analyze if there exists an understanding of structural design principles among untrained humans. Building forms and styles have evolved since the earliest structures. For thousands of years buildings were limited by naturally occurring materials. Designs of those periods reflected the structural principles of those materials. In the last few hundred years technological advances have provided structural methods which radically altered how buildings can be designed. An example is the difference in column spacing between historic and modern buildings, where the former has much tighter spacing due to natural material’s spanning limitations.To analyze the understanding of untrained humans an eye-tracking study was conducted using A.I.-3M-VAS eye-tracking software. This technology utilizes artificial intelligence to graphically display eye gaze sequences, patterns, and durations of focus. The software reflects the first few seconds of eye-tracking, providing insights into subconscious reactions before a logical response is formed. Images of structural elements were designed digitally to reflect a variety of forms, maintain cohesiveness, and remove visual variables. Each image was individually processed through the software providing isolated results.The results of the study show consistent patterns of focus on locations of structural significance, such as bearing points, connections, and material loads. The consistency by which these concepts received focus concludes that there is an innate human ability to locate structural methods of building. Of note the structural forms which adhered to the limits of natural materials registered different eye tracking patterns than the modern manipulated material forms. The historic methods displayed even tracking throughout the structure, whereas the modern methods created hot spots at the points of greatest structural significance. The differences further emphasizes that untrained people are not limited to just understanding familiar structural forms. This will allow for further research on the physiological effects between form types.

Kalasia Bradshaw

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:

#1 Kalasia Bradshaw
#2 Sara McClelland

Abstract Name: Impacts of Environmental Microplastics on Larval Behavior Using an Amphibian Model

Microplastics pollution is on the rise within the environment with microplastics being found in terrestrial environments, saltwater bodies, freshwater bodies, and drinking water. Oftentimes, animals either mistake microplastics for food or microplastics become embedded in food and animals end up consuming them. I will be studying how exposure to microplastics will affect animal behavior using Xenopus laevis tadpoles as a model. For this study, I exposed 15 Xenopus laevis tadpoles to 10 µg/L of 34-50 µm polyethylene microplastics and 15 Xenopus laevis tadpoles were used as a control group (i.e. not exposed to microplastics). After three weeks of exposures, I performed behavioral assays. To assess impacts on feeding, I withheld food for 48 hours. After 48 hours, I added food to the tank and recorded how long it took tadpoles to approach the food, amount of time spent eating, and number of times tadpoles returned to the food. After the feeding assay, tadpoles were fed regularly. Three days later, I performed behavioral assays to assess general behavior and responses to a simulated predator stimulus. Analysis of these behavioral assays is currently underway. I predict that we will see a change in how tadpoles respond to food because microplastics have been shown to impact the function of the digestive system. This work is important because microplastics have been a rising pollutant due to single use plastic and their improper disposal leading to increasing exposures across the globe.

Hailey Brady

MN - Hamline University

Discipline: Natural and Physical Sciences

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Sara Dooley

Abstract Name: Degradation of Perfluorooctanoic Acid in Water by a Pin to Water Discharge Cold Plasma

This study focuses on the degradation of perfluorooctanoic acid (PFOA)-contaminated water by a Cold Atmospheric Pressure Plasma (CAP). Using PFOA as the choice of our contaminant is justified in today's ecosystem. PFOA is a "forever chemical" that does not break down easily and is toxic even at low levels, and its conventional treatment technologies such as advanced oxidation processes and activated carbon have scientific challenges. A 20-micromolar PFOA solution in conductive water was subjected to argon plasma at around 10 Watts in both positive and negative polarity respectively. The time of plasma exposure was varied from zero to two hours and the solution was analyzed with an LC-MS to quantify the percent degradation of PFOA over time using CAP. It was determined that PFOA degrades about 65% in an hour when CAP is run in positive polarity with Argon gas. The negative polarity trials provided evidence that about 40% of PFOA degrades in the same conditions mentioned above for positive. In the presence of a 1 mM solution of a surfactant cetyltrimethylammonium bromide, 75% of PFOA degrades in one minute in both positive and negative polarity. Scavenger experiments were carried out in both positive and negative polarity with a 7 mM solution of isopropanol, a scavenger of the H, and the OH radical. Results indicate an inhibition of PFOA degradation by around 55% in positive polarity and around 11% in negative polarity. This suggests that the H radical is most likely a probable species responsible for the degradation of PFOA as OH radicals are not supposed to be responsible for PFOA degradation as suggested in the literature. We will continue to probe similar scavenger experiments in the future to determine a specified pathway for degradation.

Elise Braggs

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Elise Braggs
#2 Jennifer Borland

Abstract Name: How The Open-Access Model Impacts Viewer Relationship and Interaction: A Close Investigation of Different Visions: New Perspectives on Medieval Art

My research explores the momentum of the open access movement in academic publishing. According to Cornell University Library, open access is defined as “scholarly literature that complies with peer-review processes and maintains high publishing standards while remaining free of charge and carrying less restrictive copyright and licensing barriers than traditionally published works” (Suber, 2023). This paradigm shift from subscription-based to open access journals raises intriguing questions about the OA model’s impact on engagement, particularly within art history and the humanities, and how it compares given a cross-disciplinary analysis.My presentation will delve into the multifaceted landscape of open access publishing by using a case study approach centered on the open-access journal Different Visions: New Perspectives on Medieval Art, which is dedicated to medieval art history. By analyzing data obtained from the journal's website regarding site visits and interaction throughout time, the study investigates the spectrum of interaction facilitated by open access platforms. The use of this journal as a primary source offers insight into the nuanced dynamics of operating an open-access publication, along with the credibility of academic journals functioning under this model. My presentation also uses information from The Journal of Academic Librarianship as a baseline to discuss the varying types of open access publishing; specifically the different goals and functionality between gold and green open access. Referencing this source helps to better contextualize the case study within the larger field of open access journals used in art history. As academia navigates these transformations, understanding the implications of open access publishing becomes imperative for shaping the future of academic communication. This research uses a comparative lens, extending across publication models, to discern the model with the most successful interaction between publication and audience while further exploring the model’s influence on scholarly discourse.

Gabriella Branco

MA - Bridgewater State University

Discipline: Social Sciences

Authors:
#1 Gabriella Branco

Abstract Name: The Higher Education Crisis: The Latine Student Experience at Bridgewater State University

The rise of Latine students at Bridgewater State University (BSU) emphasizes the institute’s lack of resources and representation of Latine culture and identity. For BSU Latine students to succeed they need their voices heard and their needs met. Students are in desperate need of Latine mentorship, representation, and resources. To address this issue, the study conducted interviews with Latine students who attend or have graduated from BSU. These interviews consisted of questions about participant’s demographics and their BSU experience and support. The interviews revealed themes relevant to the Latine experience: intersectionality, Latine

identity, first generation, and mentorship and support. The students in this project discussed their want for more Latine faculty and staff and revealed their encounters with microaggressions and discrimination from BSU members. The participants in the study rated their overall BSU experience as positive but believed the institute could do more for their Latine population. Results from this study show the importance of listening to Latine voices and the steps needed for closing the educational gaps and for student success at BSU.

Amy Brandt

MO - University of Missouri - Columbia

Discipline: Health and Human Services

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Abstract Name: Hit Me with Your Best Shot - Nursing Student Perceptions on Covid Risk and Vaccine Effectiveness Could Surprise You

Introduction - Cultural beliefs and misperceptions may lead to variable behavioral responses to COVID and vaccinations. Educators should not assume uniformity of nursing students' (NSs) perceptions regarding COVID. A better understanding of nursing trainee perceptions can inform educational interventions. Methods - A 44-question survey was distributed in September 2023 to students enrolled in a senior-level BSN (baccalaureate program in nursing) course. Then compared to surveys from the same time across Missouri, with urban and rural participants. The analytic plan included descriptive and bivariate statistics. Results - Ninety-one NSs and 371 other adults (OA) were surveyed. NSs were statistically more likely than OAs to trust CDC, FDA, and other government agencies (60.4% vs 37.5%; p<0.0006) and less likely to trust healthcare providers (47.3% vs 57.7%; p<0.07) for information about COVID and vaccines. The majority of NSs when describing vaccination status reported "they got vaccinated as soon as they could" (67.3%), while one-quarter of the NSs (24.2%) indicated they are more likely to wait and "see what happens to others." Few remain skeptical about the pandemic (4.4%) or "do not trust the system" (4.4%). About half of the NSs and OAs plan to get vaccinated in the future (58.2% vs 54.4%), but significantly more NSs were unsure of future vaccination (28.6% vs 15.6%, p<0.004). Both NSs and OAs reported being "not at all worried" about getting long COVID (59.3% vs 52.6%), despite NSs reporting higher risk of getting COVID (medium to high risk 72.5% vs 56.9%; p<0.006).Discussion - NSs were not uniform in their perceptions of COVID risk or vaccinations and were different than OAs. NSs may trust government sources more and providers less, which could impact effectiveness of messaging strategies. Based upon our results, COVID education for NSs should include risks for long COVID with the safety and effectiveness of vaccines.

Mary Brandt

FL - Stetson University

Discipline: Humanities

Authors:
#1 Mary Brandt

Abstract Name: American Airpower: Historical Narratives, Museum Aircraft, and World War II in Asia

In 1984, the National Air and Space Museum announced its impending restoration and display of the Enola Gay, the B-29 Superfortress that dropped the atomic bomb on Hiroshima. This was the beginning of the well-known public controversy about which narrative to assign to this historic aircraft. Because no one could agree on which narrative to present, the display of the restored Enola Gay opened in 2003 as a bare exhibit containing a singular sign listing basic facts. The question of historical narrative and the observation that many times museums lack historical objectivity and nuance has been questioned globally. Beyond the analysis of the Enola Gay controversy, there is no research about public history narratives of American airpower in Asia as studied through museum aircraft. The question I ask is how and why have certain historical narratives been prioritized in U.S. museums, particularly aviation museums and those revolving around American airpower during World War II in Asia? This project seeks to analyze the unique limitations and strengths of aviation museums, noting their purpose to serve and educate the public through the display of aircraft as their primary educational tool. It also seeks to highlight the lesser-known narratives of World War II, as museums and academic narratives adopt an occasionally Western-centric, even American-centric perspective. As evidenced by the case studies of American airpower in Asia during World War II, museums do not prioritize historical objectivity and nuance due to space, time, and funding constraints. Museums deal with the difficult balancing act of providing adequate historical context and attracting visitors. The narratives attributed to the aircraft change over time, and not every narrative is told. The choice of historical narrative becomes a part of the collective national memory of World War II, and the aircraft serve as a powerful reminder of the war.

William Brandt

MN - St. Olaf College

Discipline: Health and Human Services

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#1 Will Brandt
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Abstract Name: Impact of the ActiveStep Perturbation Treadmill on Fall Prevention within Aging Populations

As the global population continues to age, promoting healthy aging becomes crucial for sustaining individual well-being and alleviating the burden on healthcare systems. One-third of adults aged 60 and above experience falls annually in the US, a serious concern for mobility and independence. Prior research highlights the correlation between a decline in neuromuscular function in older adults and an increase in fall risk. The purpose of our study was to determine the effect of perturbation training on fall prevention in older adults. Participants from rural Minnesota underwent two weekly sessions over the course of four weeks. They were harnessed on an ActiveStep treadmill designed to challenge and enhance their neuromuscular responses

to unexpected perturbations (slips and trips). The ActiveStep treadmill has five levels of difficulty which determine the magnitude of the perturbations. Comprehensive assessment metrics were recorded at baseline and again at post-intervention for balance, strength, fear of falling, and gait patterns. Furthermore, follow-up evaluations at six months gauged the intervention's impact on fall risk, indicating that participants experienced an improved awareness of falls. Overall, predictors of fall risks and reactions were examined through exploratory data and regression analysis. Our results show a marginally significant improvement in sit to stand ($p = 0.1$) and timed up and go ($p = 0.08$). Overall, there was a decrease in reaction time to slips and trips. However, the magnitude of the effect was dependent on the participant's age and the season in which their sessions took place. Our findings contribute to the growing body of knowledge on healthy aging and present a possible targeted intervention for preventing falls in older populations.

Preston Brantley

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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#3 Razvan Voicu

Abstract Name: AI and Robotic Energy: Integrating Generative AI for Advanced Drone and Robotic Manipulator Real-Time Control

Generative Artificial Intelligence (AI) has revolutionized the technological landscape, driving unprecedented advancements across numerous industries. Its applications extend beyond mere convenience, tackling complex, high-stakes challenges such as climate modeling, personalized medicine, and advanced materials science, addressing some of the most pressing issues of our time.Building on this momentum, this research harnesses the power of generative AI to steer robotic units, including Tello Drones and Elephant Robotics Manipulators. These robotic entities prove invaluable in innumerable settings. Drones, with their aerial prowess, excel in tasks ranging from intricate surveying of inaccessible terrains to swift delivery services. Meanwhile, robotic manipulators excel in precision-based activities, thriving in environments requiring meticulous attention like complex assembly lines and delicate surgical procedures.In this innovative synergy, generative AI, represented by models like ChatGPT, leverages advanced logic and prompt-training to make robotic technologies more accessible and practical for users with limited technical understanding. The project initially targets basic functionalities like autonomous mobility and object localization within specific areas, aspiring to support critical, life-saving missions like search and rescue operations under challenging conditions.A significant innovation of this research is its approach to real-time robotic manipulation, addressing the pressing need for instantaneous feedback and directives in applications involving drone mobility and manipulators. Traditionally, GPT models introduce prompt delays and communication lags, presenting substantial challenges in real-time scenarios. This research project counters these issues by implementing parallel networking and computational enhancements, including multi-processing and innovative task-queuing techniques.In summary, the research boosts robotic units' responsiveness to user inputs and environmental changes, ensuring swift, seamless operations. The research contribution includes significantly reducing communication and GPT prompt delays to meet the stringent demands of real-time applications. Furthermore, it boosts real-time operation capabilities through advanced computational performance algorithms and unique tasking processes, as detailed in the results section.

Kal Breeden

WI - University of Wisconsin-Stout

Discipline: Natural and Physical Sciences

Authors:
#1 Kal Breeden

Abstract Name: Urban Stream Corridor Restoration Effects on Sediment Loading

Urbanization of stream ecosystems is known to increase sediment loading and change the physical and chemical characteristics of a stream, leading to decreased water quality and poorer aquatic and riparian habitats. This is often in response to channelization, runoff from impervious surfaces, riparian corridor degradation, drainage systems, and pollution found in urban environments. Urban stream restoration projects generally include riparian habitat and vegetation improvements as well as removing channelization features. The impacts of stream restoration in urban environments bear investigation as to the effects it may have on water quality in a watershed. Galloway Creek in Menomonie, Wisconsin is a small urban watershed (~1300 hectares) and is responsible for handling much of the collected runoff from the city. The stream has been a long-term study site for UW-Stout undergraduate researchers and faculty and has recently undergone reach-scale restoration projects to improve the riparian corridor vegetative community by removing invasive shrubs and planting native tree species. In this project, we examined turbidity, conductivity, pH, NVSS, substrate type, habitat assessment score, biotic index, and flow measurements from locations upstream or downstream of areas of restoration or channelization. Analysis of the data attempts to display trends that restoration projects may have on an urban stream like Galloway with the goal of better understanding the impacts of stream urbanization and the effectiveness of subsequent restoration projects. This information may be useful in advocating for awareness about water quality in our streams and watersheds as well as encouraging new restoration projects based on potential positive impacts on water quality in small urban watersheds.

Desiree Brickson

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Adelia Bovell-Benjamin

Abstract Name: Psychological and Medical Significance of Chitterlings (Chitlins) in Southern Rural American Communities: Foods that Shape Traditions and Dietary Choices in the South

Chitterlings, commonly referred to as ‘chitlins”, is the Southern American delicacy that represents soul food and comfort. Comfort food/tradition is combined with culture, and culture incorporates food that has been cultivated by hands that have passed down generational legacies. Chitterlings were associated with the dietary habits and position in society of enslaved people in the Southern United States, particularly in the 17th to 19th centuries. The present study investigated how the methods used to prepare chitterlings, the historical link to slavery, the nutritional aspects of chitterlings such as the high content in protein but also the harmful nutritional aspects of chitterlings such as high levels of cholesterol and fat. As well as the use of preservation techniques used in chitterlings and the similarities of convenience and affordability in fast food. In addition to the alternatives to align the traditional cuisine without losing its cultural essence and other substitutes in terms of vegan soul food. This research used peer-reviewed research articles, books, and cultural blogs. The reviewed literature gathered data through focus groups, interviews, and surveys conducted at University of Alabama at Birmingham and more Southern American Universities (Southern America= South of the Mason and Dixon Line, the Ohio River, and the 36°30′ parallel), representing a variety of socio-economic backgrounds rooted in Black American descent. Results indicated that chitterlings were ranked as one the unhealthiest foods associated with African Americans through the Nominal Group Technique (NGT). African Americans in the South were reluctant of vegan soul food because of the taste, chitterlings required heavy salting and seasoning to allow the dish to become palatable, and chitterlings represented low-

socioeconomic status for Southern communities in the United States. Examine how socioeconoomic status influences diietary taste preferences, with regard to chitterlings.Keywords Chitterlings, Black American, vegan soul food, slavery, Southern rural America

Haven Broadhurst

UT - Utah State University

Discipline: Education

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Tessa Sabin

Abstract Name: Analysis of Complex Sentences in Language Samples Obtained from One Frog Too Many and Frog Where Are You: Step 1.

The purpose of this project was to create a systematic, reliable rubric for using two of the Frog Stories from the Frog Story series to evaluate the percentage and type of complex sentence structures as part of a comprehensive language sample analysis for the diagnosis and treatment of children with developmental language disorders (DLD). Language sample analysis is a critical part of the assessment process by speech language pathologists (SLPs) for determining whether a child has a developmental language disorder. Elicitation of language from a child is often achieved by asking them to tell a story. One popular way that SLPs have obtained samples is to ask them to retell one of four popular wordless picture books from the Frog Story series by Mercer Mayer. This series involves the antics of a frog and his boy as they encounter different adventures. There is no rubric or “analysis key” associated with the stories leaving the SLP to decide how to use the information obtained from the story independently. This makes it hard to obtain reliable results over multiple time points for use in progress monitoring.In this project, a team analyzed two of the four Frog stories, One Frog Too Many and Frog Where are you, for its inclusion of specific complex sentence structures that should be present in oral and written language samples obtained from school-age children. These include complement clauses, reported speech, relative clauses, subordinate and coordinate clauses. The methodology for identifying the language parameters of interest, reliability in coding, and uses for the rubric will be described. The rubrics will be automated using a web application so clinicians can upload their child’s story and have them instantly scored, making their use in analysis more reliable and consistent.

Kaitlyn Brock

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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#3 Robin Cooper

Abstract Name: The similarities and differences in the effects of bacterial endotoxin lipopolysaccharide (LPS) on synaptic transmission at glutamatergic synapses.

The endotoxin lipopolysaccharides (LPS), secreted from Gram-negative bacteria, has direct effects on synaptic transmission independent of systemic secondary cytokine responses. High concentration of LPS

(500 µg/mL) from Serratia marcescens increased synaptic efficacy at glutamatergic synapse at the crayfish neuromuscular junction (NMJ) but depressed synaptic efficacy at glutamatergic synapse at the larval Drosophila NMJ (N=12 for each; P<0.05). Both preparations resulted in transient hyperpolarization (N=6 for each; P<0.05). At the Drosophila NMJ, quantal responses and evoked excitatory junction potentials (EJPs) decreased in amplitude, and it appears that postsynaptic glutamate receptors are blocked. However, this is not the case at the crayfish NMJ despite the receptor subtypes at both NMJs being pharmacologically classified as quisqualate receptors. The hyperpolarization appears to be due to transiently activating K2p potassium channels at the Drosophila NMJ since doxapram blocks the LPS response (N=6 for each; P<0.05). Doxapram is a therapeutic compound used clinically to improve respiratory drive of carotid bodies by blocking the pH sensitive K2p channels (TASK subtypes). Doxapram (10 mM) depolarizes the larval Drosophila muscle in all preparations (N=6) but not as substantially for crayfish muscle (1 to 10 mV) for all preparations (N=6). Doxapram at the crayfish NMJ does not cause the NMJ to spontaneously fire action potentials as it does at the larval Drosophila NMJ. Doxapram does not block the LPS response on glutamate receptors in Drosophila but does block the hyperpolarization induced by LPS. Investigations at the crayfish NMJ is still underway. Perhaps doxapram will be able to be used to block the LPS direct responses during Gram-negative bacterial septicemia.

Lauren Broman

WI - University of Wisconsin-La Crosse

Discipline: Natural and Physical Sciences

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Abstract Name: Sex Difference in Stress-Induced Increase of Epithelial Permeability in the Mouse Colon

The intestinal inner lining is made of epithelial cells held together by tight junctions that prevent harmful or foreign material from entering into the body. Stress has been proven to increase intestinal permeability, contributing to the development of irritable bowel syndrome (IBS) and other gastrointestinal diseases. IBS is more common in females, but prior studies have been inconclusive on finding a link between biological sex and increased intestinal permeability. The aim of this research was to explore the role biological sex has in stress-induced increased epithelial permeability in the mouse colon. Mice were divided into four groups (5/group): control male, control female, stressed male, stressed female. Animals in the stressed groups were restrained for 1 h/day for five consecutive days. Control animals were kept in their home cages and did not experience restraint. Following the final restraint/control session, the proximal and distal colon were removed. The mucosa/submucosa preparations were mounted to the Ussing Chambers. The transepithelial resistance (TER) was recorded continuously as a measurement of paracellular permeability. FITC-inulin and horseradish peroxidase (HRP) were added to the luminal chamber to measure paracellular and transcellular permeability, respectively, across the colonic epithelium. The results showed stress caused a significant decrease in TER in the female proximal colon and in the male distal colon. Stress also increased FITC-inulin flux in the proximal and distal colon of female mice but had no effect in male mice. Stress increased HRP flux in the proximal colon of both male and female mice but had no effect in the distal colon of either sex. These results suggest female mice are more susceptible to increased paracellular intestinal permeability than male mice. Understanding how stress affects intestinal permeability differently between male and female may lead to the development of sex-specific treatments to reduce the symptoms of gastrointestinal distress.

Faith Brooks

TN - Trevecca Nazarene University

Discipline: Social Sciences

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Abstract Name: Music Preference, Personality, and Gender as Predictors of Resilience

This study sought to identify predictors of resilience in undergraduate students. Previous literature revealed connections between resilience, personality, music preference, and gender. For instance, there was a significant relationship between resilience and personality; specifically, a negative correlation was found between resilience and neuroticism/emotional stability as well as a positive correlation between resilience and both conscientiousness and openness to experience. Additionally, personality has also been shown to relate to music genre preference. Music is known to aid in coping with trauma, regulating mood, and reducing stress– all of which were factors discovered as important in building resilience. The current study also investigated the relationship between gender and resilience based on literature indicating a possible connection between gender and coping mechanisms. In consideration of the aforementioned literature, the following hypothesis was proposed. The Big Five personality test scores (openness to experience, conscientiousness, neuroticism/emotional stability, extraversion, and agreeableness), music genre preference scores, and gender would predict resilience scores. To test this hypothesis, The Big Five Personality Test Short Questionnaire (BFPTSQ), the Brief Resilience Scale (BRS), and the Short Test of Music Preferences — Revised (STOMP-R) were administered. One hundred sixty-five (N = 165) undergraduate students participated in the study. The participants were students of all classifications from mathematics, choir, history, and science classes. Upon IRB approval, instrument packets and consent forms were administered in classrooms with the permission of the professor. Participation was voluntary and confidential. The collected data was analyzed by a multiple regression analysis using SPSS software. It was found that neuroticism/emotional stability and a preference for unpretentious music were significant predictors of resilience. No other variables predicted resilience scores. Limitations included the homogeneity of the sample, and future researchers were advised to include more sample diversity.

Matthew Brooks

NY - Finger Lakes Community College

Discipline: Natural and Physical Sciences

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Abstract Name: Submerged Fermentation of Ganoderma tsugae Mycelium for the Production of Exopolysaccharides

Ganoderma tsugae, commonly known as the hemlock reishi, has historically played a significant role in Eastern traditional medicine. Notably, Ganoderma species are known to have medicinal properties for potential commercial use including cholesterol reduction, lowering blood pressure, antivirals, and antitumor therapies. To fully capitalize on these medicinal benefits for commercial use, the Ganoderma mushroom and its potential therapeutic metabolites, including biologically active polysaccharides, must first be produced at scale. One promising approach is to employ stirred-tank bioreactors for the submerged fermentation of mushroom mycelium. The goal of this project is to maximize biomass and polysaccharide production from the submerged fermentation of G. tsugae mycelium. Experimental variables included media formulations and enrichments, temperature, pH, and agitation. Mycelium cultivation involved growing G. tsugae on Potato Dextrose Agar (PDA) plates, which were then used to inoculate liquid cultures in baffled shake flasks. After a two-week shaking incubation, liquid cultures were then used to inoculate 2 and 4-liter stirred-tank bioreactors. Samples were taken every 2-4 days and assayed for biomass, reducing sugars, and total polysaccharides. The highest biomass and polysaccharide production was observed in a lactose-based media with a constant temperature of 28°C, pH of 5.5, and an agitation of 120 RPM. These optimized parameters resulted in a peak biomass yield of 6.4g/L and a peak polysaccharide yield of 1.7g/L.

Gabriel Broom

FL - University of West Florida

Discipline: Mathematics and Computer Science

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Abstract Name: A Radial Basis Function Neural Network for Classification in Smart Grids

Introducing technology into systems inevitably amplifies the susceptibility to malicious attacks and security breaches, a concern notably pertinent in the context of Smart Grid (SG) systems. Through integrating Internet of Things and intelligent devices into the conventional electrical grid, SG systems enhance efficiency but introduce security risks, including potential financial losses, power disruptions, data tampering, cascading failures, and erosion of trust. Mitigating these risks and promptly discerning potential attacks rank high on the priority list. To address this, we propose the implementation of a Self-Organizing Map (SOM) for data clustering and dimensionality reduction, utilizing its innate capacity for unsupervised learning, adaptive feature extraction, and topology preservation. Subsequently, the output of the SOM serves as input to a Radial Basis Function Neural Network (RBFNN), responsible for classifying data clusters into distinct attack types. The SOM-RBFNN algorithm will be applied to real-time power grid data obtained from the Mississippi State University and Oak Ridge National Laboratory. These datasets are grouped into 3 sets: Multi class, Triple class, and Binary, where the distinction is in how an event is classified. Development and testing of the SOM-RBFNN algorithm was done in Google Collaboratory using MiniSom and sklearn libraries. This algorithm is rigorously assessed and tested against other standard algorithms using the accuracy measure. The experiments using our SOM-RBFNN algorithm averaged 94% accuracy on the binary class data set.

Jordan Brower

CA - University of California - Santa Barbara

Discipline: Natural and Physical Sciences

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Abstract Name: Synthesis and Characterization of a Heterometallic Copper Thallium Hydride Cluster

Metal hydrides have been a continual topic of research and development over the last 50 years due to their ability to catalyze complex molecular rearrangements and redox reactions. Thallium hydrides, however, are exceedingly rare and remain a relatively unexplored metal hydride. It was only in 2018 that the first thallium hydride complex was reported, and there have not been any developments since then. In efforts to synthesize this rare class of metal hydride, treatment of Cu6H6(PPh3)6 with TlOTf (OTf=trifluoromethanesulfonate) was performed to create [Cu6TlH6(PPh3)6][OTf]. We hypothesized that this cluster contained thallium hydride bonding and through structural characterization verified the presence of thallium hydride bonds and, successfully isolated the second of this rare class of metal hydrides. Characterization included: NMR spectroscopy, mass spectrometry, and X-ray crystallography. This project aims to provide a reliable synthesis, isolation method, and characterization of the copper thallium cluster.

Jasmyn Brown

NC - Elon University

Discipline: Humanities

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Abstract Name: Brilliantly Black: Success and Resiliency in Predominately White Spaces (PWI)

In predominately White educational spaces, Black students are isolated and lack belonging. Despite this challenge, higher educational spaces remain an essential catalyst for success within the Black Community. Black students have not only persevered but excelled in predominately White spaces. This study is an analysis of qualitative comments generated from TikTok, a popular social media platform. The creator of the TikTok video is a current student of a predominately White institution (PWI) who sought advice and support while navigating this tumultuous environment. The project Resilience and Black Brilliance (R&B) highlights the marginalized perspective of Black collegiate students and showcases the many expressions of Black students and alumni. The narrative will be told through a presentation. This presentation will contribute to the body of scholarly knowledge and increase the understanding of the complex and dynamic relationships between Black students and the academy. The greater understanding provided by this presentation will highlight the role intentional inclusivity initiatives and academic community support play in the Black educational experience.

Daliyah Brown

MD - Bowie State University

Discipline: Natural and Physical Sciences

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Abstract Name: Melia azedarach and Its Endosymbionts

Melia azedarach, commonly known as Melea or Chinaberry, is a plant valued for its antimicrobial properties and used as a remedy for various ailments. Several studies show that all plants form symbioses with microbes known as endophytes. Although endophytes can be neutral and under certain conditions, parasitic, they are mainly known for their beneficial symbiotic relationships with plants. Although M. azedarach is a medicinal plant, its endophytic diversity and metabolomic properties remain unclassified. This study sought to increase knowledge of the metabolic potential and influences of endophytic fungi in M.azedarach. Its leaves were sampled from locations of varied climate and environmental conditions: central Kenya (semi-arid climate) and coastal Kenya (semi-arid/tropical climates). Fungal endophytes were isolated from the leaves. Morphological and molecular characterization of the fungal colonies were performed. The results reflected overlapping endophytic communities between the regions. In both central and coastal Kenya, M. Azedarach

leaves contained Colletotrichum gloeosporioides, a well-known beneficial endophyte that can become pathogenic in fruit crops. In contrast, Preussia minima was observed only in coastal Kenya. Aspergillus and Penicillium were among the remaining fungi identified. In conclusion, C. gleosporioides can survive across environmental gradients while P. minimaprefers a tropical climate. The bioactive secretions of the endophytic samples will be identified using High-Performance Thin Layer Chromatography (HPTLC).

Daliyah Brown

MD - Bowie State University

Discipline: Natural and Physical Sciences

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Abstract Name: The Impact of Non-Native Red-eared Sliders on Native Freshwater Turtles in Maryland Wetlands

Non-native species are one of the leading causes of extinction, worldwide, and are particularly problematic in freshwater ecosystems. However, not all non-native species have significant ecological impacts or warrant control. Here, we critically examine the influence of the non-native red-eared slider (Trachemys scripta elegans) – a commonly released pet – on native freshwater turtles in Prince George's County, Maryland. Specifically, we focus on potential impacts to the abundant eastern painted turtle (Chrysemmys picta picta) in the Patuxent Research Refuge and nearby Bowie State University campus. We quantified eastern painted turtle abundance, body condition, and diet in wetlands where they coexist with red-eared sliders and at similar wetlands extending up to 2.4 km away from known red-eared slider capture locations. Catch per unit effort (number of turtles per trap-day) and body condition of eastern painted turtles did not vary significantly based on proximity to red-eared sliders over the two years of our study. However, we found a cline in diet (quantified as by stable carbon and nitrogen isotope ratios in turtle claws) moving away from red-eared slider capture sites in both Patuxent Research Refuge and Bowie State campus. Our stable isotope data suggest that eastern painted turtles shift to a lower trophic level and more benthic diet when they must compete with red-eared sliders. Overall, our data strongly suggest that red-eared sliders compete with the native eastern painted turtles for food, effectively shifting their dietary niche. However, we do not have sufficient evidence to conclude that the local painted turtles suffer in their abundance or fitness, potentially because of the relatively low abundance of red-eared sliders in our study sites.

Madyson Brown

DC - American University

Discipline: Interdisciplinary Studies

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Abstract Name: The Politics of Reproductive Health: Understanding The Impact of the Global Gag Rule on International NGOs

Our central research question was: how have non-governmental organizations (NGOs) adjusted their practices and policies in reaction to the partisan flip-flopping of the Global Gag Rule (GGR) since the Obama administration? The Mexico City Policy, or Global Gag Rule (GGR), is a policy that prevents international organizations that receive USAID funding from referring, providing, or advocating for abortion services. Since its first enactment, the GGR has been rescinded and reinstituted multiple times, depending on which party is in the executive branch. This political flip-flopping has led to a need for constant adjustment by NGOs and has impacted health care provisions in vulnerable countries. During the Trump administration, the GGR was expanded to include nearly all global healthcare providers, but it was later rescinded by President Joe Biden. While the literature assumes that these NGOs would struggle uniformly, we investigated how different people viewed the policy changes and reacted creatively. Our methods were primarily a series of semi-structured interviews of employees at different NGOs and US experts. Using the responses from these interviews, we were able to draw conclusions about how NGOs have perceived and responded to GGR changes. Our project analyzes the GGR policy and uses Marie Stopes Nepal as a case study to illustrate how NGOs have been affected, and what their current action plans are for when this flip-flopping occurs. We learned that NGOs need to rely on a heightened level of self-reliance, diversify their funds, and pay close attention to the political climate in the United States so that they can continue to provide essential health services. Our goal is to create a documentary that aims to provide a toolkit offering information to policymakers, NGOs, and the public, highlighting the different ways the GGR affects people around the world.

Arielle Brown

NC - University of North Carolina at Charlotte

Discipline: Education

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Abstract Name: Global Network Learning Project: Investigating and Comparing Sustainable Development Goal #4 Quality Education

The purpose of our research is to investigate and compare aspects of the Sustainable Development Goal (SDG) #4: Quality Education. The main research questions for our international comparative study are: What are the similarities among Germany and the United States related to target goals for Sustainable Development Goal #4 Quality Education, guarantee quality and equitable education while creating educational opportunities for all? What are the differences? Are the countries on track to make progress on SDG #4 Quality Education by the 2030 goal year? To conduct this research, we wrote an annotated references document and used a literature review research design to develop an Executive Summary of our findings. The literature review included international reports and the method was framed by Bereday's (1964) Comparative Model. The research was part of a semester-long Global Networked Learning (GNL) research collaboration among students at UNC Charlotte with and students at the PH Ludwigsburg in Germany. A GNL project is a collaborative approach to learning that enables students and instructors from different locations around the world to participate in learning and creation of knowledge together. GNL allows for access to international experiences for all students. In our research, we report the comparative findings of our GNL project. The

research includes an examination and discussion of the challenges and possibilities in meeting selected target goals of SDG 4 Quality Education, guarantee quality and equitable education while creating educational opportunities for all by the 2030 goal year.

Madyson Brown

DC - American University

Discipline: Social Sciences

Authors:
#1 Madyson Brown

Abstract Name: Support for Constitutional Change as a Measuring Tool for the Necessity of Truth and Reconciliation Committees

Establishing common ground among separatist groups cohabiting within a state is imperative for fostering peace and security for both the state and its inhabitants. In regions marred by intense conflict, divergent narratives emerge, creating a complex set of conflicting "truths." This historical ambiguity often persists and is passed down through generations, as the youth grapple with competing interpretations of the past. To address these divergent “truths”, Truth and Reconciliation Committees (TRCs) have proven to be instrumental. These committees aim to uncover the most accurate account of violent events and promote reconciliation among communities. Why then, do some post-conflict resolutions need to create formal Truth and Reconciliation Committees, while others do not? I propose that a critical factor lies in the degree of widespread support for constitutional changes in the post-conflict state. The unification of people in the aftermath of conflict is intricately tied to the endorsement of constitutional reforms. When there is widespread support for such changes, the need for implementing Truth and Reconciliation Committees diminishes, as the constitutional framework itself becomes a catalyst for reconciliation among previously divided communities. To illustrate this, I compare the conflicts in Northern Ireland druing The Troubles and in Bosnia and Herzegovina during the Bosnian War. With similar social cleavages, paramilitary actors, and international military intervention, we find only one signifigant divergence between these two case studies; the level of support for the constitutional changes outlined in their peace agrrements. A widely accepted constitutional framework can remove the need for formal TRCs, offering a pathway for reconciliation that is rooted in shared values and a collective commitment to a peaceful future. But, if widespread consensus cannot be made, a formal TRC is imperative to sort out the most accurate account of the “truth” so that the people of that state can move forward, together.

Alexa Brown

GA - Kennesaw State University

Discipline: Social Sciences

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Abstract Name: Examining the Five-Factor Personality Model: A Latent Profile Analysis in Individuals with Above Threshold PTSD Symptomology

Latent Profile Analysis (LPA) has been extensively used in psychological research to uncover distinct subgroups within heterogeneous populations. Historically, these subgroups have been pivotal for

understanding the nuanced differences in symptom presentations, especially in conditions like PTSD. In this context, individuals with PTSD can vary in their expressed personality traits, which can impact treatment outcomes. This study aimed to understand these variations within a population exhibiting above-threshold PTSD symptomology. Similar to previous literature, LPA revealed three distinct profiles: 'Adaptive', 'Highly Adaptive', and 'Maladaptive'. These profiles were derived from the five-factor personality dimensions: openness, conscientiousness, extraversion, agreeableness, and emotional instability. Follow-up ANOVA outcomes showed significant differences across these profiles in multiple variables, including PTSD severity, resilience, and quality of life measures. Notably, the 'Maladaptive' group showed heightened PTSD symptomology and reduced quality of life, highlighting the importance of personalized therapeutic strategies. Building on previous literature, these findings underscore the necessity of tailoring treatments based on personality profiles, which may lead to improved therapeutic outcomes for individuals who struggle with PTSD.

Charlotte Brown

AL - Auburn University

Discipline: Mathematics and Computer Science

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Abstract Name: Post Processing Error Correction for Quantum Algorithms

In the era of the noisy intermediate-scale quantum computers (NISQ), the ability to control error rates is a key factor in our ability to achieve quantum supremacy. Current methods to reduce error rate include both using additional qubits and gates in quantum circuit design and post-processing techniques. Our method is a post-processing technique applicable to any circuit with a single desired output and less than 50% error rate. It operates by analyzing the occurances of 1s or 0s in each bit's place value and reconstructing a string by using the most occurring number for each place value. We predict that implementation of this method can help reduce error at a set number of shots and reduce the number of shots required to reach a reliable answer. Benefits of this technique include (1) reduced need for in-circuit error correction, which can lead to a higher likelihood of decoherence if too many operations must be done and (2) more real-estate on open source quantum computers due to a reduction in the optimal run time for a conclusive answer. Our method was built from analyzing uniform bit-flip error models and was tested on the Bernstein-Vazirani (B-V) algorithm. We also look forward to how the information gained from this processing technique can facilitate educated guesses to find the intended output for cases with bits at and near 50%.

David Brown

TN - University of Tennessee at Chattanooga

Discipline: Engineering and Architecture

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Abstract Name: Quantification of Uncertainties in Operating Conditions on the Features of High-Pressure Turbulent Premixed Flames Using Surrogate Modeling Techniques

Turbulent premixed flames observed in energy conversion and propulsion devices encounter uncertainties that arise from various factors such as operating conditions, chemistry, turbulence, and turbulence-chemistry interactions. Such uncertainties pose challenges to the numerical investigation of such flames in terms of reliable predictive capabilities. Uncertainty quantification (UQ) is an effective computational strategy to quantify such uncertainties. UQ studies can be performed either using direct or surrogate modeling techniques. While the direct Monte Carlo (MC) sampling technique is popular and accurate, it tends to be computationally prohibitive for the investigation of practically relevant configurations. To this end, surrogate modeling techniques offer a computationally tractable approach. In this study, three popular surrogate modeling techniques, namely, polynomial chaos expansion (PCE), stochastic collocation (SC), and Gaussian process (GP) are assessed for their capabilities for the investigation of freely propagating laminar premixed flame. In this study, a non-intrusive forward UQ strategy is considered to examine the effect of the uncertainties in the operating conditions on the features of premixed flames. First, we consider freely propagating laminar premixed flame to assess the accuracy and efficiency of PCE, SC, and GP techniques in comparison to the MC approach, where the operating pressure is considered as the uncertain parameter. Afterward, the optimally performing surrogate technique is used to examine the uncertainty of pressure on the features of high-pressure turbulent premixed flame.

Jack Brown

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Jack Brown

Abstract Name: Will University Students Agree With Political Opinions Along Party Lines?

One of the hallmarks of modern American politics is growing political partisanship. This gap between ideological liberals and conservatives is observed in descriptive and statistical data for measures of both the American public and with national politicians. Another hallmark of the current system is the relatively low levels of trust that the American people have in their elected officials and in the political institutions as a whole, though the public tends to be more trusting of officials from the party they align with. What we know less about is how far this trust in a partisan figure can be pushed. Could it be that someone with high trust in their party would be more likely to accept incongruous information? Will people agree with a statement that goes against their political beliefs simply because the statement is attributed to a candidate that they like? Leveraging a unique survey, data from a sample of college students at the University of Wisconsin-Stout was collected and analyzed. The results suggest that, overall, both young Democrats and Republicans do often stick with their perceived favored political ideas. This is opposed to leaning toward supporting an individual candidate they may like and, more importantly, trust. However, the research also suggests that at least a small level of polarization and partisanship are alive in the college age group.

Gwynndolynn Browning

MN - Minnesota State University - Mankato

Discipline: Education

Authors:
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Abstract Name: Learning strategies that advance acceptance and adaptation among descendants of Dakota

and European in Minnesota

The US-Dakota War of 1862 in Minnesota influenced President Abraham Lincoln to order the execution of 38 Dakota men. The entire oppressive and genocidal context created generational trauma for the Dakota community in southern Minnesota. For years after the war, many Dakota people were targeted and persecuted. Even today, many European descendants living in Minnesota are unaware of Dakota culture even while living together. The broader community has not been able to conclude what reconciliation would look like in southern Minnesota. Many community organizers have attempted to implement learning strategies in action to bridge the knowledge gap and bring reconciliation between Dakota and European descendants, such as the Mahkato Wacipi (Mankato Powwow), the annual Dakota 38+2 Ride, service learning by university students, and more. This study examined how previous service-learning experiences fostered a better understanding of Dakota culture among European descendants. Researchers predicted that students who completed service-learning hours had a better understanding of Dakota culture and the history of the US-Dakota War. Investigators also expected that students would develop a commitment to reconciliation and restoration of understanding and relationships.

Ella Brown-Terry

KY - University of Kentucky

Discipline:

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Abstract Name: “Myself should send their hateful souls to hell:” Constancy and Passion in Early Modern Drama

This study focuses on the tension between feminine constancy and the intense passion concomitant to vengeance in early modern revenge tragedies. In much early modern literature, enduring faithfulness and a commitment to invariability were hallmarks of admirable feminine character; remarkably, these traits are still present in women whose actions are anathema to admirability: female revengers. While revenge was considered fundamentally effeminate by Stoic philosophers because of the passionate sensitivity necessary for its action, the act of avoiding vengeance was characterized as equally effeminate by several early modern plays, including Shakespeare’s Hamlet. In plays like Thomas Kyd’s The Spanish Tragedy and John Marston’s Antonio’s Revenge, female conspirators embody exceptional constancy crucial for offsetting the intense mercuriality and emotional vigor displayed by their male counterparts. Ultimately, the most constant of female revengers, like The Spanish Tragedy’s Bel-imperia, quell the vulnerability sown by grief-born sensitivity in male conspirators, allowing them to realize their abstract machinations by stabilizing them with practicality and concrete thought. Femininity in revenge tragedies, then, much like modern and historical understandings of the concept, is fraught with contradiction: it is at once celebrated and condemned, virtuous and cowardly.

Taylor Broz

PA - Westminster College

Discipline: Natural and Physical Sciences

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Abstract Name: The Effect of Propylparaben on the Reproductive Anatomy of the Fathead Minnow (Pimephales promelas)

The fathead minnow is a commonly found species that is an excellent model organism for reproductive system studies. Propylparaben is an antimicrobial agent found in many personal products such as deodorant, soaps, shampoos, cosmetics, and many others. Estrogen agonists, such as 17β-estradiol, are chemicals which affect the body's physiological responses by imitating the effects of estrogen. This disrupts various pathways such as the Hypothalamus-Pituitary-Gonad axis, which controls the development of the gonads and secondary sexual characteristics. There has been some evidence suggesting that parabens may have estrogen agonists effects in animal model systems. When exposed to estrogen agonists male fathead minnows can fail to develop secondary sexual characteristics such as tubercules and fleshy dorsal pads, and both sexes can experience delayed growth and deformities within the cellular structure of the gonads. This study aimed to determine whether these effects are significant at ecologically relevant concentrations in fishes such as the fathead minnow. To determine if the paraben had any effect, fishes were weighed, photographed, and dissected under a microscope. The reproductive organs were harvested, weighed, placed into fixative, and sent out for histological examination. It is hypothesized that propylparaben will have a moderate estrogen agonist effect on fathead minnows.

Bradan Bruce

IN - University of Evansville

Discipline: Engineering and Architecture

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Abstract Name: Variations in System Parameters on Thermosiphon Collector Efficiency

A passive thermosiphon is a water heating device without any mechanical or electrical inputs. In a thermosiphon, the working fluid is heated in a collector and rises into the top of a reservoir through hot leg tubing. The fluid cools, increasing the density, and it returns to the collector through cold leg tubing to complete the cycle. Prior research at the University of Evansville has shown the need to carefully control the test conditions. This has resulted in the use of an insulating enclosure around the thermosiphon to control the ambient temperature. Heat tapes, as opposed to solar input, provide and maintain consistent power to the device. The system has thermistors located at critical points throughout the system to record temperature. An open-bore flow meter is located along the cold leg tubing. The data from these collection systems are monitored and recorded with LabView software. The aim of this research is to investigate trends in efficiency by varying parameters on the system with a more specific goal of understanding any efficiency enhancing mechanisms. Before any parameter-varying tests are performed, baseline tests are conducted to establish an efficiency to compare to previous years and compare between series. The main parameters that drive flow through the thermosiphon are the heights of the hot leg (which includes the collector height) and cold leg and the temperature, or density, difference of the working fluid between the two legs. When performing a test series, one parameter is varied while all others remain constant to determine its effect on the thermosiphon efficiency. The parameters that are varied include the cold leg height, hot leg height, and the input power to the collector to vary the hot leg temperature.

Rivka Bruk

NY - Brooklyn College

Discipline: Social Sciences

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Abstract Name: Healthcare Attitudes of Former Soviet Union Immigrants in the U.S

The Soviet model of healthcare was built on a centralized, paternalistic standard of care. Many citizens of the USSR held negative perceptions of this style of care and its outcomes, and they came to distrust the government's healthcare programs and mandates. But do residents of the United States who grew up in the USSR hold similar attitudes towards the U.S. healthcare system? Though there is some existing research on the current general sentiments of Russians in the former USSR towards health decisions, their fear of their government, and the impact of these sentiments on their healthcare, there has been little research on immigrants living in the United States. Research has also provided data on Soviet immigrants in the U.S. and it has been observed that many of them suffer from poor health. However, these studies fail to consider whether mistrust in the system explains these poor outcomes. This study will employ a survey of immigrants from the USSR to determine (1) whether they hold negative attitudes towards U.S. healthcare and (2) whether these attitudes can be explained by their previous experiences in the USSR. Specifically, the survey will explore attitudes of distrust towards school-mandated vaccines as well as more recent COVID-19 vaccine mandates that have impacted many more individuals, such as those who work in federally funded healthcare facilities. I hypothesize that the participants will exhibit higher rates of distrust towards U.S healthcare when compared to the average American as a result of their former experiences in the USSR. This data will be especially useful for public health and healthcare professionals, as it will explore whether certain immigrant populations express mistrust of medical procedures, policies, and institutions, and it will inform them as they attempt to improve the health outcomes of these populations.

Alison Brunmeier

MN - Minnesota State University - Mankato

Discipline: Health and Human Services

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Alyssa Bartholow

Abstract Name: Exploring a Montessori-Based Activity with Progressive Complexity for Individuals with Dementia: Student Learning Experiences

The purpose of the study was to explore how implementation of a Montessori-based group activity promotes more active engagement for individuals with dementia. The study explored activity implementation with a progressive complexity influencing engagement amongst individuals with dementia. Activity modification includes simplifying task demands (downward) and challenging cognitive and motor skills (upward) (Jarrott, Gozali, & Gigliotti., 2008). This treasure hunt activity required an individual with dementia to use a magnetic fishing pole to fish small magnetic-themed-based objects from a bin. Individuals with dementia were invited to participate, prompted to engage, identify different objects in the bin, and share their thoughts. Pre-set questions were developed to support conversation based on the individuals' abilities and their intact senses. For example, "this looks like a spoon to me. Let's look at this together" for the downward version.

“What would you like to say about this? What does this remind you of?” for the upward version. The research participants were eight college students who completed dementia-friends training and were mentored by a faculty member who specialized in dementia. Research participants conducted the activity with a small group of residents with dementia twice a week for ten weeks. Each participant interacted one-on-one with an individual with dementia during the activity and engaged in a personal conversation. Research participants followed a protocol to identify the preferred complexity version (upward/downward) based on engagement level and conduct the activity with modifications as needed for individuals with dementia. Student learning outcomes will be obtained through qualitative and quantitative measures before and after completing the program. Specific measures will be used to document their perception of ageism, dementia, and engagement of individuals with dementia. The expected outcome is for college students to create appropriate meaningful engagement activities by capitalizing on the abilities of individuals with dementia.

Karen Brutus

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Karen Brutus
#2 Hyeokmin Choe
#3 Aria Mason
#4 Natasha Wynter

Abstract Name: Structural Analysis of Biominerals with X-ray Microscopy: Development of Phase Reconstruction Techniques

Biominerals are a widespread phenomenon where living organisms produce minerals to strengthen existing tissue [1]. Two essential parts of a biomineral’s tissue are the organic and inorganic mineral part [1]. Biocrystallization involves complex and regular biochemical processes where living organisms control the crystalline form and texture of their organo-mineral components. When concentrating on the nanoscale granular structure of a biomineral, almost all calcareous crystallizing organisms contain a generic biomineralization and assembly process [2]. This truth will provide a key to building realistic scenarios of biomineralization and reveal the crystalline architecture at the mesoscale, which none of the existing nano-characterization tools is able to provide [2]. The focus of this study will be the exploitation of the synchrotron coherent x-ray diffraction imaging technique that will provide access to a 3D mesoscale image of crystalline properties, with required flexibility, nanoscale resolution, and non-invasiveness [2]. In result, revealing the generics of the mesoscale crystalline structure of CaCO3 biominerals through crystalline biominerals produced by marine calcifies like sea urchins [2].References[1] Gurvinder Singh Chana, ‘Biomineralisation: Calcite Structures in Sea Urchin Tests using X-ray Ptychography’, Thesis 2012[2] Virginie Chamard. ‘A New Look on Biomineralization with X-ray Crystalline 3D Microscopy’, Microscopy and Microanalysis 2018, 24 (supp 2), 2-5

Jessica Bryant

VA - Liberty University

Discipline: Natural and Physical Sciences

Authors:
#1 Jessica Bryant
#2 Nehemiah Jantomaso
#3 Stephen Hobson

Nehemiah Jantomaso

Abstract Name: Microwave Assisted Optimization of bisguaiacol F Synthesis

Bisphenol A (BPA, 4-[1-(4-hydroxyphenyl)-1-methylethyl]phenol), a monomer used to produce epoxy resins and in thermal printing processes, is problematic from environmental and toxicological perspectives as it is synthesized from non-renewable sources and is estrogenic. One BPA mimic with the advantage of renewable feedstock and non-estrogenic toxicology is bisguaiacol F (BGF, 4-[(4-Hydroxy-3-methoxyphenyl)methyl]-2-methoxyphenol). The typical BGF synthesis via electrophilic coupling of vanillyl alcohol and guaiacol results in a mixture of p,p' and o,p' isomers in moderate yield (40-60%) following laborious workup and purification. This research project aims to optimize the synthesis and purification of p,p' BGF. Optimized conditions with water and acidic amberlyst resin were used as a baseline for microwave assisted synthesis. The effects of solvent (i. e. DMF, ethanol, DME), acidic catalyst (i. e. Amberlyst resin, sulfuric acid, functionalized silica gel), temperature/pressure, reaction time, and workup/reaction conditions on yield of p,p' BGF to o,p' BGF ratio will be reported. Efforts towards scale up and preliminary reaction work-up/purification efforts will be reported.

Robert Bryant

TX - Lone Star College

Discipline: Social Sciences

Authors:
#1 Robert Bryant

Abstract Name: Texas Gambling Law: A Hegelian Dialectical Approach to Addressing Problem Gambling

With the aim to determine the most effective method to address problem gambling, Hegelian dialectic was used to compare expanding versus reducing Texas gambling restrictions. Problem gambling is a psychological diagnosis of gambling behavior that disrupts major life events, with an estimated 6.2 million U.S. adults afflicted. The Hegelian Dialectic is utilized to provide a synthetic argument between outlawing gambling and liberalizing gambling to address problem gambling comprehensively. A synthetic argument is built by utilizing the potential treatment methods from "Problem Gambling in the 21st Century Healthcare System," by Kagan et al. and comparing them to Texas gambling law's historical context provided by Scott Sloan's "Putting Texas back in Texas Hold 'Em." This approach concludes that liberalizing gambling restrictions on the Texas state level is the most effective way to address problem gambling, as the revenue generated for the state can be used to fund social programs that treat it while also promoting treatment at physical or digital gambling locations. While this may be true within the Texas government, further research is needed on how the federal government could intervene on the proliferation of problem gambling and if there are nations that could be modeled in order to address it.

Trinity Bryant

FL - Jacksonville University

Discipline: Social Sciences

Authors:
#1 Victoria McNeil-Young
#2 Amanda McGraw
#3 Trinity Bryant

Abstract Name: Perceived Discrimination, Test Anxiety, and Intelligence Mindsets

Among college students, perceived discrimination is associated with lower levels of well-being and impacts educational outcomes (Schmitt et al., 2014). However, there is little understanding regarding the process of how perceived discrimination impacts performance amongst diverse college students. Furthermore, previous studies have shown that an individual's intelligence mindsets (e.g., whether one believes intelligence is a fixed trait or is malleable) is predictive of their academic outcomes (Haimovitz & Dweck, 2017). This research project will assess the impact of perceived discrimination on test anxiety and if intelligence mindsets serve as a mediator of this impact. This study seeks to answer two research questions: (1) What is the relationship between perceived discrimination and level of test anxiety? and (2) How does mindset (growth vs fixed) impact this relationship? It is hypothesized that perceived discrimination and test anxiety will be positively related and that intelligence mindsets (e.g. growth mindsets and fixed mindsets) will partially mediate the relationship between perceived discrimination and test anxiety. Participants for this study are adult college students at a small liberal arts college in Florida. Study data was collected via an online survey that consisted of the following instruments: (A) Demographic Questionnaire; (B) The Everyday Discrimination Scale; (C) Cognitive Test Anxiety Scale; and (D) the Intelligence Mindsets Questionnaire. Regression analyses will be used to address the research questions and hypotheses. A multiple regression analysis will test the relationship between perceived discrimination, intelligence mindset, and test anxiety. A mediated regression analysis will be used to determine if intelligence mindset mediates the relationship between perceived discrimination and test anxiety. The results of this study will inform future interventions for students who are more susceptible to experiences of discrimination in an academic setting. These results will help identify how intelligence mindsets and test anxiety interventions can provide support to diverse student groups.

Grant Budden

SD - University of South Dakota

Discipline: Natural and Physical Sciences

Authors:
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#2 Jacob Kerby

Abstract Name: Monitoring Selenium Bioaccumulation and its Potential Effects in False Map Turtles (Graptemys pseudogeographica)

Selenium is an element that becomes bioactivated in aquatic environments. Selenium bioaccumulation may threaten a South Dakota state threatened species, the False Map Turtle (Graptemys pseudogeographica). Invertebrate filter feeder species like zebra mussels (Dreissena polymorpha) are known to uptake selenium via their exposure. Previous laboratory work has found that False Map Turtles consume large amounts of zebra mussels throughout the summer months leading to selenium bioaccumulation from selenium transfer. A myriad of negative effects like selenosis, reproductive infertility, and death are associated with high selenium concentrations. Sampling was done on the False Map Turtles in the summer of 2022. Samples were taken once a month from July to September. A blood sample and several morphometric measurements were collected from each turtle. Data were collected from 15 male and 38 female False Map Turtles. The average selenium concentration present during each month appeared to peak in July with an average concentration of 0.941 ug/g and a maximum concentration of 6.24 ug/g. The relationship between sex and the average selenium concentration per month showed relatively equal concentrations among males and females with similar concentrations during August and September. Yet, during the peak month of July, male turtles had a much higher selenium concentration (1.37 ug/g) than their female counterparts (0.732 ug/g). When accounting for turtle body mass in relation to sex, males appeared to have over 600% more selenium present per gram of body weight. Further work needs to be done to determine why this difference exists. Differences

in overall size might alter prey selection where males are more likely to consume the smaller zebra mussels. Additionally, detoxification systems in the turtles themselves might differ between the sexes. Regardless, these findings highlight the importance of understanding the role of invasive zebra mussels in contaminant distribution in aquatic ecosystems.

Elise Buellesbach

DC - American University

Discipline: Social Sciences

Authors:
#1 Elise Buellesbach

Abstract Name: The Impact of Media Sources on Political Behavior

With the dawn of the internet, our communication fundamentally changed. Conversations shifted online, workflows became digital, and social media emerged connecting individuals in a new and constant manner. The political world too felt this massive movement. I seek to discover if the tactile media, that is the physical attributes of the media (i.e., online, visual, verbal, etc.), with which we consume political information influences our subsequent behavior. To investigate this, I will look at the influence of online/internet media on the actions of voters in comparison with already established media, (i.e., newspaper, radio, TV news). I begin by examining the distinction between online media and traditional media; from there, I look deeper into the types of internet media and their impact on political behavior. Finally, I investigate potential mechanisms behind the shift by examining the impact of visuals and the availability of new information online compared to the limited nature of news released on a predetermined schedule. Previous research establishes connections between online/traditional media and several voter beliefs, i.e. perception of candidates (Garzia, da Silva, and De Angelis 2020 and Maj and Lewandowsky 2020). Additionally, previous scholarship emphasizes the importance of including multi-media users (Stromback, Falasca, and Kruikemeier 2018). However, there is less research focused on understanding the connection between media characteristics i.e., visuals, writing, timing, across platforms, and engagement. I use the 2020 American National Election Survey (ANES) data to test several hypotheses. My dependent variables are additive scales that measure electoral and non-electoral political engagement. For the independent variables, I categorize respondents as being pure traditional media users, multi-media users, or only digital media consumers. Regression analyses with controls suggest an association between social media usage and political engagement. I find support for my hypothesis that the 24-hour media cycle has increased political engagement.

Friederike Buergin-Witt

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Friederike Buergin-Witt

Abstract Name: Applying a First Amendment Values-Based Analysis to Conversion Therapy-Banning Legislation

The purpose of this research was to construct a legal argument that allows states to ban the harmful practice of conversion therapy on minors. This issue has been considered in federal courts and discussed in detail by lawyers and law students in various legal publications, but there has been no general consensus thus far.

Conversion therapy is a discredited therapeutic practice that attempts to change the client's sexual orientation from gay to straight. This therapy exists in the form of nonaversive (talk) and aversive (physical) therapy. The prevalent legal argument against banning nonaversive conversion therapy on minors is that such laws violate therapists' First Amendment freedom of speech. To create my legal argument, I researched the law and binding precedent set by federal courts and consulted law review articles to further my knowledge of the current understanding of the issue. Avoiding bias and assumptions, I analyzed these sources to construct my own legal theory. I found that the speech aspect of nonaversive conversion therapy can be categorized as non-expressive speech, because it is not primarily meant to express an idea or message. The intent of nonaversive conversion therapy is to change an aspect of their client using words as a tool. Non-expressive speech as a category does not directly represent the primary values the Free Speech Clause protects, which are the free marketplace of ideas and U.S. people engaging in democratic self-governance. Banning conversion therapy does not restrict therapists' ability to add to the free marketplace of ideas by spreading their opinions and research or petitioning for conversion therapy to be legalized. It simply restricts a less-valuable category of speech, which should be subject to a lesser form of legal scrutiny. Due to the harmful nature of conversion therapy, conversion therapy bans for minors pass lower constitutional review.

Minh Bui

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
#1 Minh Bui
#2 Ai Nghi Diep
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#4 Michael Frank
#5 Alexandra Carstensen

Abstract Name: Assessing the Noun Bias in Vietnamese Monolingual and Vietnamese-English Bilingual Children

The natural partition hypothesis suggests that children universally display a noun bias, learning nouns more readily than verbs due to the concreteness and ease of encoding associated with nouns. Verbs are more abstract and often require a child to have a relational understanding between two agents. While studies on English-learning children support this idea, cross-linguistic research challenges the existence of a universal noun bias. The current study further tests this hypothesis by studying Vietnamese-learning children. Vietnamese, with its structural similarities to Mandarin and Cantonese—both considered verb-friendly languages—provides grounds for anticipating a verb bias. Additionally, we explore whether bilingual exposure modulates the noun bias by comparing Vietnamese monolingual and Vietnamese-English bilingual children. We plan to collect data from a convenient sample of parents of 16- to 34- month-old children. Participants are divided into two groups: parents of Vietnamese monolinguals and parents of Vietnamese-English bilingual children. Parents are asked to fill out the Vietnamese adaption of the Communicative Development Inventory (CDI). Parents in the bilingual group are asked to fill out the English CDI additionally. Data for English-learning children will be pulled from the Wordbank data repository. Consistent with previous studies, we will compute the proportion of reported verbs and nouns to the total verbs and nouns in the CDI in each language. We will, then, make group comparisons using these proportions. The study also evaluates the Vietnamese CDI's validity and reliability level for measuring vocabulary in monolingual children. The findings reveal potential differences in noun vs. verb acquisition between English- and Vietnamese-learning children, as well as between monolingual and bilingual children.

Lauren Bulalacao

CA - California State University - Fullerton

Discipline: Social Sciences

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#9 Kev Holmes
#10 Sarah Bryant
#11 Sarah Bryant
#12 Brenda Godoy
#13 Suzanne Lopez
#14 Emilio Lara Maza
#15 Eva Hayek
#16 Tiffany Perry-Wilson
Ana Reyes

Abstract Name: Creating Counterspaces and Counternarratives in Research

Join Lauren and Ana in this interactive presentation as they recount their experiences working alongside nine queer womxn of color (QWoC) in a photovoice project. This project was designed to discover the healing experiences and practices of co-researchers within and beyond counseling spaces. Through imagery and dialogue, the project aims to honor the wisdom of the co-researchers, celebrate their healing journeys, engage in advocacy, and inspire others to explore ways of attending to catalytic validity within their own professional and research pursuits.

Alriana Buller-Jarrett

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Alriana Buller-Jarrett
#2 Jay Evans
#3 Anthony Nearman
#4 Karen Shelton

Abstract Name: Solicitation of viral evolution: analysis of diversification of deformed wing virus (DWV) in the western European honey bee (Aphis melifera), by observing DWV mutations over several generations

Responsible for 80% of global agricultural crop pollination, bees are essential to food production efforts. Deformed wing virus (DWV) is the leading cause of death, disability, and colony collapse disorder in honeybees (Apis mellifera). DWV does not only jeopardize the health of bees but global food security as well, inhibiting goods production. This study investigates the viral diversity of DWV and how viral mutations influence strain virulence across multiple honeybee generations, allowing researchers to accurately predict future DWV polymorphisms/prevalence aimed toward cross-reference in "vaccine" development. Honeybee pupae were sampled (n=64) from three randomized source colonies (#57, #75, and #78). They were then

inoculated with a tagged nano-luminescent DWV strain (10^6 viral particles) via injection. After 72 hours of growth at 35°C, viral mRNA was extracted using the QIAGEN Viral RNA Extraction Kit and isolated by creating cDNA, which was used to perform qPCR to quantify viral loads and then deep sequenced. Procedures were replicated thrice with two parent-to-child colony injections and a final three-way cross. The susceptibility of recipient colonies influences the virulence strength of DWV strains rather than the donor strain, as colony #75 experienced elevated DWV levels in reaction to all donor pools. Experimentation found seemingly no interaction link between source colony and viral levels indicative of virulence patterns consistent with the laws of natural selection, suggesting an increase in the prevalence of inheritable traits promotes DWV growth in isolated to exposed populations over time. Honeybees insect-like innate immunity poses a unique barrier to vaccine-centric immune treatment, as bees lack the memory-based immunity (Larsen, José Reynaldi, & Guzmán-Novoa, 2019) essential for vaccine expression. Findings are aimed to expand scientific knowledge on mutative patterns in the DWV genome by providing an evolutionary template of DWV to potentially improve the efficiency of epidemiology models/further treatment development.

Broseth Bun

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Bethany Mostert

Abstract Name: Screening stabilizing additives for the solubilization of Cytochrome P450 (CYP) and Cytochrome P450 Reductase (CPR) enzymes expressed in Escherichia coli

Recombinant proteins are proteins expressed inside a host through the combination of DNA from another organism with its own. One such host is Escherichia coli, and its cells must be lysed to extract the protein from solution. During this step, however, the protein yield is often hindered by the formation of inclusion bodies (unfolded protein) since only fully folded protein in solution can be purified and potentially crystallized for further analysis. Inclusion body formation is likely partly a consequence of the proteins of interest not usually being native to E. coli. The production of soluble protein is therefore a major bottleneck in enzymology and structural genomics. Some theories assert that inclusion bodies form as proteins denature and aggregate when they are exposed to the buffer solution during lysis. Nevertheless, there is evidence that protein can be made soluble through the introduction of certain stabilizing additives during this lysis step. Osmolytes have been the most successful additives which protect proteins from denaturing in vivo, but other additives have been shown to work. I intend to screen various additives under the lysis conditions for Cytochrome P450 71AV1 (CYP71AV1) and Cytochrome Reductase 1 (CPR1). These enzymes are membrane bound in the cells of the plant Artemisia annua, and are involved in the synthesis of the antimalarial drug artemisinin. The membrane-bound nature of these enzymes make them good targets for employing osmolytic stabilizers since membrane enzymes are notoriously difficult to express and purify from E. coli under natural conditions. The additives I will use for the screen are trehalose, octyl-d-glucopyranoside, glycine-betaine, proline, arginine, mannitol, and xylitol. Determination of which additives contribute to solubility will provide insight into the underlying mechanisms driving protein solubility and help optimize recombinant protein lysis protocols.

Nicholas Bunch

NH - Southern New Hampshire University

Discipline: Natural and Physical Sciences

Authors:
#1 Nicholas Bunch
#2 Hamed Majidzadeh

Abstract Name: Rapid Bioassement of Messer Brook, New Hampshire: Benthic Macroinvertebrate and Fish-assemblage as Bioindicators

Aquatic bioindicator species are essential in determining the health and integrity of streams throughout the world and are regarded as a better means of measuring water quality in a system compared to instrumental methods (EPA,2023). Rapid bioassessment utilizing bioindicators allows for a cost-effective and quick measurement of the stream's health. Bioindicators themselves allow researchers to quickly determine the health of an ecosystem due to their increased sensitivity to their environment (Kenney et al, 2009). Utilizing the bioindicator's hypersensitivity to their environment allows for a rapid characterization and the existence of an impairment, the severity of an impairment, and the evaluation to control action causing the impairment as well as possible restoration efforts (EPA, 2023). The study conducted uses benthic macroinvertebrates as well as fish assemblage data as bioindicators to assess the water quality in Messer Brook, New Hampshire. It utilizes the Hilsenhoff Biotic Index (HBI), which is a quantitative method of evaluating the amount of Arthropoda within a system, as well as the New Hampshire Benthic Index of Biotic Integrity model (NH B-IBI) to grade the health of the stream. By following the EPA's Rapid Bioassessment protocol and the New Hampshire Department of Environmental Services protocol for macroinvertebrate and fish collection, three rock basket macroinvertebrate habitats were deployed in Messer Brook for a period of 90 days. After 90 days the macroinvertebrate habitats were removed and sent to Lotic Incorporated for macroinvertebrate sample processing for identification. Electrofishing within a 150-meter reach was conducted to determine the fish assemblage with a total of 222 individuals and 7 different species. This bioassembelage data was put into the HBI and NH B-IBI where it showed moderate impairment. With the knowledge of an impairment and what is causing the impairment, the next course of action is to construct a method for restoration efforts.

Trushaan Bundhoo

CAN - University of British Columbia

Discipline: Natural and Physical Sciences

Authors:
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#2 Herieth Ringo
#3 Raymond Andersen
#4 David Williams
#5 Yossef Av-Gay

Abstract Name: Screening marine compounds for antimicrobial activity against Mycobacterium abscessus

Mycobacterium abscessus (Mabs) is a nontuberculous mycobacterium (NTM) that causes severe disease in patients with cystic fibrosis (CF) and other underlying lung diseases. Mabs is ubiquitously present in tap water, can infect immunodeficient patients, and cause nosocomial outbreaks. Chronic Mabs infection in CF patients is associated with declining lung function, adds challenges to lung transplantation, and contributes to fatal airway damage with mortality rates up to 60%. Mabs is the most pathogenic and chemotherapy-resistant rapid-growing mycobacterium and is resistant to most common antibiotics. As a result, there is an urgent need for new antibiotics against Mabs. Classically, screening compounds and extracts is the preferred way to identify new antibiotics. We used automated microscopy and high content screening (HCS) for rapid screening of drug candidates against Mabs. 251 marine compounds, originally isolated from deep sea ocean invertebrates, were screened at a concentration of 20 ug/mL against Mabs growing in broth. Compounds with >90% inhibition were followed up with dose-dependency assays to determine minimum inhibitory

concentrations (MIC). Compounds were then tested in a THP-1 macrophage infection model to assess the intracellular antimicrobial activity of the compounds together with their associated toxicity to the host cells. Of the 251 compounds, 7 were found to have significant antimicrobial activity against Mabs when tested in broth. When tested in a macrophage infection model, 6 compounds were found to inhibit Mabs growth intracellularly with low cell cytotoxicity. The mechanisms of action of these compounds will be further investigated. The findings of this study may potentially identify a compound for further development into a novel treatment for Mabs infection.

Isabella Buonaugurio

RI - Salve Regina University

Discipline: Education

Authors:
#1 Isabella Buonaugurio

Abstract Name: Teaching At Risk 6th Graders Operations with Decimals

My study consists of two sixth grade students who demonstrate similar needs in the area of decimal operations. To help students gain proficiency with decimal subtraction, multiplication, and division, I have chosen to design a series of nine interventions two for subtraction, two multiplication, one for review of multiplication, addition, and subtraction. The fifth intervention serves as a review as well as a form of progress monitoring to determine if students are ready for decimal division, the most complex of the four operations for sixth grade students.

Rachel Burcin

PA - Carnegie Mellon University

Discipline:

Authors:
#1 Rachel Burcin
#2 Vishwas Mruthyunjaya

Abstract Name: Designed for Inclusion: Innovation in An Undergraduate Robotics & AI Research Program

Science and technology drive innovation, create economic opportunity, and are critical to national security. With increased competition for a skilled STEM workforce, high barriers to participation in STEM, the missing millions (Gershenfeld et al., 2021), and the longstanding underrepresentation of minoritized US communities, collective action is urgently needed to expand STEM education and training. Strengthening and expanding STEM education is necessary to meet critical workforce demands and to fortify the national research pipeline. Undergraduate research experiences, long recognized as a high-impact education practice (Kuh & Schneider, 2008), are critical to growing the nation's research and science communities. In 2006, Carnegie Mellon University's Robotics Institute launched a summer undergraduate research program, the CMU Robotics Institute Summer Scholars (RISS), to provide early robotics research exposure. Initially, RISS followed the traditional undergraduate research experience (REU) site model, coupling experts (science faculty) with undergraduate students to enable involvement in a research project, providing communications and graduate school preparation workshops, hosting social activities, and an end-of-program poster session. Over time, RISS became a living lab to design, implement, and evaluate educational interventions to increase domestic student participation in STEM graduate programs. This poster will discuss CMU's RISS program's

evolution and current framework guided by 1) David Kolb's Experiential Learning Theory (ELT) and 2) Wenger's Community of Practice Model.The reimagined, four-phase CMU Robotics Institute Summer Scholars (RISS) program provides immersive undergraduate research experiences, professional development, mentorship, and service learning to nurture future roboticists. The 100-plus RISS mentors include faculty from the Robotics Institute, Mechanical Engineering, and Electrical Engineering Department, current graduate students, alums, and leaders from the community. An analysis of RISS student outcomes showed that more than seventy-five percent of RISS alums from 2012 to 2018 pursued graduate studies in STEM.

Rachel Burcin

PA - Carnegie Mellon University

Discipline:

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Vishwas Mruthyunjaya

Abstract Name: Imagining and Engaging Futures Through Rural-R1 Collaboration in STEM Education

Rural students are underrepresented in STEM fields and less likely to attend R1 schools (Carnegie Classification for High Research Activity), especially for computing-related majors (Postsecondary National Policy Institute, 2023). Rural spaces remain understudied and underserved and are at high risk for further exclusion from participating in the innovation economy and imagining and creating their own pathways and engagement. In response to this overwhelming need, we, Carnegie Mellon Robotics Institute Summer Scholars (RISS) and local rural partners, developed a pilot project that coupled robotics undergraduate researchers with rural communities, educators, and political leaders. Establishing trust and beginning to see each other as individuals were the first steps towards collectively trying to understand the opportunities, perspectives, and possibilities for R1-rural shared futures. Carnegie Mellon University’s RISS uses evidence-based approaches and engages an extensive network of mentors to extend the traditional 10-week summer research experience into a multiple-stage scholar development community. Undergraduate research & service learning are well-documented high-impact practices (Kuh, 2009) that have a measurable impact on scholar development and future civic engagement (Chittum et al., 2022). During our initial engagement, the project shifted from a one-direction service-learning pilot to an ongoing rural-R1 collaboration focused on mutuality and reciprocity by embedding collective impact and appreciative inquiry practices. By doing so, space was created for the community and undergraduate robotics researchers to imagine futures connected to and impacted by STEM that were empowering and supportive rather than solely connected to careers, economic survival or development.In this Narratives and Storytelling presentation, presenters will share observations, promising practices, and experiences within rural spaces to break down barriers of exclusion and discuss the potential impact and long-term engagements emerging from the project.

Nicholas Burdick

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

Authors:
#1 Nicholas Burdick

Abstract Name: Distribution of Neurotransmitters in the Parabrachial Subnuclei of Primates: A Cross-Species Comparison of the Human and Cebus Monkey

The parabrachial nucleus (PBN) is located in the pons, surrounding the superior cerebellar peduncle. Data collected from rodent models have shown that it plays an integral role in various physiological functions, including sleep and wakefulness, taste, appetite, visceral sensation, nociception, temperature regulation, itch, and chemosensation. The present work aims to identify whether the primate PBN contains the diversity of neuropeptides that have been described in rodents.We performed a detailed literature review on this region and also mapped the distribution of calbindin (CAL), cholecystokinin (CCK), dynorphin (DYN), galanin (GAL), neurotensin (NT), somatostatin (SOM), and substance P (SP) applying immunohistochemical techniques on horizontal brainstem cross-sections obtained from four neurologically normal human subjects and five male Cebus monkeys. Overall, cell body morphology and fiber distribution in the external lateral and external medial subnuclei were similar in both primate species, but there were clear differences in peptide distribution. Both the external lateral and external medial subnuclei contained CAL, CCK, NT, SOM, and SP immunoreactivity. DYN was observed in the external lateral PBN, and GAL was present in the central lateral and dorsal medial PBN. The external lateral subnucleus exhibited a distinct topographical distribution of GAL, CAL, CCK, DYN, and SOM, with DYN and SOM overlapping in the ventral corner of the subnucleus.The results of our literature review and histological analysis suggest that the neuropeptide distribution in the primate Lateral PBN is similar to the one described in rodents. This allows for inferences into possible physiological parallels.

Jarrod Burges

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

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#2 Kathryn Metcalf

Abstract Name: DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE

Detrital zircon datasets contain vast amounts of geochronological data, and different labs, researchers, and institutions all have their own formatting standards. Detrital zircon data are also becoming cheaper and easier to produce, increasing the quantity of datasets available to researchers. This data increase only makes the problem of organizing, sorting, and filtering the data that much more difficult. This application aims to fix this problem of organizing and managing data by importing and storing it in a personal local SQL database, similar to a reference manager for publications. When the application is unsure how to import the data, it prompts the user with a step-by-step wizard to confirm or modify the assumed data values, which are then remembered for future imports. Users can create custom tags to classify the data. The data inside the local SQL database can then be used by the built-in filtering and basic plotting to allow users to visualize the data quickly based on current filtering options. Once the user is satisfied with the selected data, it can be output in varying formats for Excel, IsoplotR, DZstats, detritalPy, etc. Users can also split, merge, and share the SQL database for other researchers to merge into their own databases with little user input unless there are conflicting entries. New AI tools such as Chat GPT are intriguing, but we find them insufficient for our needs as they are still unreliable, and the results cannot be shared, merged, or stored. The application will use open-source version control methods so that users can submit their own feedback or help contribute to the application through GitHub. Once closed alpha development is completed and the application is published, it will help all geochronologists optimize their own research methods while seamlessly integrating with existing tools.

Emma Burke

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Emma Burke

Abstract Name: The Origins of the Comanche Nation in North America

Purpose: My research showcases the transformation of the Comanche Nation from their origins as Western Shoshone to their dominance of the American Plains. The origin of the Comanches is explored through the development of an exhibit that tells this story through primary sources, artifacts, and art. The purpose of this exhibit is to highlight Native American culture of the Comanche Nation and allow viewers to rediscover the importance of Native American History.Research: This exhibit uses primary sources in forms of artifacts and artwork in order to portray the history of the Comanche Nation. These sources will tell the story of the beginnings of the tribe, what makes them different from other nations, and how they adapted to the rapidly changing country. One of these primary sources includes a Comanche Horse Mask. This artifact is crucial to the history of the Comanche nation, for it showcases the importance of the acquisition of horses in their culture. Another primary source includes the art piece, “Comanche Motion,” by Eric Tippeconnic. This work of art showcases who the Comanches were and how they continued to persevere as a nation during the foundation of America.Methodology: The research conducted in this exhibit was gathered through reviewing primary sources, museum artifacts, journals, and scholarly articles. A presentation was created to display artifacts that were distinctive to the Comanche Nation.Conclusions: This presentation is important because it places a new perspective on Native American history by telling a story through the eyes of the Comanche Nation. This presentation will focus on one of the many Indigenous groups who played a significant role in how our country was created and will bring to light the forgotten stories of one of the most powerful Native American tribes in history.

Ashton Burkhead

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Ashton Burkhead
#2 Kevin FInk
#3 Larissa Boyd

Abstract Name: Inter-rater Reliability Between an Emerging Professional and Professional Using Skinfolds to Measure Body Fat Percentage

Introduction: Assessing body composition is a common practice for Exercise Science professionals. It provides a baseline assessment of the individual who is starting an exercise program. Therefore, it is also an important skill to master in undergraduate Kinesiology as future professionals. One way of assessing body composition is by Skinfold (SKF) measurements. SKF is one of the most accurate and common field methods for assessing Percent Body Fat (%BF). Purpose: The purpose of this study was to create Inter-Rater Reliability (IRR) between an emerging professional and professional through SKF in order to assess %BF. Methods: Students were recruited from the Department of Kinesiology and Health Studies (KHS) at a regional university. At the university, the KHS students (N=11) consented and responded to a series of demographic questions. The professional and emerging professional then conducted two trials of a 7-site SKF assessment for a minimum of four trials each. The data collection process consisted of two rounds to

determine IRR. The IRR between the emerging professional and professional was investigated through Intraclass Correlations (ICC). Results: ICC estimates for two-way mixed-effects (absolute agreement, single measures) showed moderate to excellent IRR for point estimates in both rounds of SKF. Excellent IRR was established for %BF (> .980) while 95% Confidence Intervals (CI) indicated more variability for specific sites. Conclusion: The results indicate the emerging professional and professional are equal to excellent when it comes to assessing %BF using SKF. The CI for the various sites provides useful information about where the assessors have more variability for the two rounds of testing and where more training between the assessors may be needed. IRR was established between two assessors which indicated the emerging professional obtained the skills to assess %BF using the field method of SKF.

Ashley Burnett

NC - Elon University

Discipline: Interdisciplinary Studies

Authors:
#1 Ashley Burnett
#2 Kathleen Crosby

Abstract Name: Creation and Curation: The Narratives of Festival Culture in the Religious Imagination

A sensory overload of blaring/loud music that can be heard long before you arrive at the entrance, a kaleidoscope of colors that blur into art, and pungent smells that leave you questioning their source, festivals like Coachella and Bonnaroo might easily be seen as mere recreation. But as Gilmore (2010), Lucia (2020), and others have argued, festival culture exists at the intersection of relational community and recreational fun. In my work, I examine religious practices found at seemingly secular festivals, including various ritualized processes, such as the ubiquitous presence of altars and the creation of shared communal experiences, in order to unpack how the construction of secular festivals parallels religious practices. This project looks at two festival sites, Coachella 2023 and Bonnaroo 2023, where I conducted ethnographic research to study approximately 100 participants and their experiences. Methodologically, I employed a three-step cross-sectional approach that examined the creation of festival culture and how, in return, it is presented and performed within and outside the festival site. My analysis centers youth culture, narrative theory, and digital culture and argues that participants create and curate their experiences, both orally and digitally, in a way that contributes to the authenticity of a festival space as religious worldmaking.

Logan Burnett

AL - University of Alabama at Birmingham

Discipline: Engineering and Architecture

Authors:
#1 Logan Burnett
#2 Emilio Baglietto

Abstract Name: Advanced Simulation of Thermal Striping in HTGR Plena Using the STRUCT Turbulence Model

Advancements in understanding and predicitng thermal striping are crucial for the development and safety of future nuclear systems. This research focuses on developing a reliable and computationally efficient method for predicting thermal striping in the upper plenum of High Temperature Gas Reactors (HTGR). The higher

energy efficiency offered by elevated coolant temperatures in gas-cooled fast reactors marks a significant departure from traditional light water reactor technologies, bringing unique challenges in simulating thermal fluctuations and the resulting stresses on reactor components. We propose the STRUCT hybrid URANS/LES turbulence model as a candidate, capable of generating high-resolution thermal fluctuation data akin to Large Eddy Simulation (LES) but at computational costs comparable to Unsteady Reynolds Averaged Navier-Stokes (URANS) methods. The aim of this research is to assess the STRUCT hybrid model's performance by benchmarking it against results obtained from the NekRs GPU-accelerated spectral element Navier-Stokes solver. This study not only evaluates the STRUCT model but also aims to deepen the understanding of thermal striping mechanisms, contributing to the development of safer and more reliable HTGR systems.

Raymond Burris

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Raymond Burris

Abstract Name: Milton Glaser An In Depth Analysis On A Design Hero

This abstract is an homage to the design hero Milton Glaser, and the wonderful life that he led and the impact that he had on not only design but art as a whole. This paper talks not only about the beginning of his journey in design, but also the end of his story, and the things that happened in between. This paper is meant to show the reader that not only was Milton Glaser a wonderful man, but a truly brilliant designer, and not one that will soon be forgotten.

Hayden Burris

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Hayden Burris

Abstract Name: Patriotism and Persecution: The Experiences of Queer Communities in the Wake of World War II

On June 27, 1969, a routine police raid was conducted on the Stonewall Inn, a gay bar in New York City. Police frequently conducted these raids, but that night was an exception as the queer bargoers stood their ground. They would perform what would come to be known as the Stonewall Riots for the following three days. However, these three days did not come about suddenly. This was the culmination of over two decades of oppression at the hands of the United States government, which arose at the start of the Second World War. Although the military and federal government had previously kept lesbian women, gay men, and transgender people out of the armed forces, the need for troops required these restrictions to be set aside. This provided an opportunity for relationships to form like never before. The war empowered some queer people to become visible in the United States, forming safe spaces to embrace their identities and fighting for their right to exist. However, Cold War paranoia was a setback to the advancement of the queer community in the United States. Drastic changes in American society as a byproduct of World War Two led the government to enforce sweeping policies to root out any suspected communist infiltrators or gay employees, as they were both deemed too immoral to be employed. Unfortunately, this homophobic attitude extended to local law

enforcement agencies and the public as well. But this did not deter queer communities from resisting oppression. Gay men and women, both veterans and non-veterans alike, founded activist organizations, built clandestine support networks, and performed early protests. Their struggle for equality and gay rights laid the groundwork for Stonewall and for the flourishing of LGBTQ+ identities that has occurred in the years since then.

Ashlynn Burrows

MD - Salisbury University

Discipline: Social Sciences

Authors:
#1 Ashlynn Burrows

Abstract Name: Social Media, Safety, and School Shootings

I will never forget the day I was strolling down the school supplies aisle of Target and I overheard a young boy, who was back-to-school shopping with his grandmother, ask for a bulletproof backpack. School shootings are an epidemic in our country and it is not going unnoticed by the youth. The purpose of this mixed-methods study is to explore the level of safety students feel in their respective schools and explain whether their perceived level of safety is based more on social media or their school's safety procedures. The study aims to understand the phenomenon of social media's influence on public school students' perceived levels of safety at the elementary, middle, and high school levels in Wicomico County, MD. Previous studies have attempted to identify why school shooters become school shooters, the motivating factors behind school shootings, precursors to violent behavior, and the efficiency of current school intruder policies. However, previous studies lack focus on the general population of students that are in attendance at schools. To understand the way in which to move forward and improve school safety systems, we need to first understand the actual people that the safety precautions are designed for, which is students.

Gracie Burrows

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Gracie Burrows
#2 Luke Cross
#3 Dr. Christopher Crawford

Abstract Name: Analysis of the Efficacy of Magnetic Coils for Neutron Electric Dipole Moment Experiment

Measurement of the Neutron Electric Dipole Moment (nEDM) is one of the top priorities in nuclear and particle physics because of its discovery potential for physics beyond the currently accepted standard model. The neutron EDM would, if non-zero, violate Charge-Parity (CP) symmetry and is therefore associated with time-reversal asymmetry. Some amount of CP/T violation is predicted by the standard model, but a significantly higher amount would fulfill one of the three conditions required for baryogenesis, the hypothesized method of conversion of antimatter into matter in the very early universe. This is not predicted by the standard model. If a non-zero nEDM is measured by the high sensitivity apparatus at Paul-Scherrer Institute in Switzerland, it would provide evidence for baryogenesis. In order to measure the nEDM at such high precision, magnetic coils were fabricated and installed to preserve the identical precession of the

neutrons through the measurement cell. The efficacy of the coils' ability to generate this uniform field will be assessed by mathematically fitting laplace solutions to the data collected by Paul-Scherrer Institute.

Gracie Burrows

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Gracie Burrows
#2 Carol Street

Abstract Name: The Mind of Thomas Henshaw: The Scientific Method Through the Ages

Today’s scientific method, which is used in most modern experimental disciplines, has been refined over hundreds of years to best describe how an experimentalist should approach research. Its use dates back to the 11th century but was refined and propagated in the 17th century by European scientists. The research of this era is notable for alchemy, an early form of religiously motivated science which later evolved into chemistry and physics. The European alchemical work of this period emerges as one of the most intriguing, marked by transformative shifts in response to technological advancements coupled with the sociopolitical power of the church. Enter Thomas Henshaw (b. 1618): while much of his written work is lost to time, it is known that he published several papers on saltpeter and gunpowder, as well as a few historical and political discussions. This work led Henshaw to assist in the founding of the Royal Society of London for the Improvement of Natural Knowledge, which is known to this day as the Royal Society. The University of Kentucky’s Special Collections Library has recently acquired an original copy of La Vie Devote (or The Devout Life), a religious text written by Saint Francis de Sales in 1644. The text was Henshaw’s personal copy and contains his own thoughts and annotations. Analysis of Henshaw’s markings in his copy of La Vie Devote paired with his known works is likely to reveal crucial connections between Henshaw’s use of the early scientific method and the one that science widely accepts today.

Eric Burton

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Eric Burton

Abstract Name: Understanding the Value of Function Following Form

Which approach creates more interesting and beautiful buildings: Those who utilize ‘form following function’, or ‘function following form’? When an architect designs only using form following function, the building can have an excess of the utilitarian, resulting in a building that is very useful but can suffer in its overall design aesthetic, lacking attention to beauty. When the opposite occurs, the building can be an incredible work of art, but perhaps suffer in its usage. For an architect to be successful, there needs to be a balance of both methods. In the field of architecture, many architects and designers follow the adage ‘form ever follows function’. While the purpose of this research project is not to discredit this philosophy, the goal is to prove that the other side of the architectural coin, so to speak, has value and that there are multiple philosophies to consider. The research methodology for this project was comparing the buildings of architects that utilize differing philosophies with various building types, and utilizing eye tracking software to help

determine which philosophy is more engaging, and beautiful to the average person. The results show that function following form typically produces buildings that are considered more pleasing to the eye, when it comes to the building facades that are evaluated. Building with form in mind first will allow for the designs to better fit their perceived building typology. There is worth at looking into different perspectives. When one is approaching design, they should be willing to implement multiple methods to achieve the best version of their building. Function following form is one method that can help us attain a more beautiful building experience that will impact the world for generations to come.

Charlotte Burts

SC - University of South Carolina - Columbia

Discipline: Health and Human Services

Authors:
#1 Charlotte Burts

Abstract Name: Analyzing Perceptions of Mental Health among Individuals with Polycystic Ovary Syndrome

Introduction: Individuals of reproductive years with polycystic ovary syndrome (PCOS) are up to three times more likely to have mental health issues such as depression, and seven times more likely to attempt suicide. However, mental health issues associated with PCOS often go unrecognized. Without proper treatment, mental health conditions can worsen over time. The purpose of this study was to explore how physical, mental, and social experiences and perspectives impact the mental health of individuals with PCOS aged 18-26 years. Methods: Participants were recruited using flyers, social media, the snowball method, and ResearchMatch (NIH digital recruiting technology). Using a semi-structured interview guide created through the lens of the biopsychosocial theory, interviews were conducted and audio recorded using Zoom and surveys were sent to be returned after the interview. All data were de-identified. Interview data were transcribed and analyzed using thematic analysis. Survey data were entered in SPSS and analyzed. Results: Participants (n=24) were aged 22.2 (+/- 2.3) years, single (75%), and resided in different regions of the United States. Mean depressive symptom scores (PHQ-8) were 10.9 (+/- 7.3), indicating moderate depression. Preliminary interview themes were: 1) feeling initially dismissed by healthcare providers when discussing PCOS and pharmacological interventions; but validated after receiving a PCOS diagnosis; 2) perceiving that mental health was affected by physical symptoms, such as weight gain, hirsutism, and fatigue; and 3) expressing concerns about the future given recent changes concerning reproductive rights. Conclusion: HCPs should consider biopsychosocial aspects of PCOS to better provide patient-centered care and earlier recognize signs of mental health distress. A holistic medical assessment could improve patient-provider communication, inform individualized treatment plans, and ultimately lead to better mental health outcomes for individuals with PCOS. Further research could help develop PCOS-specific evidence-based biopsychosocial screenings, consider their point of integration, and create decision-trees based on results.

Carlos Bustillos

NM - University of New Mexico - Valencia Campus

Discipline: Natural and Physical Sciences

Authors:
#1 Carlos Bustillos

Abstract Name: Use of X-Ray Fluorescence to Map Colorant Localization in Crystalline Glazes

Crystalline glazes are ceramic glazes formulated to favor the growth of macroscopic crystals that can reach several centimeters in diameter. The glaze base is primarily colorless zinc silicate. Copper, nickel and cobalt compounds are added at single percent-by-mass levels to generate colored macrocrystals. These crystals often imply localization of the colorants, despite being applied uniformly. The application of X-Ray Fluorescence (XRF) spectrophotometry to analyze colorant localization, crystal thickness, glaze flow and glaze depth are discussed.

Fernando Bustos

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Fernando Bustos

Abstract Name: How Mathematics Faculty Strive to Create a Classroom Environment Where Students Feel Comfortable Contributing

Our research team developed the Teaching Equity-minded and Active Mathematics (TEAM) Tool, a tool for professional development and reflection, to help faculty transition their instructional practices to be more equity-minded and active. As active learning and equity-minded instruction are becoming more commonplace in mathematics education, we invited various mathematics faculty to engage in reflection cycles using the TEAM tool. Reflection cycles consist of three phases: planning, implementation, and reflection. Reflection cycles provide professors the opportunity to collaborate with undergraduate mathematics researchers to discuss teaching practices and strategies that can be implemented in the classroom to encourage equity-minded active mathematics. We investigated what teaching practices faculty selected from the TEAM Tool, their rationale for their selected teaching practices, and their reflection after implementation. We share the data gathered from 10 reflection cycles from Fall 2022 to Spring 2023 from participating CSUF math faculty. We found that Teaching Practice 5, Creates a classroom environment where students feel comfortable contributing, was chosen most frequently among the faculty members. After analyzing their rationale and reflection we concluded that faculty see great value in fostering a positive classroom climate. The TEAM Tool helps to increase faculty awareness of how to be more inclusive within the classroom, consistently building toward a climate that encourages and reassures students to actively participate in learning. Further, our findings indicate that leveraging the TEAM Tool in professional development can help faculty and/or faculty learning communities in greater self-reflection towards continuous instructional improvement.

Alexander Butler

NC - William Peace University

Discipline: Humanities

Authors:
#1 Alexander Butler
#2 Katie Otis

Abstract Name: Bears, Cow, Crows, and Humans: A Historical Study of Animal Influence on Societies and Cultures

Human fascination and interaction with animals is innate and apparent across time and cultures. Throughout

history humans have observed, revered, and hunted animals, and in some cases domesticated them for their own benefit. Human usage of animals had a massive impact on the development of human civilizations. For example, the domestication of the horse enabled mass conquest of cultures who had not yet developed horseback riding. Also, many zoonotic diseases, such as smallpox, have been connected to domesticated animals, with many of these disease devastating cultures who lacked prior exposure. Finally, domesticated animals played an extensive role in human agriculture and economics as demonstrated in Sumerian cattle rearing. Bears, Cattle and crows capture unique attention from cultures across the world. While numerous animals receive human consideration, these three are particularly ubiquitous and important. Some significance to these animals exist almost everywhere amongst the cultures that live with them. Examining how societies view these animals tells us a lot about both human cultures and the animals themselves. It provides unique insights on human relationships with these animals and sometimes even reveals something about animal behavior. This essay draws on extensive, interdisciplinary academicresearch in the fields of anthropology, psychology, and history. It was initially developed as part of a cart presentation for the author's internship project at the North Carolina of Natural Science in Raleigh, North Carolina.

Abigail Butler

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Abigail Butler

Abstract Name: Positive Effects of Social Support on Stress Levels in College Students

Previous research shows that stress is a massive problem in the college-aged community. Social support has been understood as a helpful combat to stress. The present study explores the effect of perceived social support on stress levels in college students. The researcher hypothesized that perceived social support would positively influence reducing stress levels among college students. In this study, stress level was measured with the College Student Stress Scale (Feldt, 2008). Social support was measured with the Multidimensional Scale of Perceived Social Support (Porter et al., 2019). The sample included 59 full-time college students from a Christian university. A t-test and a simple regression analysis were conducted to analyze the data. The findings in this research revealed that perceived social support significantly predicted stress levels ($b1 = -202$, $p = .013$). The more social support perceived was associated with lower stress levels in college students. In addition, there was a statistically significant difference in stress levels between males and females ($t = -2.001$, $p = .05$). Female students ($M = 36.30$, $SD = 7.7$) reported higher levels of stress than male students ($M = 30.40$, $SD = 11.7$). In accordance with the hypothesis, perceived social support has a positive influence on stress levels among college students. The findings emphasize the need for society and university institutions to recognize that stress levels in college students are impacted by social support. Furthermore, future implications address the need to understand how perceived social support can be increased among college students.

Skylar Butler

FL - Embry - Riddle Aeronautical University

Discipline: Natural and Physical Sciences

Authors:
#1 Ashley Kehoe
#2 Skylar Butler

Abstract Name: Asteroid Disruptions of the Datura Family

To research the Datura Family of asteroids, a prewritten dynamical IDL code was run to track the orbital decay of asteroid fragments released in an asteroid disruption. Different particle sizes were used to analyze the outputs of each size, including the semi-major axis, eccentricity, and inclination, to observe how certain particle sizes' orbital elements evolve. Using a young asteroid family like the Datura family gives more insight into their original structure and formation because the time is closer to before the asteroid's breakup. We use these models to constrain the dust parameters by comparing the conditions to infrared satellite data sets. The semi-major axis utilizes Poynting-Robertson drag, while the eccentricity and inclination are related to the effects of Jupiter. But all of these orbital elements relate to the role of the radiative forces. This research is important to understand potential Earth hazards from space.

Dionna Butts

VA - Norfolk State University

Discipline: Engineering and Architecture

Authors:
#1 Dionna Butts

Abstract Name: Electrochromic Device: Tungsten Oxide

In today's world, the increase in energy consumption has significant implications for our environment, economy and our overall quality of life. Research has shown that buildings contribute to one third of the energy sector; and a total of fifty- percent of energy being used comes from heating, ventilation, and air conditioning (HVAC) usage; this number is only projected to grow in the future. Our research aims to contribute to the reduction of total energy consumption by increasing the usage of renewable sources through the development of energy-efficient glazing solutions, i.e., the smart window. The process of creating the energy glazing (e g)smart window involves the development of an electrochromic Device. This device is comprised of an electrolyte sandwiched between two electrodes. The electrodes are thin films that are spin coated. Spin coating is a simple and cheap method to create conformal and low-surface roughness films. The films that are spin coated are able to change color or transparency in response to an electrical stimulus. We report on the use of transition metal oxide (tungsten oxide) to fabricate electrochromic devices. The fabricated device showed promising electrochromic properties; for instance, it holds the ability to generate a fast switching time and exhibited great chemical stability.

William Butts

IN - Franklin College

Discipline: Humanities

Authors:
#1 William Butts

Abstract Name: Home Runs and Racial Bias: The Unjust Treatment of Minority Baseball Players in Steroid Era Media Coverage

One of the most controversial time periods of baseball occurred in the 1990s and early 2000s. While the period is known for record-breaking homerun hitters (notably, Mark McGwire, Barry Bonds, and Sammy Sosa), it is also known as the Steroid Era. Many players from this time were accused or proven to have used illegal performance enhancing drugs, including McGwire, Bonds, and Sosa. My research looked to determine, "What role did the race of these players have in the way they were covered and depicted in the media following these accusations of steroid usage?" Many previous historians have looked at race and baseball regarding the league's integration, but there is little research that deals with MLB media coverage during the Steroid Era and issues of race. This research contributes to the field by comparing the media coverage of McGwire, Bonds, and Sosa, each a player of a different race. After examining articles published by ESPN, Bleacher Report, and Sports Illustrated, this paper argues that the media vilified and condemned minority players accused of steroid usage and showed greater forgiveness to accused white players. The media repeatedly judged minority players more harshly, showing that the long-standing racial discrimination towards minority baseball players, still existed at the beginning of the 21st century. It is essential to understand that the campaign for equality in sports and media coverage continues today, and we can only hope to achieve this inclusivity if we first confront and recognize the history of racial bias that has existed in baseball's past.

Savannah Bynaum

TX - Tarleton State University

Discipline: Health and Human Services

Authors:
#1 Savannah Bynaum

Abstract Name: Mixed Methods Study of Diversification Factors Affecting Meal Service Recruitment

Meals on Wheels strives to increase services to community residents of color. This exploratory study focuses on the impact of diversity at Meals on Wheels and the factors involved in the limited number of participants of color. There are clients who are unable to communicate with the agency because of language barriers. The student researchers reviewed a total of 16 journal articles relating to how the diversification of staff at Meals on Wheels affects vulnerable populations. Researchers created a 17-question survey that included open ended and closed ended questions to ask 100 community residents of color. Researchers collect data to assess the interest of having a diversified staff at Meals on Wheels. This research aims to understand what accommodation is necessary to have within the Meals on Wheels agency in order to reach more potential clients. The student researchers use the Statistical Package for Social Sciences (SPSS) to perform parametric and nonparametric tests. The researchers ran a measure of central tendency focusing on mean of age and mode of preferred language and gender. The student researchers ran a measure of variability focusing on the range of living arrangements and employment statuses. The student researcher ran correlation between the comfort levels of participants with people of their own race and people from different races. The overall results inform possible accommodations to be implemented within the agency to increase clientele. This study provides knowledge to the Meals on Wheels agency in Erath and many other Meals on Wheels agencies about the effects that diversification of the staff at MOW has on underserved populations. These findings contribute to the importance of having a diverse staff and supports advocacy for a vulnerable population.

Brianna Bynes

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Courtney Cleary
#2 Kathryn McDougal
#3 Akeem Lawerence
#4 Jaelyn McCracken

Abstract Name: Investigating Multiple Sclerosis Incidence by Proximity to the Equator

Multiple sclerosis is an autoimmune disease wherein the immune system attacks the myelin sheath causing communication issues between the brain and body. Symptoms vary depending on the patient's severity, some obtain numbness or weakness in limbs, tingling, lack of coordination, vision issues, slurred speech, and even cognitive disabilities. There is currently no cure for the disease, but there are several ways to help reduce the severity and the rate of occurrence of flare ups using different prescribed medications, with research, further medicinal solutions may be found after considering geographical location. It has been found that MS patients living closer to the equator had a higher severity. It was also found that those with darker skin tones were less likely to develop MS due to some UV radiation protection. The research investigates the interplay between temperature at location of residence and genetics on the incidence of MS. Zip code, demographics, and genomic data were obtained from the All of Us Research Program. Data was analyzed using R in Jupyter

Notebook. Hail was used to run a GWAS with MS as an outcome and temperature-by-location as a covariate. A t test was administered between age and MS diagnosis with a p-value of 0.01927. A chi-squared test analyzing race and MS diagnosis resulting in a p-value of 2.2*10^-16. Although the data suggests that the data is statistically insignificant, the analysis is somewhat accurate considering the representation for this disease in the All of Us Research Program database. GWAS showed GPC6, TMC1, CDH23, and SYNGAP1 as genes of interest. These genes function in physiological and pathological conditions, CDH23 and TMC1 function in sensory perception, while GPC6 and SYNGAP1 function in cell signaling and other neurological functions. While the genes have different focuses, all have some relation to MS.

Olivia Bynum

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Olivia Bynum
#2 Nick Sbrockey

Abstract Name: Vitamin C Content of a Bell Pepper in Different Environments

This study investigated the impact of different storage environments on the Vitamin C content of bell peppers. Four distinct environments were examined: a frozen environment, a refrigerated environment, an open environment, and a closed capsule. Each bell pepper was stored in a bottle within these environments. The mass of the bell peppers was recorded both before and after the experiment to account for any changes. The results of this study could provide valuable insights into the optimal storage conditions for preserving the nutritional value of bell peppers, particularly their Vitamin C content. Further research is needed to confirm these findings and explore their implications for food storage practice.

Luciano Byrd

VA - George Mason University

Discipline: Social Sciences

Authors:
#1 Luciano Byrd
#2 Adam Winsler

Abstract Name: The Evolution of U.S. Presidential Executive Orders 1936 to 2022: Historical Trends and New Modern Changes

Executive orders are an important tool for the U.S. president to implement policy goals and execute laws. Scholars, such as Mayer (1999), have spent considerable time studying the use of executive orders; however, research on this topic has largely been limited to before Clinton's presidency. Examining executive orders in the 21st century is crucial for a complete understanding of the topic, especially given recent changes in American democratic processes. This paper analyzes historical trends in executive orders since 2000 with research questions and hypotheses based on replication of Mayer (1999): There would be more executive orders during a united than divided Congress; Democratic presidents would issue more executive orders; a negative correlation exists between approval rating and executive order issuance; and there would be no noticeable change in executive order issuance at the beginning or end of presidential terms. I gathered information from publicly available data and conducted t-tests and multiple regression analyses for relevant

yearly data during the presidencies of W. Bush to Biden. I conclude that the majority of trends observed by Mayer (1999) are not applicable today. I found no significant difference (t= -.65, p = .53) in the number of executive orders issued during a united or divided Congress. There was no significant difference (t = .56, p = .29) between the number of executive orders issued by Democratic or Republican presidents, although, Democrats issued slightly more orders (41 to 37). Finally, there was no significant association between presidential monthly approval ratings and executive order issuance (r2=.03). The number of executive orders issued by presidents was significantly higher during the first and last month in office compared to overall averages. Variables related to when a president uses executive orders appear to have changed since 2000.

Sarah Byrd

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

Authors:
#1 Sarah Byrd
#2 Ahmed Awad

Abstract Name: MRSA Antibiotic Potential of PEGA-Nucleoside Compounds: In Silico Results and Next-Phase Design

MRSA has quickly arisen as a deadly hospital superbug, due to causes such as overuse of antibiotics on livestock, tendency of patients to stop treatment regimens early, and horizontal gene transfer during comorbidity. In MRSA and other resistant bacteria, this largely results from the ability to produce beta-lactamases inactivating penicillins, as well as the presence of the modified peptidoglycan synthesis protein PBP2a, which penicillins have reduced binding affinity for. Mendoza et al. (2021) proposed PEGA-nucleosides as theoretical drug candidates targeting the class B1 metallo-beta-lactamases NDM-1, IMP-1, and VIM-2; however, their study only considered uridine and adenosine analogues. This study built upon Mendoza et al.'s research by performing computational analysis for L- and D- isomers of ten different PEGA-nucleosides in order to see if uridine remained the superior analogue; currently, 5-azadihydrouracil analogues perform best for all targets tested. To determine this, the twenty analogues were run through icmMolsoft to calculate binding energies and protein residue interactions against both PBP2a and the metallo-beta-lactamases. SwissADME, admetSAR2.0, and PASS prediction programs were also used to determine properties and safety profiles; however, as currently administered antibiotics have harmful effects, toxicity was not considered immediately disqualifying. Poor candidates, such as cytidine analogues, have been removed from further study, and the most promising analogues will be synthesized for in vitro and in vivo testing with proteins. Plans for in vitro and in vivo testing for metallo-beta-lactamase and PBP2a inhibition using MRSA are also discussed, with Kirby-Bauer diffusion and nitrocefin assays among proposed diagnostics.

Christopher Byrnes

PA - Lafayette College

Discipline: Humanities

Authors:
#1 Christopher Byrnes

Abstract Name: Lafayette at Yorktown (1782): An Art Historical Case Study of African-Americans in the American Revolution

This research uses Jean-Baptiste Le Paon's painting, Lafayette at Yorktown (1782) as a case study to illuminate one of the marginalized communities of history: African-Americans. The painting depicts the Marquis de Lafayette in uniform pointing to a battle scene—Battle of Yorktown (1781)—unfolding in the distance. Next to the Marquis, stands a restless horse and a mysterious unknown African-American man, also dressed in an extravagant uniform, perhaps, even grander than Lafayette's. The latter prompts the question, who is he? Only a singular chapter serves as the most comprehensive piece of scholarship on the painting. The most accepted interpretation posits the figure is James Armistead Lafayette, a double agent black spy at Yorktown. This research, however, presents alternative theories that have not previously been considered. A mixed-method approach was employed, mainly consisting of a content analysis of Marquis de Lafayette letters from repositories around the globe, artwork from Le Paon contemporaries, and a site-visit to Yorktown. Other means included oral history interviews and the current scholarship. Ultimately, no direct evidence surfaced that James is the figure. The research presents a new alternative theory—albeit rooted only in circumstantial evidence like the James theory—that the figure is a composite character for African-Americans from the First Rhode Island Regiment at Redoubt 10 at Yorktown. Despite inconclusive results on the whole, the research is a testament to the resurgence of African-American history that has long been under-recorded and is also commentary and a critique of historian's story-telling. It is an early attempt to create a more complete picture with Lafayette at Yorktown being one of the only sources of African-American espionage. More practically, it is a guide of how to rethink current notions of the American Revolution with its semiquincentennial quickly approaching in 2026 for audiences both domestically (America250) but also internationally (France's America2026 movement).

Jeremyah Cabrera

KY - Morehead State University

Discipline: Health and Human Services

Authors:
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Abstract Name: Leadership Initiatives Public Health Campaign

Leadership Initiatives is an international non-profit organization focused on youth development, specifically through their International Public Health Internship Program. This nine-month program is designed to address key health issues affecting populations in sub-Saharan Africa. The program empowers interns to collaborate and create public health campaigns targeting prevalent concerns like water safety, hunger, and tropical diseases. One particular campaign undertaken by Leadership Initiatives was centered around menstrual hygiene in Bauchi State, Nigeria. The goal was to establish an educational campaign that would explain and dispel misconceptions in the community. Menstruation is a natural phenomenon experienced by approximately 1.9 billion people worldwide, yet stigma and neglect persist. Through promoting proper healthcare practices, the organization aimed to create a ripple effect in the region, making the dangers of menstrual hygiene more familiar and less stigmatized. The campaign sought to reach not only the participating group but also their families and friends, further extending its influence and potentially spreading throughout Nigeria for generations.

Nathalie Cabrera

CO - Regis University

Discipline: Natural and Physical Sciences

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#2 Isabella De Leon
#3 Katelyn De Leon
#4 Julianna Pelletier
#5 Sofia Galeano
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Abstract Name: Exercise Attenuates Methamphetamine-Induced Neurotoxicity in Male Rats

Methamphetamine is a highly addictive drug. Recreational use of methamphetamine induces neurotoxicity that leaves users with cognitive deficits, such as impairment in memory, which is often irreversible. This occurs due to cell death of neurons, specifically in the caudate-putamen. In methamphetamine induced neurotoxicity, the terminals of the dopaminergic neurons degenerate, resulting in memory impairment. An action potential in the caudate-putamen region results in the release of dopamine. DAT protein aids in the overflow of dopamine by transporting dopamine from the post-synaptic terminal to the presynaptic terminal. Methamphetamine also acts as a substrate as a monoamine transporter, resulting in even more dopamine release. Several studies have found that chronic exercise can have beneficial effects on memory, specifically short term. Our project aimed to analyze whether exercise improved a rat's ability to perform better in cognitive tasks that assessed memory after experiencing methamphetamine-induced neurotoxicity. A female and male cohort were used in this study to assess whether gender differences existed in methamphetamine use and the impact of exercise. Both sex cohorts of rats were either dosed with saline or methamphetamine and randomly chosen to receive a sedentary or active lifestyle, via a wheel in their cage. The rats with access to wheels were allowed 7 days to rest without a wheel in their cage post-dosing. To assess memory, two cognitive tests, object in place test and odor recognition, were tested on the rats. Post-euthanasia, immunohistochemistry was used to analyze neurotoxicity in the brains. The study revealed that female rats, saline or methamphetamine dosed, ran further distances than male rats. Methamphetamine had significant neurotoxic effects in both sex cohorts but exercise significantly attenuated the neurotoxic effects of methamphetamine in males. As the data displays, in male rats only, exercise helps attenuate the methamphetamine-induced neurotoxicity displaying that there are gender differences.

Schuyler Cady

NC - Elon University

Discipline: Mathematics and Computer Science

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Abstract Name: Statistical Modelling of Alaskan Coral Biodiversity

Cold-water corals are incredibly diverse marine organisms, ranging from deep water habitats in the tropics to shallow depths at the poles. They have an enormous range of structures, provide food and shelter for many organisms, and are the foundation upon which oceanic health rests. Warm-water corals have experienced a

decline over the past few decades, but less is known about cold-water corals. Current research points to shifting environmental conditions (e.g., climate change) and fishing practices leading to decreased coral biodiversity. My research seeks to better understand how environmental trends affect coral biodiversity around the Gulf of Alaska, the Aleutian Islands, and the Chukchi Sea. I used the National Oceanic and Atmospheric Administration's Deep-Sea Coral Database, one of the largest spatial and temporal data sets available. There are nearly 30,000 coral records in the database for these regions. Using these records, I analyzed the biodiversity of cold-water corals to show how this diversity is distributed around Alaska. I discuss the potential effects of these results, as understanding biodiversity trends is vital in predicting how coral reefs may change in the future and in protecting this ecologically crucial region.

Jiayun Cai

GA - Emory University

Discipline: Humanities

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Aden Diaz

Abstract Name: NP Length Matters: An Analysis of Relative Clauses in Min Nan

Min Nan is a Sinitic language spoken in the southern coast of China and in Taiwan. It belongs to a larger family the Min languages, which are a group of related languages but not mutually intelligible (Chappell, 2019). The current paper examines the usage of the structural particle e and the preposition/light verb ga in Min Nan in relation to relative clauses. The particle e in Min Nan is used in various constructions and plays a significant role in forming relative clauses. On the other hand, ga functions as a constituent allowing the object to be moved to a sentence-initial position. We conducted 6 elicitation sessions with a native Min Nan speaker, asking them to translate 108 English sentences. Our findings suggest that Min Nan exhibits a preference for ga-fronting in relative clauses, while e is primarily used for shorter sentences. This preference can be attributed to the fact that e has multiple functions and can be used in different constructions, which may lead to ambiguity in surface structures. In addition, when the objects were heavy, we observed two different patterns: 1) objects were fronted with the shi copula, with the e particle following the head noun, and 2) the object was fronted, but the ga marker remained in the object position without being fronted. The shi-e copular pattern was more commonly found in our data, supporting the argument by Yang (2016) that ga-fronting is unacceptable when used with a heavy noun phrase. This paper contributes to the ongoing discussion on relative clauses in Sinitic languages, particularly in determining whether they constitute a distinct category or a subtype of noun-noun clauses. Furthermore, the analysis of weight distribution in relative clause fronting adds to the existing literature on the cross-linguistic preference for end-weight structures.

Chao Cai

IN - Purdue University Main Campus

Discipline:

Authors:
#1 Chao Cai
#2 Chaonan Liu
Chaonan Liu

Abstract Name: Develop a portable mentorship training program for a summer undergraduate research experience program

High quality mentoring is essential for the success of undergraduate research, as it’s known to be associated with positive student outcomes in research skills, professional identity and self-efficacy, as well as persistence in STEM. In certain disciplines, like life sciences, graduate students and postdoctoral researchers are usually the ones who work with undergraduate researchers on a daily basis, where the majority of the mentoring activities take place. However, rarely there is mentorship training opportunities or programs developed specifically for these early-career scientists. Here, we report the development of a mentorship training program targeting graduate and postdoc mentors for a summer undergraduate research experience program in the discipline of plant biology. In addition to common skills and competencies for effective mentoring, including maintaining communication and establishing expectations, our mentorship program emphasized the unique role that graduate/postdoc mentors may serve as the communication bridge between undergraduate researchers and their faculty mentors. Moreover, our training program emphasized how to engage and successfully mentor underrepresented trainees. Additionally, summer undergraduate research experience programs tend to have shorter turnover for recruiting, shorter program length, and more intense working schedules. Thus, we designed our mentorship training program into a portable asynchronous online format that requires about 1 hour of participants’ time for the training and assessment. Participants of the training program also have access to all the learning materials over the course of the summer program. Our mentorship training program fills the gap of lack of official mentorship training targeting graduate/postdoc mentors for undergraduate researchers. Even though the program was developed for a specific summer undergraduate research experience program, the training material can be easily adapted to be reused in other similar summer undergraduate research experience settings.

Molly Cai

IN - Indiana University Bloomington

Discipline: Engineering and Architecture

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Abstract Name: Healing Spaces Through Time: An In-Depth Analysis of the Evolution of Children’s Hospital Healthcare Interiors During and Directly After WWII

BACKGROUND: Historically, children's hospitals have undergone ideological transformations, with recent research promoting increased interaction between young patients and their families within these medical settings. Consequently, there has been a notable shift in children's hospitals towards embracing family-centered care. Children’s hospitals serve as the cornerstone for promoting health equity, conducting research, and advancing pediatric medicine, playing a crucial role in the holistic well-being of disadvantaged children. Established in 1924, Riley Children’s Hospital has experienced substantial transformation and expansion, prompting an examination of its interior design evolution, especially during and post-WWII. RESEARCH QUESTION: How do hospital patient room interiors serve as artifacts of material culture, record the narrative told in the interior design, and observe the reflection of cultural values? Specifically examining Riley Children's Hospital as a case study and delving into the evolution of its healing spaces during and after WWII. METHODOLOGY: A team of undergraduate students collected data from databases and university archives, which were then analyzed through qualitative template analysis. Analysis areas included privacy, materiality, equipment, and design. PRELIMINARY FINDINGS: During and directly after WWII, patient

rooms were commonly open wards separated by adjustable partitions. However, these did not extend to the floor and ceiling, raising concerns about privacy. The materiality of partitions and medical equipment was commonly metal, indicating sanitation considerations. The layout of patient beds allowed for efficient patient surveillance. In later decades, around the 1940s, personal touches like flowers and balloons near beds, artwork on walls, and a greater variety of furniture signaled a shift towards more personalized and domestic interiors. FUTURE CONSIDERATIONS: In the interwar era, Riley Children's Hospital emphasized safety, sanitation, and efficiency, subtly transitioning towards family-centered care, signifying an ideological shift. With children's hospitals being integral spaces for underserved populations, these ideological shifts represent designed health equity.

Emily Cain

WI - Carthage College

Discipline: Social Sciences

Authors:
#1 Emily Cain

Abstract Name: The Impact of Social Media on the Travel Industry

This thesis paper focuses on the impact that social media has on the travel industry now and over the last ten years. With an increased use of social media and user-generated contact, this new way of gathering trusted information has also led to changes within the travel industry. The use of social media has both clear positive and negative impacts. This research focuses on both those aspects of impact. Along with looking at how social media has impacted the travel industry, the researcher will look at how it has impacted the tourism industry as well. With user-generated contact helping target individual's feeds with content related to travel destinations, this is now encouraging inexperienced travelers to plan those dream trips finally. This can lead to issues in areas with already high tourism rates, now increasing and affecting the lives of locals in these areas. The researcher looks at primarily secondary research information,and, with outlining all the benefits and setbacks of social media on the travel industry, the researcher explains why this is occurring. The research is applied through the psychological theory of social proof, through a public relations viewpoint. This is an important topic because the travel industry is one of the biggest industries globally, and the use of social media has helped it to continue to grow.

Nayeric Cairo

FL - Florida International University

Discipline: Social Sciences

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#2 Fabian Soto

Abstract Name: The Face of Fear: How Fear Learning Influences Face Representations

The capacity to discriminate between threatening stimuli and non-threatening stimuli is an important survival strategy. A leading model for studying fear and anxiety in the brain is Pavlovian fear conditioning, a procedure in which an emotionally neutral conditioned stimulus (CS), such as a face, is paired with an aversive unconditioned stimulus (US), such as a gunshot sound. Previous research has found that the perceptual representation of a CS changes following fear conditioning, changing how well the CS can be

discriminated or support generalization. However, the mechanisms behind these perceptual changes are poorly understood. Moreover, little is known about how fear learning might modify the information extracted from a complex CS, such as a face. Here, we aim to characterize the effect of fear conditioning on face perception by recovering the information used for face identification with and without fear conditioning. To test this, two groups of participants are first trained to learn to discriminate two face stimuli of different identities, one paired with an aversive sound (CS+) and the other paired with a neutral sound (CS-) and are then asked to rate their expectation of the US, while recording their Skin Conductance Response (SCR) to measure their autonomic fear response. Using reverse correlation, a psychophysical technique that estimates visual proxies of mental representations based on participants' judgements of randomly varying noise added to the stimuli, we aim to identify what face features are represented more or less strongly after fear conditioning, as well as whether this effect depends on face identity. These findings could help understand the mechanisms that contribute to abnormal responses that underlie psychopathological disorders.

Marielle Calanza

MN - Minnesota State University - Mankato

Discipline: Education

Authors:
#1 Marielle Calanza

Abstract Name: Changes in Cultural Learning Strategies in U.S. Youth Education K-8.

Historically, monolingual America was the socially acceptable norm for school children in America. Multilingual education was frowned upon. As early as the 1900s, assimilation to the English language and American culture has been ingrained in the U.S. education system. Non-English-speaking students were most likely to be channeled into speech therapy and English as a Second Language (ESL). "This is America, we speak English here" was the welcoming slogan to newcomers. Since 2000, there has been a shift from monolingual conformity to multilingual celebration in educational programs. Dual-language programs, such as the Mandarin-English or Spanish-English, show advancement in cognitive skills for their students. This research project examined changes in cultural learning strategies in the U.S. education system K-8 grade. The investigator found common themes among LifeStories Matter podcasts that had been collected as part of a course at a mid-sized midwestern university. Results suggested a significant connection between the newer cultural learning strategies and growing diversity in American demographics. For example, education programs such as ESL were rebranded as English Language Learners (ELL). The results shed light on a centuries-long, derogatory system. Investigators comment on improvements to better diversity, equity, inclusion, intercultural competence, and multicultural awareness.

Jay Calkins

MD - Towson University

Discipline: Social Sciences

Authors:
#1 Jay Calkins
#2 Elyssa Klann

Abstract Name: Social Anxiety Across Genders and Sexualities

Transgender and nonbinary people have rates of anxiety that are almost three times as high as cisgender

people. This study compares level of social anxiety between transgender and nonbinary, cisgender LGBQ+, and cisgender heterosexual individuals and looks for correlations between social anxiety, dysphoria, and body image. Data were collected through an anonymous survey that included the Social Interactions Anxiety Scale (SIA), Centre for Appearance Research Salience Scale and the Centre for Appearance Research Valence Scale (CARSAL/CARVAL), and questions about sexual orientation and gender identity. Participants who identified as transgender or nonbinary also scored their social and physical dysphoria. A one-way ANOVA found that transgender or nonbinary participants had significantly higher SIA scores than cisgender LGBQ+ or cisgender heterosexual participants. Pearson's r tests showed that there was a correlation between physical dysphoria and CARSAL/CARVAL score and between CARSAL/CARVAL score and SIA score, but there was not a correlation between physical or social dysphoria and SIA score. This indicates that increased rates of social anxiety among transgender or nonbinary individuals may not be explained by their experiences with dysphoria.

Caitlin Callahan

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Caitlin Callahan

Abstract Name: Pregnancy Behind Bars: Exploring the Impact of Incarceration on Prenatal and Postnatal Care for Female Inmates

Incarcerated women have a constitutionally protected right to obtain appropriate medical care. Past research has found that "38 states had inadequate or no prenatal care in their prisons" (NWsLC, 2010). A report from The US Department of Justice states that "46% of pregnant imprisoned women reported they received no pregnancy care" (Maruschak, 2008). There is a gap in the literature of analyzing primary accounts of pregnant inmates. The current study is investigating the interaction of incarceration and the available care and quality of care given to female inmates in American correctional institutions. This study is comprised of a qualitative video analysis using a convenience sample. We selected 10 videos of incarcerated women and 10 of non incarcerated women speaking about their pregnancy experience in America. Inclusion criteria includes the videos being made within the past five years, being at least ten minutes long, and showing their face. The software system "ATLAS.ti" will be used to analyze the transcripts and visual notes of the video testimonies. The analysis will focus on the spoken experiences and the visual social cues that are present. Considering these variables, we will be able to account for the similarity and differences of provided care to inmates. The visual cues will provide information about how the subject feels recounting their experience, which can give another element to the analysis as some mental health conditions, such as PTSD, has visual cues. As a control, video testimonies from non-incarcerated women sharing their pregnancy experience will also be analyzed. We hypothesize that prenatal and postnatal care being given to inmates will vary greatly since there is very little legislation protecting pregnant inmates' access to honorable prenatal and postnatal care. We also hypothesize that women that were incarcerated while pregnant will show more visual signals of mental distress.

Victoria Callahan

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Victoria Callahan

Abstract Name: On the Brink of Adulthood: The Growing Young Adult Mental Health Crisis

Mental health is a growing problem in the United States, especially for the young adult population. Before the pandemic 19% of high school students had seriously considered suicide and 16% of those had made a plan; these numbers have increased significantly since COVID-19. Through an extensive literature review, this research evaluates the existing solution to this crisis, integrated mental health care, and acknowledges its potentially beneficial impact on young adult mental health. However, this solution falls short of solving the problem due to its inability to address the social and cultural barriers that dissuade young adults from seeking care for their mental health, the high costs of implementation, and the failure to address basic accessibility barriers for these programs. This paper proposes a four-step plan for integrating mental health treatment and education into the school system. These four steps are integrating mental health lessons organically into the established curriculum to teach emotional intelligence at all ages, increasing teacher and administrator training in mental health affairs, decreasing teacher stress, and increasing the number of school counselors. The paper acknowledges that increasing the number of school counselors in schools would cost a significant amount of money, but the low cost of implementing the other three steps renders this solution the more sustainable option.

Erikson David Calungsod

NY - Brooklyn College

Discipline: Interdisciplinary Studies

Authors:
#1 Erikson Calungsod

Abstract Name: Applying Empathy-Based Childcare Methods to the Care of our Peers

My project considers how we foster growth and development in children, specifically the methods by which we apply empathy to meet their wants and needs-and how we might apply these methods to our care of adults, including how doing so would alter our “kindness” to one another. The project seeks to propose a lens through which we can view our peers, not necessarily as adults but as the child we carry with us, to foster greater empathy as if we were interacting with a child unaware, or by nature, non responsible for their (or our own) actions. The project combines elements of psychology with an analysis of literature, examining previous research on what exactly a child is, why we respond with empathy to children, why we may respond differently to adults who have developed autonomy and a sense of responsibility, and what it would take to bridge the gap in our perceptions in order to develop a greater sense of empathy to our peers and ourselves in a healthy and forgiving way. I will also consider contemporary literature that centers around the Bildungsroman, the coming-of-age story, to discover our perceived difference between childhood and adulthood. Research will consist of interviews with various health professionals, educators, students, and parents, to discover the capacity for empathy, and how altering the perception of another individual may alter the capacity for empathy likewise. I will employ a survey to ascertain the limits and reaches of one’s personal empathy in an attempt to understand the philosophical differences and hopefully bridge the gap to foster more empathetic, understanding, kind, and thoughtful interactions with others.

Aleah Camacho

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
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#3 Shahar Sukenik

Abstract Name: Revealing structural dynamics of transcription factor by changes in cell volume

C/EBP**β** is a transcription factor that regulates a variety of cellular functions including cell proliferation and differentiation. It consists of a folded DNA binding domain and an intrinsically disordered N-terminal transactivation domain. Unlike folded domains, intrinsically disordered regions (IDRs) lack a stable tertiary structure and exist in an ensemble of fluctuating conformations. Structural preferences within these dynamic ensembles have been linked directly to IDR function. At the same time, due to their extended conformations and low number of intramolecular bonds, IDR ensembles are sensitive to physical-chemical changes in their surroundings. We hypothesize that the sensitivity of the C/EBP**β** N-terminal IDR can cause its ensemble to change as a result of abiotic perturbations to the intracellular environment, possibly leading to changes in function. To test this, we measured the ensemble dimensions of IDRs derived from C/EBP**β** using live-cell FRET microscopy in cells before and after subjecting them to an osmotic challenge. Our results showed that specific regions of C/EBP**β** displayed elevated sensitivity compared to other regions. This suggests that these regions may influence C/EBP**β**'s transcriptional response to changes in cell volume induced by osmotic stress. We propose that this is a general mechanism for how transcriptional activation IDRs tune regulation in response to physical-chemical changes inside the cell.

Zainab Camara

WI - University of Wisconsin-Madison

Discipline: Health and Human Services

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Jasmine Cheng

Abstract Name: Mental Health Disparities among College Students: An Intersectional Analysis of Racial Backgrounds

College is an inherently stressful environment for students, and mental health problems can intensify stress, impacting various areas of student lives, including quality of life, academic success, physical health, and relationships. This research aims to analyze mental health outcomes among students across diverse racial backgrounds. Acknowledging the profound impact of mental health diagnoses, treatment-seeking behaviors, and overall well-being among students from different racial backgrounds, this study will examine existing research on mental health in college students, emphasizing the intersectionality of race and mental health. Recognizing gaps in current knowledge, the study takes on a mixed-method approach incorporating surveys, interviews, and potential voluntary focus groups with undergraduate students who attend a large land-grant institution. Participants will encompass a diverse range of racialized backgrounds, considering factors such as ethnicity, nationality and cultural identity. Statistical methods will be employed to compare aggregate quantified survey data pertaining to mental health outcomes and treatment-seeking behaviors across racialized groups. Simultaneously, qualitative data will undergo thematic analysis, offering a refined exploration of participants' experiences. Results will be presented highlighting any statistically significant differences in mental health outcomes and treatment-seeking outcomes will offer qualitative analysis providing depth and context to quantified findings. The discussion will interpret implications within the existing literature, exploring potential cultural, systemic, and individual factors contributing to the observed disparities.Overall, this research will summarize key findings, emphasizing the importance of recognizing

and addressing mental health disparities on college campuses. Furthermore, these findings have the potential to contribute valuable insights that can inform mental health support services and policies on college campuses, fostering a more inclusive and equitable environment for students of all racialized backgrounds.

Joana Camargo Ramirez

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

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#2 Dr. Kathryn Metcalf

Abstract Name: Utilizing Detrital Zircons for U-Pb Age Analysis and Investigating the Similarities Between the Eastern Hayfork and North Fork Terrane, and their Association with the Western Margin of North America

The Klamath Mountains are located on the west side of the United States on the border of Oregon and California. The region is made of oceanic rocks that have accreted to North America and is divided into four different belts: the Eastern Paleozoic, Central Metamorphic, Western Paleozoic and Triassic, and the Western Jurassic. The oldest rocks in each belt become younger from east towards the Pacific Ocean. Within the Western Paleozoic and Triassic belt, the Eastern Hayfork terrane is a mixture of rock that formed in a subduction zone complex with the folded North Fork terrane. There are questions about how and when these terranes formed as well as the relationship between them. The Eastern Hayfork terrane consists of metamorphosed sedimentary blocks. Mixing may have begun as early as Permian time, and the terrane may have become part of North during the Late Triassic. Some sedimentary blocks are very old but do not tell us when mixing occurred. The sedimentary matrix surrounding them likely formed during mixing, but it is not well studied and so far, shows a large range in ages. The North Fork terrane consists of folded volcanic and sedimentary rocks with oceanic characteristics. Although the rocks are not mixed, the North Fork terrane has been compared to the Eastern Hayfork terrane due to its similarities of rock samples. However, there is little age data to support this. Metamorphosed sandstones have been collected from both terranes to find detrital zircons and obtain U-Pb ages to identify similarities between the Eastern Hayfork and North Fork terranes. The goal is to find an age and compositional relationship between both terranes to be able to understand how both terranes are related with each other and how the western margin of North America developed over time.

Anaya Cambridge

CA - University of California - Merced

Discipline: Social Sciences

Authors:
#1 Anaya Cambridge

Abstract Name: Native Americans in the University of California System

Do Native American students, faculty, and staff at select University of California (UC) campuses feel that their interests are recognized and represented within the UC system? This research analyzes the opportunities and barriers Native Americans face in higher education in the United States and Canada. In the United States, Native Americans have the lowest enrollment and graduation rates of all racial and ethnic minority groups that seek out higher education and are the only group to have not experienced a consistent rise in attendance.

If the University of California system wants to improve the experience of the Native American demographic at UC campuses, then understanding their experiences is critical. The research methodology included an annotated bibliography, interviews and ethnographic participant-observation amongst Native American students, faculty, and staff members at select UC campuses. Phase 1 of the research project analyzed data and scholarly literature about the problem, including potential solutions. This resulted in an annotated bibliography. Phase 2 of this research project involved interviews and participant-observation fieldwork with Native American students, faculty, and staff members at select UC campuses. In addition, Native American community events were attended for a first-hand experience of the festivities and people attending the event. Statistical and secondary data provided by the UC websites and other information sources were also utilized. The results of the research provide information about what is working, what can be improved, and potential solutions to enhance the academic experience of Native Americans in higher education.

Avery Camp

TX - Lubbock Christian University

Discipline: Natural and Physical Sciences

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Abstract Name: Fatty Acid Composition of Peanuts With Different Solvents and Methods Of Extraction

Peanuts, Arachis hypogaea, are an important food source and crop across the world. One of the ways researchers study peanuts is by analyzing the fatty acid content (FAC) present. Knowing the FAC is beneficial because around 50% of the fat in peanuts is monounsaturated fat, the “good fat” that lowers blood cholesterol and provides health benefits to consumers. One way to extract peanut oil is by using solvents. Since multiple methods of extraction and solvents could be used, this project aims to answer the question, “Is the fatty acid composition in peanut oil affected by the solvent and method of extraction?” We will compare FAC determined by gas chromatography (GC) from samples extracted with two different solvents, hexane and dichloromethane (DCM), and two different methods, vacuum filtration and Soxhlet extraction. The current hypothesis is that different solvents and extraction methods will produce variable amounts of total oil and FAC. This project will follow the Biochemical Research Lab (BRL) “Oil Content- Raw Nut Procedure” protocol with triplicate peanut samples as written and repeat the procedure with triplicate samples, replacing the DCM with hexane. Once the oil has been extracted, the BRL “Sample Methylation for Fatty Acid Content (FAC) or Oleic:Linoleic (O:L) Ratio Analysis Protocol” will be applied to all samples to prepare them for GC analysis. In addition, previously collected samples run with DCM or hexane and varied run times following the BRL “Oil Content by Soxhlet- Peanut Procedure” will also be methylated and analyzed using GC. The collected data will include the percent oil content and the samples' FAC and O:L ratios. This data will be used to determine if the method of extraction and solvent used affect the total oil and FAC.

Landon Campbell

FL - Florida Atlantic University

Discipline: Business and Entrepreneurship

Authors:
#1 Landon Campbell

Abstract Name: Options Trading Screener

Automating options trading with this algorithm saves time and enhances decision-making, potentially leading to increased returns. Which can lead to financial freedom by optimizing trading efficiency and minimizing risks.

Jiavonni Campbell

OH - Capital University

Discipline: Health and Human Services

Authors:
#1 Jiavonni Campbell
#2 Nathan Gibbs
#3 Katherine Freeland
#4 Jaiden Watts
Katherine Freeland

Abstract Name: Evaluation of the Efficacy of At-Home Genetic Testing Kits Between Identical Twins

Direct-to-consumer (DTC) genetic testing kits, also known as at-home kits, have gained immense popularity since their introduction in the early 2000s. However, concerns have emerged regarding the accuracy and reliability of the ancestry reports provided by these kits. Previous research conducted in this laboratory has revealed significant discrepancies in the results provided by different companies, despite their claims of over 99% accuracy. Out of 42 individuals previously tested, 39 exhibited major variations in their genetic ancestry categories across different companies, with differences of up to 40% in some cases. The current study aims to investigate whether these testing discrepancies exist within companies or only between them, focusing on identical twins because they share the same DNA. The study involved the same three genetic testing companies previously examined: Ancestry, 23&Me, and MyHeritage. So far, complete results have been obtained for six sets of identical twins, with additional sets currently being processed. The findings have remained consistent with the previous study, as each company reported discrepancies in ancestry categories. Surprisingly, in addition to the variations between companies, differences were also observed between twins in the data reported by the same company. None of the sets of twins had completely matching results, and in some cases, one twin had an ancestry category that the other did not have at all. These inconsistencies raise significant ethical concerns, particularly considering the companies' claims of near-perfect accuracy and their marketing of genetic health screenings for specific diseases and health conditions. It emphasizes the need to address how these companies market and report data to consumers who may not possess sufficient knowledge in this field.

Katherine Campbell

MN - St. Catherine University

Discipline:

Authors:
#1 Katherine A. Campbell
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#3 Rahul Roy

Abstract Name: The CONNECT Network: Mentoring Undergraduate BIPOC Women as Biosciences Entrepreneurs

Currently, undergraduate biology education lacks bioscience-focused entrepreneurial training. While students may be aware of entrepreneurship as a career, they may fail to see themselves as innovators, find the pathway daunting, or not consider entrepreneurship as a way of solving real-world challenges. The Community of Neighboring and National Entrepreneurial Centers and Trainees (CONNECT) network is an NSF-funded initiative empowering undergraduate biology educators to increase entrepreneurial opportunities and training for BIPOC women. Within the first year of funding, CONNECT has grown to include 17 undergraduate biology educators from 14 institutions across 10 states, developed a SWOT analysis for implementation of entrepreneurial training into undergraduate biology curricula, and surveyed nearly 250 biology undergrad students regarding their current experiences and future needs around biosciences entrepreneurship. To better understand how the intersection of gender identity, race, and ethnicity may impact students' perceptions of entrepreneurship, we identified ID groups within our dataset: BIPOC Female+ (N=85), White Female+ (N=73), BIPOC Male (N=25), White Male (N=25). Notably, BIPOC Female+ respondents rank higher than all other identity groups for seeing entrepreneurship as an investment and being 'very interested' in learning more about biosciences entrepreneurship as a career path. BIPOC Female+ respondents were second only to White Male respondents in percentage of respondents who have 'very seriously' considered a biosciences entrepreneurial career path for themselves. However, BIPOC Female+ respondents were the lowest among identity groups in affirming that they had the support they needed at their college or university to consider entrepreneurship in the future. This preliminary data and the faculty-led SWOT analysis will inform the mentor-led presentation and encourage discussion among attendees about future implementation of inclusive curricula and research opportunities within undergraduate biosciences entrepreneurship. We strongly encourage faculty and students to join the CONNECT network and start mentor-student hubs at their universities.

Angelika Canete

CA - California Polytechnic State University - San Luis Obispo

Discipline: Engineering and Architecture

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Javier Gonzalez-Sanchez
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Abstract Name: Exploring Affect and Cognition during Human-Robot Collaboration

Integrating robots into workplaces promises to revolutionize manufacturing and production processes, optimizing quality and cost-effectiveness. Effective collaboration between humans and robots is paramount for achieving productivity, safety, and efficiency enhancements.However, the challenge lies in addressing the inherent variability in human cognitive and affective states to enable robots to provide optimal support to human operators. Human decision-making abilities are significantly influenced by affective and cognitive states—areas where robots traditionally lack understanding.This project, situated in the domains of Human-Robot Interaction (HRI) and Brain-Computer Interfaces (BCI), seeks to investigate the potential of leveraging information about the emotional and cognitive states of human operators to robotic systems looking to enhance collaboration outcomes and operator experiences while realizing manufacturing tasks. Specifically, we developed a distributed system where (1) brain signals from human operators were gathered by a consumer-grade EEG device; (2) affective and cognitive states were inferred using a machine learning commercial software; (3) affective and cognitive data were transmitted to a robotic unit powered by a Raspberry Pi; (4) implement an adaptive algorithm in the robot to make it responded in real-time to stress and concentration levels in the operator.The results obtained from stress and concentration measurements demonstrated the applicability of this real-time cognitive state feedback in improving collaboration. The robot's adaptive responses contributed to smother interaction by (1) actively adjusting its motor speed in

response to high or low levels of concentration and stress (2) activating RGB lighting to alert the operator when stress levels exceed a predetermined threshold – prompting them to take a break for optimal well-being. These results serve as a foundational step for our next endeavor, involving multiple users and multiple robots collaborating simultaneously.

Angelika Canete

CA - San Diego State University

Discipline:

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Abstract Name: mock submission

mock abstract

Aliana Canizares

FL - Miami Dade College

Discipline: Business and Entrepreneurship

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Abstract Name: The Impact Social Capital has on Microfinance Success

This paper examines the evolution, challenges, and impact of microfinance, focusing on its development in Bangladesh and replication in India. The study emphasizes the role of social capital in microfinance, particularly through group lending, and explores its positive intricacies and limitations. The objective is to analyze the historical evolution of microfinance, with a focus on the role social capital plays in the success. The study aims to understand the challenges faced during its third generation, marked by controversies and a crisis in the replication in the Indian microfinance industry. The paper utilizes historical analysis, drawing from the inception of microfinance in the mid-1970s to the crisis in the 2010s. Additionally, it incorporates a quasi-study on social connections and banking, using regression analysis to explore the relationship between loan default, savings behavior, attrition, and social connections. The analysis reveals the positive impact of microfinance in its early stages, emphasizing the success of joint liability and social capital. However, it uncovers the challenges triggered by the rapid expansion of microfinance institutions which resulted in the "overlapping" of loans and debt traps. The study provides insights into the advantages of social connections, showcasing improved group lending outcomes and a strong link to forgiveness in cases of sincere misfortune as a result of the interconnectedness. The findings underscore the importance of social embeddedness for the success of microfinance programs. While social connections contribute positively to monitoring and enforcement activities, the study acknowledges that the same social connections relied on, could also negatively impact relations especially post-default. The research contributes to ongoing discussions on the role of social capital in microfinance and its broader implications for development.

Ciela Capage

DC - American University

Discipline: Social Sciences

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Abstract Name: You Can’t Park There!: Urban Revitalization and the Regulation of Public Space

The consequences of gentrification include conflicts over the appropriate uses of public space. One way that this occurs is through the regulation of on street parking. Changing development patterns may motivate changes in parking regulations and enforcement across neighborhoods, which can lead to financial consequences for motorists who violate new regulations. Considering this, two research questions frame this study. First, what is the geographic patterning of traffic citations in Washington, DC? And second, what is the effect of neighborhood gentrification on the issuance of parking violations? Using citation data from Open Data DC, we constructed an average count variable of citations issued between 2017 and 2019. The gentrification measure was constructed using census data downloaded from the National Historical Geographic Information System. This included six variables that indicate gentrification, including the proportion of white residents, educational attainment, post-industrial employment, income, rent, and home values. We included a number of controls, including 311 calls for parking related issues, the proportion of Black residents, and the part one crime rate. Geospatial mapping technology was used to create maps of the distribution of parking citations and the distribution of gentrification based changes. In addition, regression models were used to estimate the statistical effect gentrification had on citations. We found that parking citations are not equally distributed across space. In addition, the regression model suggests that as gentrification progresses, the effect 311 calls for service has on the rate of citations weakens. Post-Industrial policing literature states that order maintenance policing tends to be strongest when gentrification is just beginning, but decreases as the community turns over and the conflict over public space balances. These findings support that theory. This research expands our understanding of the social control mechanisms city governments have available to affect gentrification.

Hannah Caraker

FL - The University of Tampa

Discipline: Humanities

Authors:
#1 Hannah Caraker

Abstract Name: An Adamless Eden? Lila Clay’s Ladies’ Orchestra in Late Nineteenth-Century London

In September of 1879, nineteen-year-old Lila Clay signed a Memorandum of Association for a new organization titled “Miss Lila Clay’s Company of Lady Minstrels,” confidently listing herself as “spinster” and solidifying her role as sole Conductress and leader of this all-female ensemble. While originating from humble beginnings, Clay’s orchestra initiated their career with a bold statement: one of their earliest productions, a comic operetta titled “An Adamless Eden,” told the story of an island devoid of any men. Their performance was quite striking, and reviews of the performance reflected the audience’s amazement and intrigue. This production also acted as the catalyst for the ensemble’s international tour, which traveled across Europe and North America and featured operas, symphony orchestra concerts, and gala performances complete with new original works by Lila Clay herself. Using a survey of archival material, contemporary newspapers, and recently rediscovered scores, this paper will highlight the remarkable successes of the Lila Clay Ladies’ Orchestra, both in their musical achievement and in their establishment as a professional ensemble in a time where a career as a female instrumentalist was atypical. The Lila Clay Ladies’ Orchestra

expanded the ways in which women were viewed in musical society as well as provided other women of their time a voice of advocacy and publicity uncommon for their era. Their work, while unusual in its age, thus reveals that female musicians asserted themselves in the public realm in the late-nineteenth century, and even accrued esteem and appreciation in the process.

reynaldo cardenas

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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Abstract Name: Immersive Experiences Through Hotel Design

Travelers today aren’t looking for the same accommodations they were looking for ten years ago. In 2023, millennials make up the highest percentage of travelers when divided by age groups. The main problem hotels face today when attracting this demographic is the lack of providing experiences. Whether that be through style, technology, or both. Hotels providing immersive experiences post pandemic have proven to be the most successful. So I came up with Kingsley On Fifth, a boutique hotel located on Fifth Avenue in New York City, NY. Every room in the hotel provides a different immersive style based on famous US fashion designers. The first level features the aesthetics of Anna Sui and Henri Bendel. The second level features Rick Owens, Ralph Lauren, and Tom Ford. The third level includes Kate Spade and finally the rooms and suites feature the styles of Dapper Dan and The Row. Along with this, the hotel will support new and upcoming US designers by providing a gallery for them to showcase their new collections, as well as by selling their pieces in the hotel boutique. With fashion tourism being one of the main draws in New York City there’s absolutely no doubt that this is bound to be the go-to spot for any fashion junky and as well for the fashion industry.

Marcela Cardoza Cortez

CA - University of California - Merced

Discipline: Social Sciences

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#3 Eric Walle

Abstract Name: The Effect of Emotion Brokering Frequency and Gender on Maternal Relationship Quality Among Latinx College Students

Existing research on language brokering (i.e., interpreting language for others) has investigated the relationship between language brokering frequency and familial relationships (Shen et al., 2022). For example, there is evidence that language brokering is often associated with more parent-child conflict, but not parent-child bonds (Hua & Costigan, 2012). Prior research has not investigated how this applies to the relationship between emotion brokering, a process that involves helping others navigate interactions between social partners who hold different norms in the expression and experience of emotions (Subramoney et al., 2013) and relationship quality. This study examined the association between emotion brokering frequency and maternal relationship quality among a Latinx college student sample (n = 118). In addition, we explored

whether these associations would differ by gender. We hypothesized that similarly to language brokering, emotion brokering frequency would predict relationship conflict but not relationship support. Participants reported their emotion brokering frequency for their mother, levels of conflict, and levels of support in their relationship with their mother. As expected, analyses revealed that emotion brokering frequency was associated with relationship conflict, but not relationship support. However, analyses also revealed that the association between emotion brokering frequency and relationship conflict varied by gender. Specifically, emotion brokering frequency was only positively associated with relationship conflict among men in the sample (p =.005). Like language brokering, emotion brokering frequency also predicts parent-child conflict but not support. Our study extends prior brokering research by highlighting how these associations only occur for men. Investigating these associations is important as it allows us to understand the various, complex characteristics of Latinx parent-child relationship dynamics as well as assess the cultural gendered difference that can exist in such relationships.

Macy Cardwell

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Macy Cardwell

Abstract Name: Mrs. Packard: How Misogyny and Ableism Intersect, Historically and in the Present

Mrs. Packard (2009) by Emily Mann is a play inspired by the true story of Elizabeth Packard, a woman who was committed to an insane asylum by her husband in 1860. Elizabeth Packard's story exists at the intersection of misogyny and ableism, whose combined effects left her nearly helpless and at the mercies of neurotypical men. Intersectionality is a key concept in understanding the play; Packard's struggles were not the result of her being merely a woman, or married, or possibly mentally ill. Rather, the disenfranchisement she experienced was a result of the converging of all of these issues into one situation.Elizabeth Packard was committed in 1860, at which time it was legal for a man to have his wife committed with no proof of her insanity. Packard protested her confinement for 3 years. When she was finally released, she fought in court to be declared sane, and went on to campaign for the rights of married women and the mentally ill.This dramaturgical project examines the play and its historical context in view of intersectionality. Research topics include the life of Elizabeth Packard, the rights of women and the mentally ill in the nineteenth-century United States, and the effects of misogyny and ableism in the present day. Women still struggle to be taken seriously by doctors, as do mentally ill and neurodivergent people. While the biases present in the medical field today may not seem as egregious as those displayed in Mrs. Packard, they can and do cost people their lives. All of this information is used to argue that the play is a valuable part of the conversation surrounding the intersection of misogyny and ableism as they exist today.

Carissa Carissa Perez

TX - Texas A&M University - Kingsville

Discipline: Social Sciences

Authors:
#1 Jeffery Chernosky

Abstract Name: Factors Influencing High School-Aged Student Success: Exploring Familia in a Rural South Texas School District

Minimal research has been conducted regarding the success factors associated with high school students in rural school districts, leaving a gap in our understanding of the elements that influence students' academic, technical, and life success. This study's purpose was to identify factors that contribute to the success of juniors and seniors enrolled at one rural public high school in South Texas. This study utilized a mixed methods design, which involved the collection of qualitative data first and then quantitative data. Researchers accessed public records of the Texas Education Agency (TEA) to examine the relationships between juniors and seniors at the subject school compared to other junior and senior students in the same Education Service Center (Region One). A holistic approach was implemented during observation and semi-structured interviews to assess students' perceptions of support systems and the campus environment. The results of this study could inform the faculty, staff, and students by identifying potential factors contributing to student success. The findings may also be transferred to districts of comparable size, composition, and TEA classification to achieve higher levels of student success and accomplishment in their own communities.

Eugene Carlson

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Eugene Carlson

Abstract Name: RASTER ANGLE AND INFILL PERCENTAGE INFLUENCE ON SELECTED MECHANICAL PROPERTIES OF 3D PRINTED POLYETHYLENE TEREPHTHALATE GLYCOL (PETG) AND HIGH IMPACT POLYSTYRENE (HIPS)

This work investigated the influence of raster angle and infill percentage on selected mechanical properties of two commonly used 3D Printed materials: Polyethylene Terephthalate Glycol (PETG) and High Impact Polystyrene (HIPS) at room temperature. Their Elastic Modulus, Yield Strength, and Toughness were experimentally determined and compared for infill densities of 5%, 25%, 50%, 75%, and 100%, and raster angles of 0/90, 45/45, and 30/60. The materials were printed using Fused Deposition Modeling per ASTM D638-22 standards, with a layer thickness of 0.3 mm, an initial layer speed of 35 mm/s, and an infill speed of 50 mm/s. The initial layer and infill speeds were 35 mm/s and 50 mm/s, respectively. The team concluded that PETG material, on average, outperformed HIPS when looking at Young's Modulus of the printed samples. There are few instances where HIPS has a higher Young's Modulus, i.e., 45-45 at infill 100%, 45-45 at infill 50%, and 30-60 at infill 100%. The PETG samples often exceeded the toughness of HIPS as well. As seen in the tables, there are a few cases in which HIPS has much higher toughness than the same raster and infill percentage as PETG. For instance, HIPS samples at 0-90 angles and infill percentages of 50% and 75%. Overall, the team concluded that PETG, on average, outperforms HIPS in both Young's Modulus and toughness during the testing. PETG would be suitable for most situations, whereas HIPS would fail more often if substituted for PETG.

Jerret Carpenter

OK - Oklahoma State University

Discipline: Interdisciplinary Studies

Authors:
#1 Jerret Carpenter

Abstract Name: Philosophy of Ornament in Design

Design is defined by its utilitarian foundation in practicality. This emphasis on practicality is especially evident in the case of graphic design, as its primary purpose is to disseminate objective information. Still, the graphic designer has the creative license to decide how to translate this information into their design through various styles and ornamentation. However, in a 1908 essay titled “Ornament and Crime,” Adolf Loos argued that ornament no longer served a utilitarian purpose for design in his day. Thus, the age of Modernism came - an age without ornament in design. Even though Adolf Loos was an architect himself, his views were likely known more in the world of philosophers than that of designers. Yet, the prevalence of Modernism in 20th century design demonstrates the applicability of Adolf Loos’ pervasive thoughts nonetheless as his work seemingly marks the Modernist perspective of his time. Though, this pervasive thought did not begin in 1908, and is instead a result of centuries of precedent in philosophy. This paper explores the origin and development of these pervasive thoughts within Adolf Loos’ Ornament and Crime, beginning in ancient Greece and continuing to the present-day. In this way, ornamentation is examined through its philosophical foundations and real-world applications to design. This examination not only includes the relationship between ornament and crime but that of design and art as well — all within the context of Adolf Loos’ 1908 essay and graphic design, ultimately showcasing the historically negative view of ornamentation in design with contrast to the newfound growth of design as an art today.

Declan Carr

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Discipline: Business and Entrepreneurship

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Abstract Name: Game Theory and Hotel Pricing Strategy Concerning Perceived Value

Game theory displays a situation where one player's strategy depends on another's actions, and the payoffs hinge on the strategies employed. Hotel managers can implement their KPIs to compare against reports from other businesses. The core of this research revolves around the transposition of KPI values set into matrices. Game theory matrices show that acquiring the best room standard among resort and suburban hotels is pivotal in ADR analysis. Research combining ADR data and TripAdvisor reviews shows that guests are willing to pay higher prices when expecting higher room standards. Hotel criteria that establish the guest’s evaluation of a hotel’s standard include cleanliness, location, room quality, sleep quality, service, and value. Linked with the associated qualities, mathematical models can determine how guests perceive the standard and their willingness to pay the current price (ADR) given the previous criteria. Since hotels increasingly serve as both workplaces and family connections, travelers are spending more time inside the rooms, thus becoming more subject to evaluation. Regarding operations, managers can utilize these values to form their strategy for maximizing the guest’s perception of benefiting from a higher standard, resulting in appropriate pricing for the rooms. Although the major hotel properties of Pensacola are critical in understanding revenue performance, they have not yet been combined with Game theory practices. This method has provided

powerful insight into operational changes that can lead to more satisfied guests. We suggest that the resort hotels (Hilton, Hampton Inn, Holiday Inn Resort, and the Surf and Sand) need to increase the price during the peak season, while Hyatt Place (suburban hotel) needs to decrease the price during the peak season so that both areas can increase room standards and guest satisfaction.

Denise Carrillo

FL - University of West Florida

Discipline: Natural and Physical Sciences

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Abstract Name: The Protective Effects of Exercise on Binge Alcohol Use-induced Neuron Injuries

Alcohol use disorder (AUD) is a very prevalent issue in today's society. Consistent binge drinking has been shown to decrease brain matter within the hippocampus and piriform complex, which regulate learning, memory, and olfactory processes. Moderate alcohol use and exercise stimulate similar areas of the brain, specifically the mesocorticolimbic pathway, which is involved in our body's natural reward system. Because exercise has been shown to have protective effects on the body, it was hypothesized that exercise might protect brain cells against the harmful effects of binge drinking. To test this hypothesis, human brain cells were cultured, subjected to excessive ethanol consumption, and then exposed to the exercise mimetic AICAR. Cellular death and regeneration were observed via fluorescent markers and compared among the groups. Western blots were then completed to analyze and compare concentrations of specific cellular proteins. It was found that the samples containing AICAR had fewer cellular death markers under fluorescent microscopy compared to their ethanol-only counterparts. Samples treated with ethanol only were found to have higher concentrations of proteins that induce apoptosis, whereas ethanol/AICAR groups had lower concentrations of proteins that respond to oxidative stress. In conclusion, treating human SHY5Y brain cells with AICAR may protect them against the harmful effects of binge drinking. Future research will be completed through further analysis of antioxidant proteins and western blots related to autophagy, as well as mitochondrial biogenesis and how it is affected by binge drinking.

Maija Carriveau

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

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Abstract Name: Examining the role of heparan sulfate modifying enzymes in hepatocellular carcinoma

Hepatocellular carcinoma (HCC) obtains the third highest cancer-related mortality rate in the world particularly due its high level of metastasis. HCC accounts for 80 percent of all liver cancer cases and is difficult to treat as it does not respond to chemotherapy drugs. A recent discovery in HCC structure is the overabundance of glypican-3 (GPC3) on the surface of the cell compared to that of healthy liver cells. GPC3 belongs to the heparan sulfate proteoglycan family as it consists of heparan sulfate chains that come off the core protein. The heparan sulfate chains can be cleaved by an enzyme, heparanase (HPSE) that is known to promote the progression of several cancer types. This cleavage degrades the heparan sulfate chains which causes the release of growth factors that can induce proliferation, angiogenesis, and invasion. Here, we utilized CRISPR technology to create a functional HPSE knock out HCC cell line for comparison to the wild-type cell line. We measured the effects of HPSE cleavage of heparan sulfate chains using an ELISA assay. This comparison data allows us to better understand the role heparan sulfate modifying enzymes perform in HCC progression.

McKenna Carroll

PA - Duquesne University

Discipline: Natural and Physical Sciences

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Abstract Name: Functional consequence of sequence variation in the C-terminus of RsmE in Pseudomonas fluorescens

The posttranscriptional regulator RsmE inhibits extracellular secretions across diverse bacterial species. RsmE homologs are highly conserved in sequence with the exception of their C-terminus tail. The tail region is generalized to be functionally insignificant since it has neither predicted nor resolvable structure. However, mutations in the tail region appear to manifest as a spatially dominant phenotype within a crowded colony. We assessed twelve naturally emergent rsmE isolates with mutations in the tail region and classified them into four groups using several phenotypic screens and bioinformatics analysis. Under the hypothesis that these four groups should exhibit distinct levels of competitive advantage, each of the twelve mutants were competed against the wild type to compare their relative fitness. We found that variations in the tail sequence correlate with variations in extracellular secretions and relative fitness. Although additional experiments are necessary to define the underlying molecular mechanism, our study presents the first evidence that the C-terminus region of RsmE is functionally significant.

Mary Carson

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Mary Carson

Abstract Name: Effect of pH on Mung Bean (vigna radiata) Germination and Shoot Development

Mung beans (vigna radiata) are rich in vitamins, minerals, and proteins and are important to maintaining many diets across the world. As such, it is important to understand the factors which allow them to grow and thrive. Previous research has determined that mung beans prefer acidic soil and suffer in basic soil due to how it limits nutrient uptake and metabolic function. From here, this study was conducted to determine what effect a basic pH will have on the germination and shoot development of mung beans. Two groups of mung beans (n=10) were prepared and placed in either a control solution of water (10 mL H_2O, pH 7) or the experimental solution of baking soda (10 mL 1% $NaHCO_3$, pH 9). For one week, the amount of seeds which had germinated was noted, and the length of the seed shoots was measured. After analyzing the data in Microsoft Excel, it was found that as pH increased, germination and growth were both inhibited severely, as none of the beans in the experimental group produced shoots and all of the beans in the control group did. This pattern of inhibition further solidifies previous research into the subject and confirms that mung bean growth suffers when grown in a high pH environment.

Olivia Cartwright

NY - SUNY Binghamton University

Discipline: Engineering and Architecture

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Abstract Name: Continuous Measurement of CSF Flow in Drainage Shunts for Hydrocephalus using Conductance Measurements

Hydrocephalus is a chronic condition caused by an accumulation of cerebrospinal fluid (CSF) in the ventricles of the brain and requires the surgical implantation of a life-long drainage shunt to manage intracranial pressure. If a shunt blockage occurs, emergency shunt replacement surgery is required. Yet, the symptoms due to shunt blockage and other unrelated diseases are often non-differentiating. Thus, there is a pronounced need for a reliable CSF flow monitoring system for shunts. Such a technology can significantly reduce unnecessary shunt replacement surgeries, suffering of patients, and healthcare costs associated with the treatment of hydrocephalus. We aim to develop a novel, wearable continuous flow monitoring technology that relates conductance measurements of the CSF to the flow rate through the shunt. Vitamin C (ascorbic acid) ingested by the patient appears in CSF, resulting in a measurable change in CSF conductance. By continuously monitoring the conductance of the fluid through a shunt with an embedded electrode, changes in conductance are correlated with the flow rate. A prototype shunt has been made and a bench-top model designed to replicate common scenarios for CSF shunts including blockages, kinks, and varying head positions. The prototype was tested by alternating ascorbic acid solution of varying concentrations through the tubing at known flow rates. Results show that the prototype accurately determines flow rates and detects shunt malfunctions. This technology has the potential to help physicians and researchers fully understand the behavior of fluid within CSF shunts and to reduce unnecessary testing and treatment.

John Casaria

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 John Casaria

Abstract Name: Sustainable and Inclusive Aquarium Designs: Focusing on Immersive Experiences.

Aquariums are gargantuan projects that can provide visitors with unforgettable experiences while educating them about marine life and promoting the conservation of aquatic biodiversity. However, depending on the scale of the exhibition, the aquarium design process can take time and effort as well as require a high budget.Data collection methods include case studies of existing facilities, interviews, surveys, and reviews of articles relating to design solutions and trends of an aquarium facility. An Interview was conducted with a local aquarium employee to get insight on what goes on behind the scenes as well as a survey questionnaire regarding what kind of features and exhibits the general public would want implemented in an aquarium. The research results indicated that improving the immersive environment can enhance the users' experiences with aquariums. Therefore, this project aims to design an aquarium that promotes marine life conservation, sustainability, and education through smaller and easily interchangeable exhibitions that utilize new augmented reality and projection technologies.The specific design solution for interchangeable exhibition spaces is incorporating AR and projection technologies, such as apps, touch screens, and video displays. These tools help create an interactive and immersive visitor experience using a small exhibit space. Various exhibits can be efficiently planned and programmed with these new technology features without the high budget needed to make a physical exhibition. Projection technology can be used to program certain kinds of exhibitions, which react when specific sensors are triggered and are projected on floors, walls, and ceilings. These new technologies allow for endless possibilities in exhibition design.

Piper Casey

CA - California Baptist University

Discipline: Social Sciences

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#1 Piper Casey

Abstract Name: The Relationship Between Perceptions of Motherhood, Religiosity, and Attitudes Toward Voluntary Childlessness

Procreation attitudes are impacted by cultural expectations and ideological beliefs. Aspects of culture, such as religion, have been shown in previous research, to influence individual’s perceptions of having children, voluntary childlessness, and motherhood. The present study explores the effects of religiosity on procreation attitudes as well as differences in gender in procreation attitudes. The researcher hypothesized that religiosity would correlate with higher levels of positive procreation attitudes. The scales utilized in this study include the Procreation Attitudes Scale (PrAttS) (Marhenke & Imhoff, 2020) and the Religiosity Measure (Aalsma et al., 2013). The sample was comprised of 114 college students from a Christian university. A t-test and a simple linear regression analysis were conducted to analyze the data. The findings revealed that religiosity did not significantly predict procreation attitudes (b1 = -.105, p = .177). There was a statistically significant difference in procreation attitudes between male college students and female college students (t = -2.001, p = .05). Male students (M = 3.37, SD = .263) showed higher levels of positive procreation attitudes than female students (M = 3.067, SD = .526). These findings were not in accordance with the hypothesis, however, they point to the importance of further research on procreation attitudes, specifically to better understand what factors are part of the effect for the male participants having more positive procreation attitudes than female students.

Eric Cashion

VA - Liberty University

Discipline: Humanities

Authors:
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Abstract Name: Uneasy Peace: Imperial Japan at Versailles

The Paris Peace Conference of 1919 was a storm of nations, all pursuing their own agendas with respect to the coming peace. Most notable were the Big Four: Great Britain, the United States, France, and Italy. Close behind them, however, was Japan, the Allied power largely responsible for the capture of German colonies in East Asia. Though it acted under the approval of a treaty with Great Britain, Japan's true aim was to utilize the chaos embroiling Europe to solidify their influence and territorial gains in Asia. Their territorial ambitions sated for the moment, Japan largely ignored the Western theater of the war, and their peace plans assumed that each nation would tend to its own affairs. However, after the Western powers announced an armistice and declared that the following peace would be determined by President Woodrow Wilson's Fourteen Points, Japan set out once more to establish its place in the post-war order. Its requests of the Conference were twofold: Japan would retain control of all territories captured from Germany during the war, and the soon-to-be League of Nations would guarantee racial equality among its member states. Seeking to protect its own colonial territories, yet not wanting the League to fall before it started, Great Britain assented on the former point but refused to vote on the latter. The United States followed suit and dismissed the proposal for racial equality, stating that such a matter must be agreed upon unanimously. Japan never forgot this perceived insult, and resentment festered until it finally withdrew from the League in February 1933. Japan's behavior during World War I and the ensuing peace talks proves that its territorial ambitions were nowhere near sated by its wartime acquisitions.

Leila-Jayne Casison

HI - Chaminade University of Honolulu

Discipline: Health and Human Services

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Abstract Name: The Sleep of University Student-Athletes

University students' sleep has been found to be consistently inadequate. Within the undergraduate population, student-athletes are among those who have reported the worst sleep outcomes. This study presents data on undergraduate's sleep at a university in Honolulu, Hawai'i contrasting the experience of athletes versus non-athletes. A survey was administered to a convenience sample of undergraduates in the Spring of 2023. The survey included questions of demographic characteristics and the Pittsburgh Sleep Quality Index. A total of 458 students representing 48% of the total student population completed the survey. A total of 59 participants identified as student-athletes representing approximately 40% of those participating in university sports. Data analysis included descriptive statistics and t-tests. Student-athletes reported earlier bedtimes and awakening times compared to non-athletes. The mean total sleep time of non-athletes was 6 hours and 18 minutes compared to athletes was 6 hours and 36 minutes. This difference was not statistically significant. The

amount of sleep for both groups is below the recommended minimum of 7 hours. The quality of sleep appears below levels considered adequate for good health. The average PSQI score reported for athletes was 7.9, and for non-athletes was 7.16, which was also not statistically significant. Among varsity sports, soccer players reported the poorest quality sleep with a PSQI score of 8.8. Soccer players reported the earliest awakening time and the most daytime sleepiness. Most student-athletes reported practice times interfered with their sleep. Limitations of this study include a reliance on self-report, limits to significant testing due to small sample sizes of student-athletes, lack of prospective monitoring of sleep, and no attempt to measure physiological sleep parameters. Athletes and non-athletes appeared to be poor sleepers. Interventions seem warranted to improve sleep of all students, and may be particularly needed for varsity soccer players.

Melanie Castañeda

MI - University of Michigan - Ann Arbor

Discipline: Humanities

Authors:
#1 Melanie Castaneda
#2 Angela Ebreo

Abstract Name: Broadening Participation in STEM for Underrepresented Minorities - Application of the Bowman Strengths-Based Model to DEI Interventions: Investigating peer mentoring as a program-level strength

In higher education, some racial minorities such as African Americans, Latinxs, American Indians, and Native Hawaiians/Pacific Islanders remain underrepresented in academia, particularly in STEM majors (NCSES, 2023). In addition, some STEM fields continue to exhibit gender disparities. The National Science Foundation implemented the Louis Stokes Alliances for Minority Participation (LSAMP) as one initiative to address this issue. The Michigan LSAMP (MI-LSAMP) seeks to mitigate this discrepancy by providing support to students such as tutoring, career exploration activities, faculty-sponsored research opportunities, and peer mentoring. Guided by the Bowman Strengths-based Model (2011), the overall MI-LSAMP research program bestows insights into the multilevel strengths (i.e., personal, program, campus) that can clear the way for underrepresented students' success in college. From one point of view, peer mentoring can be viewed as a program-level strength. Previous research (e.g., Reio 2013) suggests that peer mentoring facilitates positive outcomes for mentees. Using a subset of questions in baseline surveys administered to the 2022-2023 cohort of the MI-LSAMP participants, I conducted t-test and chi-square tests to examine baseline gender differences in students' experiences and perceptions of peer mentoring. T-tests revealed that, compared to males, females discussed more topics with their peer mentors and engaged in discussion more frequently than males. Interestingly, I found that both genders infrequently discussed family support with their mentors as well. The findings will be discussed in terms of the limitations of the study, the implications for educational practice or policy, and my future research plans.

Guadalupe Castaneda Martinez

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Guadalupe Castaneda Martinez

Abstract Name: Hablando Sobre Inmigracion: How Members of the House of Representatives in 118th

Congress Frame the Issue of Immigration

Historically, Immigration has played a critical role in forming the nation's identity, economic prosperity, and promoting cultural diversity. Considering that the issue of Immigration has been in the news and is considered by many to be important and in need of policy solutions, little progress has been made on passing comprehensive immigration reform since the 113th Congress in 2013. How members of Congress talk about Immigration is important because framing can influence public opinion, shaping perceptions of the issue and affecting policy decisions. Members may use their platform to communicate how they think about policy issues. Research has been done about Senators' communication about the issue of immigration on their websites and have found that immigration is often framed as a security threat and the economic aspects related to immigration. This thesis asks how members of the House of Representatives in the 118th Congress frame the issue of immigration. Using content analysis this thesis will examine members' websites, floor speeches, and press releases to evaluate how they frame the issue of Immigration. Immigration is an issue that affects everyone and Congress is responsible for passing laws about immigration. Laws tend to have the best chance of getting passed when issues are salient, the agenda has been set, and people understand what a policy aims to achieve. This thesis will shed light on how comprehensive immigration reform is discussed by members of the House of Representatives in the 118th Congress.

Lauren Castellon

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Lauren Castellon
#2 Charles Koduru
#3 Shrey Patel
#4 Aiden Kovarovics

Abstract Name: Integrating Inexpensive GPS Module with Robot Quadruped for Active Precision Tracking & Mapping

Various sectors and industries significantly expand the development and integration of robotic systems. These systems need to have the ability to perceive their surroundings, this is typically achieved by cameras and sensors. However, each type of camera or sensor has limitations in real-time adaptability and mobility on complex terrains. This research study focuses on integrating GPS modules with Robot Quadrupeds to achieve precise tracking and accurate mapping. It aims to overcome potential sensory limitations in dynamic and challenging environments while remaining economically reasonable. A critical aspect of this investigation involves obtaining Cartesian coordinates through a defined system to establish successful localization and communication. We strategically placed a GPS module to the quadruped, facilitating real-time data collection and active-feed communication. Integration with Arduino and Raspberry Pi allows a low-cost solution for a continuous GPS feed transferred to the Robot Quadruped via Transmission Control Protocols (TCP) and Python Socket Programming. The mobility of Robot Quadruped plays a pivotal role in enabling a comprehensive analysis of accurate GPS coordinates and global mapping. Furthermore, integrating publicly available positioning platforms allows for real-time tracking of the robot quadruped's precise position in various environments. This research observes and factors in the inherent capabilities of the Robot Quadruped within its various data points. Each data set is carefully analyzed to pinpoint changes corresponding to operations and movements within indoor or outdoor environments. The results of this study successfully demonstrate the addition of geolocation capabilities to a quadrupedal robotic system to be feasible, accurate, and affordable. In conclusion, this research represents a significant advancement in the utilization of GPS and robotic systems, paving the way for a wide range of potential applications where precise tracking and coordination are indispensable.

Ivan Castilleja

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Ivan Castilleja

Abstract Name: The Red Thread of Influences: Communist Propaganda and Western Culture

This paper will explore the profound influence of Western design, advertising, and art due to communist propaganda, by revealing a captivating interplay between one's political ideology and their creative expression. With the emergence of revolutionary movements throughout the world in the early 20th century, communist propaganda has left an indelible mark on the visual language of the western world. The impact of communist propaganda may be seen in Western art through the use of strong visual symbols, striking imagery, and a focus on the collective identity. Western artists have quietly communicated themes of resistance and unification via the use of color, such as red, and the universally recognized communist symbols such as the sickle and hammer. The power of communist propaganda to captivate and influence audiences has been echoed by artists like Barbara Kruger, Keith Haring, and Shepard Fairey through the use of stunning images and easily understood symbols. The study examines how communist propaganda tactics have been used in Western advertising to further the interest of capitalist. Advertising and propaganda share a common ground by using persuasive communication, visual storytelling, and the use of compelling narratives to sway the public opinion. Commercials such as Apple's "1984" and Coca-Cola's "Hilltop" use aspects of political propaganda to give their consumers a subversive and a captivating message. In conclusion, this essay will be exploring the complex interrelationships among art, design, and advertising as well as the ways in which political ideas influence and permeate Western society. It highlights how communist propaganda's visual language continues to influence many creative fields and sheds light on how the cultural environment is changing.

Israel Castillo

CA - University of California - Merced

Discipline: Social Sciences

Authors:
#1 Israel Castillo

Abstract Name: Stress, Misinformation, and the Impacts on Athletes' Cohesion and Performance

In an era of high political polarization and proliferation of online misinformation, little is known about how such phenomena affect athletes' team cohesion and performance — nor whether the stress of competition exacerbates such issues. The objective of this study is to determine whether stress, in the context of competition, contributes to negative interactions with online misinformation among collegiate student-athletes, and specifically whether it increases susceptibility to the consumption of misinformation. Using a randomized stress/relaxation exercise during team training time, I test whether stress conditions increase vulnerability to online misinformation, and whether higher engagement with misinformation mediates negative effects on team trust, cohesion, and performance. The study is currently under IRB review, with data collection in early 2024. The experiment will take place within the Recreation and Athletics Department at the University of California, Merced. Collegiate student-athletes will be recruited to participate in the experimental study that randomizes them into two groups. Group 1 participates in competitive exercises that increase psychological and physiological stress, while Group 2 participates in a relaxation exercise that decreases stress. Afterwards, individuals in both groups will come together and take a survey. The survey

includes a simulated social media feed, which presents a combination of true and mixed-truth stories and tracks fact-checking via JavaScript. The survey also measures perceptions of story reliability, plus a set of vignettes and direct questions assessing impact of teammates' engagement with misinformation on team trust and performance. I hypothesize that collegiate student-athletes enduring more sports-related stress will have more negative interactions with online misinformation, and that misinformation will have adverse impacts on team cohesion, trust, and performance. I expect to present my experimental research design, methods, and preliminary results.

Ethan Castillo

IL - Elmhurst University

Discipline: Natural and Physical Sciences

Authors:
#1 Ethan Castillo

Abstract Name: Runx2's Correlation with Breast Cancer Metastasis to the Bone

Breast cancer is widely known as one of the most prevalent cancers in women. It is caused by multiple factors that affect the expression of genes that are involved with cell signaling, proliferation, and apoptosis. Breast cancer can also metastasize into other parts of the body. Once breast cancer has metastasized to the bone, the bones become weak and have an increased risk of fracture. Bone metastasis from breast cancer tumors can significantly decrease quality of life and lower survival rates. A gene that has been identified as a possible mechanism of bone metastasis is Runx2, or runt-related transcription factor 2. Runx2 is primarily involved in bone formation but can also be found in the estrogen signaling pathway within mammalian breast cells. We examined publicly available gene expression data of breast cancer patients to determine if a change in Runx2 expression plays a critical role in bone metastasis. The correlation between Runx2 expression and menopausal and estrogen receptor statuses were also examined. We hypothesized that an increased expression of Runx2 will have a positive correlation with bone metastasis from breast cancer patient gene expression data. It was also hypothesized that there would be an increased expression in postmenopause and estrogen receptor positive samples. It was found that there is increased expression of Runx2 in breast cancer tumor tissue compared to normal tissue. However, there was no significant difference between expression in bone metastasized samples and primary breast cancer tumor samples. In postmenopausal patients there was significantly increased expression compared to premenopausal patients. It was also found that there is a significant increase in expression in estrogen receptor positive patients compared to estrogen receptor negative patients.

Terra Castresana

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Terra Castresana

Abstract Name: Oakland Cemetery as a Reflection of Atlanta's Urban Fabric

A cemetery reflects the urban fabric of a city within its confines, and the historic Oakland Cemetery of Atlanta is no exception. This research will explore Oakland Cemetery as a case study to show how it reflects Atlanta's history and unique culture. Site visits, historical research in archives, interviews with a former

employee, and architecture analysis will come together to inform why Oakland Cemetery is laid out in a manner that reflects Atlanta's historical (and current) urban layout. This paper will help deepen the knowledge and appreciation of the context surrounding the cemetery's distinct layout.

Natalie Castro

CO - University of Colorado at Boulder

Discipline: Mathematics and Computer Science

Authors:
#1 Natalie Castro

Abstract Name: Decoding Toxic Boards: The Dynamics and Consequences of Toxicity and Inequality in Colorado School Board Meetings

Primary education is a unique social institution within the United States because of local school board governance. However, school board governance processes have been overlooked as an explanation for performance differences. Against the backdrop of pandemic adaptations like remote learning and masking as well as debates about parental rights and inclusive pedagogies, school board meetings have become sites of profound political and cultural conflict. This project extends qualitative analyses of Board of Education meeting transcripts by using AI tools to transcribe and analyze the YouTube videos from school board meetings for all public K-12 schools in Colorado from 2019. Using natural language processing methods on this large corpus, this project will measure linguistic patterns related to sentiment and toxicity at multiple levels to track patterns within and across school boards over time. My research will create an accessible database for educators and parents to search Board of Education meetings and provide data analysis resources for analyzing this corpus. Methodology: This study will use the Council Data Project framework for automated meeting collection, and a host for the school district websites. A Python script will collect these meetings from their YouTube videos and use Google Cloud's transcription service to convert them into text documents. I will then use NLP methods to analyze this data to measure constructs like inequality and toxicity using sentiment analysis and text classification tools. I will use statistical analyses to identify the impact of inequality and toxicity over time and its effects on school and student performance data. Results: This study will establish the relationships between board governance processes and district performance. The project will provide data tools and resources for researchers and community members to track behaviors in school board meetings through linguistic trends and patterns.

Guinevere Caswell

NY - Long Island University

Discipline: Health and Human Services

Authors:
#1 Guinevere Caswell

Abstract Name: Navigating Temporary Protection While Building Community: The Crucial Role of a Volunteer-Run Refugee Aid Organization in Vienna, Austria

As the number of displaced people across the world surpasses 100 million and continuously breaks records for the highest number ever recorded, conflict-induced displacement shows itself to be an especially pressing global issue. People flee their homes because of persecution or nearby fighting, and are escaping violence, dislodgement, and human rights abuses, resulting in displacement crises that leave civilians to bear the brunt

of war and conflict. Following the full-scale Russian invasion of Ukraine in 2022, thousands of Ukrainians fled into nearby European countries, including Austria. Although Austria is involved in the European Union's current Temporary Protection Directive, it positions itself as a transit country and enforces restrictive asylum policies, with the state currently contracting out all care to non-governmental organizations (NGOs). There are few long-term resettlement solutions, and refugees face bad housing conditions, insufficient social benefits, language barriers, and isolation (Koziienko, 2023). This transdisciplinary qualitative case study explores the role of a small-scale volunteer-run refugee aid organization in Vienna, Austria, and the ways in which they employ a community building framework as a tool to provide long-term aid, and increase senses of well-being and belonging amongst Ukrainian refugees. Research for this study was conducted in Vienna over a three-month period from September-November 2023, with a methodology consisting of participant observation, archival research, and semi-structured interviews. The findings of this study demonstrate the Austrian government's extraordinary reliance on civil society for the care of refugees, the protracted nature of uncertainty and disconnection experienced by individuals following displacement, and the importance and necessity of an aid organization focused specifically on establishing a long-term community support space. By highlighting a small-scale NGOs aid provision and community-building methods at the local level, these findings offer a crucial and transferable perspective on the role of community-based initiatives in alleviating the adverse effects of displacement.

Rixta Cavil

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Rixta Cavil

Abstract Name: Acceptable Business Practices In The Video Game Community

Throughout a video game's development and post-release lifespan, the relationship between the developers and the community of people that play those games is undeniable. In most cases of AAA titles, developer teams for a given game could include hundreds of people and can either publish their games on their own as an "independent" game studio or through a video game publishing firm. Video game development is thus a complex task whose form can vary greatly in size and scale for the project, but how a community responds to these games can be hard to decipher. Critical analysis of video games through an academic lens has not been done until recently. Thus, although the fandom related to interactive media is relatively unknown territory, what little research has been conducted suggests that the reasons for a community to respond well to a video game can be multifaceted – related to narratives, mechanics, or the quality of interactions. This project seeks to expand on this work, and I show that the community response to a video game and its developers largely depends on the developers' philosophy of play, as well as upper management/executive decisions that have to do with the money-making aspects of a video game. In particular, money-making aspects such as the introduction of microtransactions and other paid content can put a stain on the otherwise positive relationship a developer team can have with the community. This phenomenon is largely due to publishers or upper management who do not directly have a hand in a game's development. Although there is a growing awareness of upper management's actions in this regard, I find that many still believe that it is the developer's fault. After discussing these findings, I share the implications they have for the future functioning of this growing industry.

Bridget Caywood

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Bridget Caywood

Abstract Name: The Man Behind CBS

Abstract Lou Dorfsman was a graphic designer that worked for CBS. During his time there, he changed the design department for the better. Before working for CBS, Dorfsman originally was going to study bacteriology at New York University but with the tuition being so high he could not attend. Dorfsman instead went to The Cooper Union for the Advancement of Science and Art for graphic design on a full ride scholarship. Dorfsman met his future wife, and his lifelong friend while attending Cooper Union. While there, Dorfsman held 11 design jobs, including making displays for the New York World's Fair in 1939. After graduating Dorfsman joined the Army from 1943 to 1946 during World War II and won first and second in the National Army Art Contest. After leaving the army in 1946, Dorfsman joined CBS. He worked under Bill Golden as his assistant and learned more about advertising. He would also have lunch with people from the Programming and Research department and would ask them questions to help with advertisement. Dorfsman designed Of Black America which was a full-page newspaper ad that was the first network series on black history. The design was of a man with a white American flag painted on his face looking at the viewer. Dorfsman's most well-known piece was the Gastrotypographicalassemblage that was 35 by 8.5 feet and was made of hand-milled wood and the word type. Dorfsman became Senior Vice President and Creative Director for Marketing Communications and Design for the CBS Broadcast Group in 1978. A book called Dorfsman & CBS was published in 1987 and he helped design the cover. Dorfsman was put in the Art Director Hall of Fame in 1978, retired in 1991, and died in 2008.

Saira Cazarez

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
#1 Saira Cazarez
#2 Rakia Dhaoui
#3 Joe Patterson

Abstract Name: Influence of Biomolecules on ZIF-67 Metal-Organic Framework Nucleation and Growth

The grand challenge in immobilization strategies for enzymes is the development of methods that result in high enzyme loading withoutloss of catalytic activity. The encapsulation of enzymes within metal-organic frameworks (MOFs) to form crystalline materials known asE@MOFs is an emerging technology in bio-catalysis, bio-sensing, and biopharmaceuticals. A key advantage of E@MOF composites is that they can be synthesized by simply mixing the metal, ligand, and enzyme at room temperature in aqueous solutions. However, controlling E@MOF formation is yet to be fully realized, as there is a major knowledge gap in understanding how the enzymes influence the crystal size and structure of the MOF. The objective of this project is to obtain a fundamental understanding of the structure-function relationship in the biocomposite materials to enable prediction of encapsulation efficiency, enzymatic activity, stability, and recyclability based on the interfacial structure of the enzyme. Our preliminary data demonstrate that variation in synthetic parameters (ligand:metal ratio, enzyme concentration, solution pH) provide access to different non-classical crystallization nucleation pathways which result in E@MOFs with different structural features and properties (encapsulation efficiency, catalytic activity, stability). These preliminary results show that size, morphology, composition, and surface charge of the amorphous precursor play a role in determining these parameters. This fundamental understanding enables the design of new nanostructured E@MOFs with enhanced catalytic properties using cost-effective synthetic methods.

Priscilla Ceja

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Priscilla Ceja
#2 Joseph Groom

Abstract Name: Role of newly identified gene in the lanthanide response and biofilm formation

The human release of greenhouse gases, including methane, poses an ongoing threat to our environment. Methanotrophic bacteria can aid in the decrease of greenhouse gases by converting methane into less potent gases such as carbon dioxide (CO2). Though previously thought to be biologically inert metals, lanthanides are involved in certain biological processes in many bacteria, including methanotrophs. Specifically, an enzyme called XoxF methanol dehydrogenase utilizes lanthanides in the second step of methane metabolism – the conversion of methanol to formaldehyde. Thus, these methanotrophic bacteria could also assist in harnessing lanthanide metals from batteries or hard-drives – in other words, we may be able to recycle lanthanide metals from old technological devices. A mutant methanotroph revealed a new gene which encodes an important hybrid histidine kinase protein involved in the lanthanide response. Moreover, it is suspected that this gene may also be involved in biofilm formation because it displays severe growth defects when grown on nitrate as its nitrogen source. Utilizing gene deletion methods, site specific mutagenesis and gene expression analysis, we will determine the roles of this histidine kinase gene, as well as an associated TonB dependent transporter (TBDT) and transmembrane (TM) protein. Preliminary results demonstrate the successful creation of a linear construct, cPAC1, designed to knock out the histidine kinase gene. Future steps involve electroporation to introduce our deletion construct. The resultant mutant strain will be used to reveal the role of the histidine kinase gene in the lanthanide response and its implications for methane conversion.

Madison Centeno

NY - SUNY Geneseo

Discipline: Social Sciences

Authors:
#1 Madison Centeno

Abstract Name: "Contraceptive Testing, Sterilization, and Puerto Rican Women: Unveiling the Impact, Spirituality, and Contemporary Perspectives"

This research delves into the historical and contemporary implications of contraceptive testing on Puerto Rican women, specifically the birth control pill. Focusing on the complex interplay of factors such as religion, spirituality, and intergenerational experiences, this study explores how the experiences of Puerto Rican women during the 20th century continue to shape the reproductive decisions of young Puerto Rican women today. By examining the limited documentation of unethical contraceptive research and the legacy of mass sterilization, this research aims to challenge prevailing narratives of reproductive choice and offer a more nuanced understanding of family planning in Puerto Rican communities. Utilizing an intersection of Africana Studies and Sociological Research methods, I plan on conducting interviews to investigate my thesis.

Tiffany Chacon

CA - California State University - East Bay

Discipline: Natural and Physical Sciences

Authors:
#1 Tiffany Chacon
#2 Christopher Chin
#3 Stevan Pecic
#4 Ram Kandasamy

Abstract Name: Behavioral Analysis of Simultaneous Inhibition of Fatty Acid Amide Hydrolase and Soluble Epoxide Hydrolase on Migraine-related Behavior in Rats

Migraine is the most common neurological disorder, and is characterized by severe headaches, nausea, and light sensitivity. Current treatments, including opioids and triptans, produce dangerous side effects. Moreover, modern anti-migraine drugs lack novel mechanisms of action. Our aim is to revolutionize migraine pain management by finding new medications with novel mechanisms that can provide relief from migraine without causing any negative side effects. Fatty acid amide hydrolase (FAAH) and soluble epoxide hydrolase (sEH) are two pain-related enzymes. The benefits of dual-enzyme inhibitors include fewer drug-drug interactions and improved drug synergism compared to one enzyme inhibitor. These dual inhibitors may require lower doses than traditional anti-migraine agents. We synthesized 19 analogs of our dual sEH/FAAH inhibitor and evaluated their potencies at inhibiting human, mouse, and rat enzymes. We hypothesized that simultaneous inhibition of FAAH and sEH using SW-17, the most potent inhibitor, will alleviate migraine-related pain in rats. In migraineurs, an injection of nitroglycerin triggers a migraine attack and generates headache-like pain in animals. An injection of nitroglycerin produces hypersensitivity and alters locomotion. Thus, we investigated the effects of various doses of dual inhibitors of sEH and FAAH in a rat model of nitroglycerin-induced migraine to assess its efficacy. We injected nitroglycerin, a vasodilator that induces migraine-like pain. We treated rats with a dose of SW-17, the sEH/FAAH dual inhibitor, in varying doses (0.1-3 mg/kg) or sumatriptan. Mechanical thresholds and locomotor behavior was assessed after nitroglycerin injection in rats. Both nitroglycerin and SW-17 change measures of hypersensitivity and locomotor in this animal model. The wheel running test indicated that dual inhibition of sEH and FAAH does not decrease activity in rats indicating that this drug may not produce sedation. Future studies will determine the full efficacy of FAAH and sEH inhibition in alleviating migraine-like pain in rats.

Wicahpi Cikala Chaddlesone-Yankton

MA - Bridgewater State University

Discipline: Humanities

Authors:
#1 Wicahpi Cikala Chaddlesone

Abstract Name: Finding Broken United States Government Treaties within the Osage Nation, Cherokee Nation and Oglala Sioux Tribe constitutions with a hint of colonization hidden.

The United States created treaties between Native American Tribes is much hidden within the United States' "American" history. The treaties are "contacts" that were created and fulfill promises between the United States government and Native American tribes. The treaties were seen as broken promises that the

government never fulfilled. Many Native American tribes in modern times are continuing this fight to have the United States government follow each signed treaty as they have agreed beforehand. When looking at the Osage Nation, Cherokee Nation, and Oglala Sioux Tribe do have such a complex relationship with the US government seen through various timelines. Finding the theme of the government was seen in the three tribal constitutions highlighting broken treaties within these documents. These documents seem to push focus around these treaties in various aspects such as acknowledging their right to government and their rights for their land and other minerals. Each constitution does reflect the theme of colonization within their current government structures through leadership roles for a prime example. The theme of colonization has developed over the years as each of these tribal nations' constitutions is shown within their government aspects such as the hierarchy of governmental power. They have used this form of colonization within the governing aspect to keep their tribal sovereignty successfully functioning to survive in modern society. This matches the reflection of the United State own government structures that we as a whole general public see in everyday life. These three tribes which are the Osage Nation, Cherokee Nation, and Oglala Sioux Tribe are continuing to battle for these treaties to be acknowledged in various aspects as well and they are continuing the fight against colonization.

Andy Chai

TN - Rhodes College

Discipline: Natural and Physical Sciences

Authors:
#1 Andy Chai
#2 Wujie Zhang

Abstract Name: The Use of Pectin Based Microsphere for Pharmaceutical Applications

Pulmonary drug delivery via microspheres has gained growing interest as a noninvasive method for therapy. However, drug delivery through the lungs via inhalation faces great challenges due to the natural defense mechanisms (physiology) of the respiratory tract, such as the removal or deactivation of drugs. Pectin, a polysaccharide mostly derived from citrus and apple peels, was chosen as the foundational material due to its biocompatibility and degradability in physiological environments. This study aims to develop a biocompatible microsphere system with a diameter of around 3 μm for encapsulating pulmonary drugs and facilitating their delivery to the deeper lungs. Electrospray was used to produce the pectin microspheres. Parameters, pectin:PEO ratio, voltage, feed rate, and distance between the syringe tip and collection sheet, were determined to be the dominant factors impacting particle size and morphology (including uniformity). The Design-Expert software was used to optimize the process with the microsphere size and morphology. The optimized condition is pectin:PEO of 3:1, a voltage of 14.4 kV, 18.2 cm distance, and 0.946 mL/hr flow rate. The rate of pectin microsphere degradation can be altered through coating with polymers such as gelatin. Furthermore, the study emphasizes the responsiveness of the microspheres with and without gelatin coating in the simulated lung fluid (Gamble's). The results indicate the responsiveness of the microspheres- reaching the deeper lung and rapid release of the drug. The findings of this study contribute to the understanding of pulmonary drug delivery and provide insights into novel approaches for particulate drug delivery systems.

SANGITA CHAKRABORTY

NY - City University of New York - Hunter College

Discipline: Natural and Physical Sciences

Authors:
#1 SANGITA CHAKRABORTY

Abstract Name: Enhanced Pyruvate Uptake by Naive Embryonic Stem Cells

During early embryonic development both rapid cellular proliferation and the maintenance of pluripotency are tightly regulated to control proper cell fate specification. However, little is known about the metabolic requirements that allow the dramatic cellular changes and unique demands of this critical period. We previously found that mouse embryonic stem cells (ESCs) cultured in the naive 'ground state' of pluripotency have unique amino acid intake strategies, but how naive ESCs obtain other nutrients to sustain their growth remains unknown. To study these nutrient acquisition strategies, we utilize pluripotent ESCs cultured in different media conditions that allow us to effectively model the different stages in embryonic development. ESCs cultured with serum and leukemia inhibitory factor (S/L) represent a metastable population while addition of MEK and GSK3β inhibitors (S/L+2i) represent the naïve or 'ground state' of pluripotency. Nutrient consumption by S/L or S/L+2i-cultured cells was measured by gas chromatography-mass spectrometry of conditioned media collected over 24 hours from each respective cell state. MCT1-deficient cell lines were generated through CRISPR-Cas9 genome editing and the gene knockout was confirmed by Western blot. Expression of MCT1 was exogenously restored in MCT1-deficient cell lines with the addition of MCT1 cDNA using the piggyBac transposase system. Clonogenic capacity of ESCs was measured using colony formation assays. Here, we profile the nutrient consumption of naive and differentiated ESCs and found that naive ESCs preferentially consume pyruvate relative to their more differentiated counterparts. Mechanistically, pyruvate uptake was dependent upon the monocarboxylate transporter MCT1, as MCT1-deficient ESCs were unable to increase pyruvate uptake in the naive state. Restoration of MCT1 in MCT1-deficient cell lines was sufficient to rescue pyruvate consumption. Notably, MCT1-deficient ESCs display decreased proliferation and naive colony-forming ability. Collectively, these results suggest that enhanced pyruvate uptake enables naive ESCs to sustain their cellular fitness and the pluripotent state.

Harshita Challa

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Harshita Challa
#2 Charlotte Brzozowski
#3 Laura Volpicelli-Daley

Abstract Name: Impact of α-Synuclein Pathology on Corticostriatal Synapses in Parkinson's Disease

Parkinson's disease (PD) is the most common neurodegenerative motor disorder, pathologically characterized by proteinaceous α-synuclein aggregation. Termed Lewy pathology, these aggregates are found in a subset of cortical layer 5 neurons projecting to the striatum. However, little is known about how Lewy pathology affects corticostriatal excitatory synapses. Our research aims to induce α-synuclein pathology in the secondary motor (M2) cortex to decipher the impact of aggregated α-synuclein on the morphology of M2-corticostriatal synapses. To recapitulate α-synuclein aggregation in rodent models, we utilize the preformed fibril (PFF) model for template corruption of endogenously expressed α-synuclein. PFFs or control α-synuclein monomers were injected into the M2 cortex to study M2-specific inputs in the striatum. To study corticostriatal synapses, we combined the high-resolution imaging technique Expansion Microscopy (ExM) with IMARIS software for synapse morphology analysis. M2-cortical PFF injections caused robust somal and neuritic pathology in layer 5 neurons of the M2 cortex, neighboring cortical areas, and brain areas projecting to M2, including the amygdala and orbital area. We also observed neuritic pathology in the striatum, which predominantly overlapped with the cortical, presynaptic terminal marker vGlut1. Using our combined analysis approach, we found a significant reduction in corticostriatal synaptic loci in the dorsal striatum of M2-PFF injected animals. Additional data indicate morphological changes to the volumes of cortical

presynaptic terminals upon aggregate formation. Our results suggest that cortical α-synuclein aggregation affects the density and morphology of excitatory synapses in the striatum. These findings are consistent with human and non-human primate PD models showing striatal excitatory synapse loss. Furthermore, our data points to an important role of cortical Lewy Pathology on the functionality of corticostriatal synapses, elucidating the mechanisms of Lewy pathology disruption of corticostriatal synapses to symptoms of PD.

Suneeti Chambers

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Suneeti Chambers
#2 Landon Wilson
#3 Stephen Barnes
#4 Briana De Miranda

Abstract Name: Trichloroethylene exposure influences brain lipid dysregulation as a putative mechanism in Parkinson’s neurodegeneration

Parkinson’s disease (PD) is a neurodegenerative disease that is marked by dopaminergic neuronal loss in the substantia nigra pars compacta and the accumulation of the protein alpha-synuclein, which comprise Lewy Bodies. Most (~85%) of PD is idiopathic, and environmental triggers of neurodegeneration are prevalent risk factors in PD etiology. Our lab has demonstrated that trichloroethylene (TCE) exposure in rats resulted in the death of nigrostriatal dopaminergic neurons as well as the accumulation of alpha-synuclein, indicating that TCE may influence multiple pathogenic disease pathways involved in PD. As TCE is reported to integrate into phospholipid bilayers, we hypothesized that the halogenated solvent may disrupt lipid membranes within the brain, resulting in increased risk for alpha-synuclein misfolding and aggregation.Whole brain tissue was collected from aged adult male Lewis rats that either received a dose of 800 mg/kg of TCE or olive oil via oral gavage daily for 3 weeks. The tissue was assessed for lipidomic analysis using mass spectrometry (MS). The MS data was analyzed via Metaboanalyst, using peak intensities of the 10 most abundant lipids in each lipid category: phospholipids (positive and negative), sphingomyelins, and triacylglycerols. Metaboanalyst revealed differences in lipid composition between vehicle and TCE treated rat brains, with direct comparisons of the top 10 lipids in each group revealing an overall trend of reduced lipid peak intensities. It was found that a single triacylglycerol (TAG) 54:3+NH4(-FA 18:2 (NH4)), had the greatest variation in vehicle and TCE exposed rats (t-test, p<0.001). This lipid contains fatty acid (FA 18:2), which corresponds with linoleic acid, a triglyceride that is reduced in PD patient plasma and brain tissue. This data suggests that TCE-induced alterations in lipid composition in the brain may be a novel mechanism that may possibly drive synucleinopathy and PD risk from exposure to TCE.

Janie Chan

NY - Weill Cornell Medical College

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Function and Clinical Relevance of RHAMM Isoform B in Pancreatic Cancer Initiation and Progression

Approximately 90% of cancer-related deaths are due to metastatic spread. Pancreatic cancer patients are often asymptomatic until the disease advances to later stages, at which point the tumor has already metastasized to distant organs. Pancreatic ductal adenocarcinoma (PDAC) comprises over 90% of pancreatic malignancies, is highly aggressive, and is characterized by rapid and infiltrative growth. We identified that the receptor for hyaluronan-mediated motility (RHAMM; gene name: HMMR) is overexpressed in pancreatic cancer, while undetectable in the normal adult pancreas. Different RHAMM isoforms exist as products of alternative splicing. We found that RHAMM isoform B (RHAMMB), which lacks exon 4, is the predominant isoform in pancreatic cancer, and its overexpression is associated with the poor survival of PDAC patients. The role of RHAMMB in PDAC initiation and early-stage progression is still unknown. To address this gap of knowledge and study the impact of RHAMMB isoform in the initiation and progression of PDAC, in the context of an intact immune system, we partially humanized the mouse HMMR in immunocompetent mice by CRISPR knock-in in PDAC mouse models. While human RHAMMB exists, mouse RHAMM retains exon 4. We designed a long single-strand donor DNA (lss DNA) to replace mouse exon 4 and the surrounding intronic sequences with the human exon 4 and partially intronic sequences on both sides. Two LoxP sites were added in the lss DNA to flank the DNA and mediate its excision by a Cre recombinase that was expressed under a pancreatic specific promoter (p48-Cre), yielding RHAMMB expression in the mouse pancreas. We are studying whether mice expressing heterozygous or homozygous RHAMMB will exhibit an earlier onset of invasive PDAC, larger tumor burden, and shorter lifespan compared to the control mice that do not express this RHAMM isoform.

Emma Chandler

TN - Trevecca Nazarene University

Discipline: Social Sciences

Authors:
#1 Emma Chandler

Abstract Name: When Jekylls become Hydes: Unearthing the Alter Egos Masked by Social Media

This study sought to identify correlations between online disinhibition and moral disengagement and their links to empathy, narcissism, and weekly total time spent on Instagram, TikTok, X, Snapchat, and Facebook. Previous literature revealed a significant positive relationship between online disinhibition and moral disengagement. Significant positive relationships between both of these variables and narcissism have also been reported while both variables were shown to have a negative correlation with empathy. There was mixed literature regarding online disinhibition, moral disengagement, and time spent on social media sites. In consideration of existing literature, the following hypotheses were formed. Online disinhibition and moral disengagement would be positively correlated. Online disinhibition would be positively correlated with narcissism and social media time, and online disinhibition would be negatively correlated with empathy. Moral disengagement would be positively correlated with narcissism and social media time, and moral disengagement would be negatively correlated with empathy. To test these hypotheses, the Measure of Online Disinhibition (MOD), the Moral Disengagement Scale, the Five-Factor Narcissism Inventory – Super Short Version, and the General Empathy Scale were administered. Based on data collected from cell phones, participants were asked to add their total weekly screen time for Instagram, TikTok, X, Snapchat, and Facebook. Students were surveyed from psychology, history, mathematics, and art classes. The data was

gathered voluntarily and confidentially. The data was assessed with a Pearson r correlational analysis using SPSS software. The results identified a significant positive correlation between online disinhibition and moral disengagement, online disinhibition and narcissism, and moral disengagement and narcissism. A significant negative correlation was demonstrated between moral disengagement and empathy as well as between moral disengagement and time spent on social media. No other significant correlations were found. Limitations include the homogeneity of the sample. Future researchers were advised to survey students from different types of universities.

Rajeev Chandra

VA - Norfolk State University

Discipline:

Authors:
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Z'achari Bay

Abstract Name: Studies on Folliculogenesis in Polycystic Ovaries in the Domestic Cat

AbstractPolycystic ovary syndrome (PCOS) is the most common cause of anovulatory infertility, but the mechanism of anovulation remains uncertain. The typical gross morphology of anovulatory polycystic ovaries is the presence of multiple antral follicles 2–10 mm in diameter, which signifies the arrest of follicle development prior to the preovulatory phase. PCOS is characterized by arrested growth of antral follicles. Although arrested antral follicle growth probably reflects the abnormal endocrine environment, there is increasing evidence of abnormalities of follicle development from the very earliest, gonadotropin-independent stages. The underlying molecular basis of this fundamental ovarian abnormality remains to be determined.Folliculogenesis is the cycle of maturation of a follicle within the ovary of the adult human female. A follicle is a membranous sac of cells that contains an immature egg cell, called an oocyte. The primary purpose of this research included a study identifying various stages of follicle development with special reference to antral follicle development and their respective sizes during the estrous cycle of domestic cat, felis catus. This understanding will help enhance our ability to assess risk and develop preventative strategies of ovarian dysfunction such as Polycystic Ovarian Syndrome as highlighted. Ovaries from adult female domestic cat were obtained from routine spaying procedures conducted at a local veterinary clinic. The primary methods utilized in the study included histology of the ovarian tissue. Briefly ovaries were surgically removed during spaying procedure at a veterinary clinic, and washed in PBS. Ovarian tissue was then fixed in formalin solution, followed by rinsing in graded series of ethanol. They were then embedded in paraffin, serially sectioned (5 μm), mounted onto microscope slides, and stained with hematoxylin and eosin by a standard histological procedure. Gross follicular morphology was then evaluated. Various stages of follicular development in the sectioned ovary were idenfied.

Laasya Chandrapaty

CA - San Jose State University

Discipline: Engineering and Architecture

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Abstract Name: A Theoretical Investigation on the Performance of a Bifacial Solar Panel Using ANSYS-Based Thermal Modelling

Bifacial solar panels are a recent technological advancement, distinguishable by their increased power output. This increase is attributed to the absorption of solar radiance from the back layer, relying on scattered light from the ground. Before experimentally characterizing the panel, a foundational theoretical model for the panel's temperature distributions as a function of incident solar flux is necessary to understand the impact of surface heating on the panel’s output. This study utilizes a commercially available JJN Solar 200-W Bifacial PV panel. Thermal modeling was performed using Ansys-Icepak, requiring the input of the solar panel’s surface geometry and the layers within the PV Bifacial Solar Panel, such as AR Coating, emitter layer, N-type wafer, and the aluminum back surface. Data related to these layers served as input values for the modeling, including the dimensions of various layers and corresponding thermal properties like thermal conductivities, density, and specific heat. The boundary conditions employed in stagnant air include: heat flux at the top of the aluminum frame and glass surface, convection on the top (h=5W/m2K), convection on the frame (h=5W/m2K), convection on the back (h=1.5W/m2K), and the emissivity of the glass (ε = 0.85). For bifacial solar panels, it was assumed that the heat flux at the back sheet is one-tenth of the heat flux at the front. The Ansys-Icepak model ran under various conditions, including varying incident solar flux. Results include temperature distributions on the panel. The temperature varied from ambient to 50ºC for the incident flux of 200W/m2K. The corresponding efficiencies were calculated and varied between 10-14% as the surface temperature increased. These results will serve as the base for our experimental work. Complete findings will be presented at the conference.

Sumanth Chandrupatla

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Association between Serum Urate, Gout, and Prostatic Cancer in European Male Populations: A Mendelian Randomization Study

Background: Gout and serum urate (SU) have been shown to be associated with cancer risk.Objective: We aim to conduct a two-sample Mendelian Randomization (MR) study to assess causal relationships between SU, gout, and prostate cancer.Methods: We conducted genome-wide association studies (GWAS) for SU and gout using males from UK Biobank and used publicly available meta-analyses GWAS for prostate cancer. Instrumental variables were selected based on single nucleotide polymorphism (SNP) correlation and independence. MR methods included inverse-variance-weighted MR, MR-Egger regression, and weighted median to robustly test for causal relationships and horizontal pleiotropy.Results: Our selected GWAS included 145,625 males for SU, 207,780 males for gout, and 140,000 males for prostate cancer. From these, we selected 142 genetic variants independently associated with SU, 230 associated with prostate cancer, and 409 associated with gout. No causal relationship was found between SU and prostate cancer or between gout and prostate cancer in either direction (p > 0. 07 for all). We found no evidence of horizontal pleiotropy from the MR-Egger test.Conclusion: Our MR analysis in a European male population found no evidence of a causal relationship between SU and prostate cancer and between gout and prostate cancer. This indicates that urate level alterations, resulting from urate-lowering drugs or other non-pharmacological interventions, may not change the risk of prostate cancer in patients with hyperuricemia or gout.

malia chang

CA - California State Polytechnic University - Pomona

Discipline: Interdisciplinary Studies

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Emily Yu

Abstract Name: Exploring Natural Dyeing from Orange Peel, Black Bean Peel, and Avocado Seed for Dyeing Hispanic Textile Fiber Content

This study aims to highlight sustainable practices while preserving the importance of natural dyeing traditions in Hispanic culture specifically Oaxaca in Mexico where natural dyeing is predominantly focused upon. Due to the negative impact of synthetic dyes, the discussion of more sustainable and environmentally friendly practices has become a larger discussion, and this has caused cultures to stray away from the art of traditionally dyeing fabrics.The preliminary findings from previous extraction analysis showcase rich red colors can be extracted from avocado pits and different hues of blue from black beans when applied to cotton textiles. While in Oaxacan culture, vibrant orange hues can be derived from orange peels. We decided to expand upon our preliminary findings and experiment with three variables—orange peel, black bean peels, and avocado pits—to naturally dye cotton, a commonly used textile in Oaxacan culture. The methodology includes extracting the color from the agricultural byproducts that can then be utilized to apply to cotton textiles. With methods of testing and analysis, observations can be made to determine the viability of each dye with the consideration of variables such as time, temperature, and pH condition. Aluminum and iron mordants can also be applied to achieve a vibrant color to effectively dye the cotton textiles. These natural colorants from agricultural byproducts in Hispanic textile dyeing, may demonstrate potential to be sustainable alternatives that showcase the significance of preserving traditional techniques and sustainability.

Jiaxin Chang

NC - University of North Carolina at Chapel Hill

Discipline: Business and Entrepreneurship

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Shiyunyang Zhao

Abstract Name: Catalyzing Labor Market Participation: A Study of State-Level Earned Income Tax Credit Expansion

The Earned Income Tax Credit (EITC) has garnered extensive attention within the field of labor economics. Nevertheless, there exists a noticeable gap in the literature when it comes to understanding the labor-market impact of the state level EITC, which has seen increased policy activity in recent years. This paper employs a combination of Triple Difference with Inverse Probability Weighting (DDD-IPW), and Multinomial Logistic models, all grounded in the framework of an individual employment outcome model. Our objective is to investigate how state-level EITC expansions, with varying levels of generosity, affect the labor market. Rotating panel data from the 2010-2019 Current Population Survey (CPS) provide estimates of this effect.

The result of our estimations reveals that state-level EITC expansions have yielded positive effects, particularly for single women with children, a group recognized as primary beneficiaries of the EITC. However, it is important to note that the degree of influence and significance levels associated with different expansion levels exhibit variations.

Emily Chang

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Dissecting the Distinct but Overlapping Brain Circuits that Control Attraction and Repulsion to Smells to Mammalian-Sensed Odors

Organisms across the phyla are capable of sensing an array of sensory cues to control or shape complex behavioral responses to survive in environments consisting of an array of attractive and repulsive dangerous cues. Mammalian systems extensively use olfactory and gustatory behavior to fine tune these sensory-dependent decision-making behaviors. Despite understanding the importance of behavioral responses to cues in the form of odors in shaping decision-making behavior, the underlying mechanisms that mediate these responses at the level of sensation, processing, integration, and modulation are not fully understood. To understand these mechanisms, we use the invertebrate worm, C. elegans, to characterize attraction to mammalian-sensed odorant cues. We show that hermaphrodite worms are attracted to catnip oil and identify select sensory mechanisms that mediate this attraction, identifying multiple sensory genes (molecular substrates) that are involved in this chemosensory response to a mammalian-sensed cue, which is highly attractive in many cats. We have identified sensory transduction mechanisms, including G-proteins, and cyclic nucleotide-gated ion channels, which regulate odor-dependent attraction to mammalian-sensed catnip oil cues. We therefore provide a platform to use C. elegans as a model for studying olfactory-dependent pathways to mammalian cues. This allows for the characterization of neural mechanisms that shape olfactory behavior and decision-making in higher systems.

Srichandrika Changalvala

NC - University of North Carolina at Charlotte

Discipline: Social Sciences

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#3 Ryan Kilmer

Abstract Name: Bereaved Children’s Experiences of Peer Support Groups and Posttraumatic Growth

Although professionals regularly emphasize the diagnosis as well as treatment of psychological disorders

such as posttraumatic stress disorder, fewer focus on the growth that can occur after adverse life events. The literature on how peer support groups may influence this growth, especially in children who have experienced grief, is even more limited. Posttraumatic growth reflects an individual's perceived positive change, such as a greater sense of one's strengths or appreciation for life, after experiencing the impact of a traumatic incident. This growth can be facilitated through personal relationships and via some services such as therapy or clinically-oriented or supportive groups. The present research focuses on children's self-reported experiences within a peer support group and their perceptions of posttraumatic growth after the death of a loved one (e.g., parent or sibling). It grows out of a larger, multi-site project involving pairs of caregivers and young children who were engaged in grief-focused peer support programs in the 2022–2023 academic year. Data were collected from nine grief centers across seven states in the United States at two different time points to assess a variety of child and caregiver resources, the caregiver-child connection, as well as other potentially relevant variable. In the initial survey in the fall, 180 children participated; roughly 100 completed the follow-up data collection in the spring. For this study, analyses will explore the association between children's experiences of the peer support groups and their self-reported growth. Analyses will also examine the relationship between how long a child has participated in the groups and their experience within the groups as well as posttraumatic growth. It is hypothesized that children who report more positive experiences with the group and who have attended the support groups for a longer period will tend to endorse higher levels of posttraumatic growth.

Gavin Channell

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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#1 Gavin Channell
#2 Katherine Trese

Abstract Name: Acoustically Purified Biodegradable Nanoparticles for Cell-Based Cancer Immunotherapy

Immunotherapy is an expansive and growing field that seeks to harness the body's own immune response, resulting in a therapeutic effect. Our work focuses on using macrophages and their intrinsic ability to treat cancer.Previous work has suggested that nanoparticles can be equipped as "cellular backpacks" to the surfaces of various cell types, including macrophages. Our goal is to attach drug-loaded poly (β-amino ester) (PBAE) nanoparticles to macrophages. This will gradually release a pro-inflammatory molecule that enhances the anti-tumoral capabilities of macrophages while utilizing the tumor-homing capacity of macrophages to deliver the drugs directly to the tumor. Our research is directed toward testing the mechanical properties, biodegradation, and drug-loading ability of various PBAE polymers to better understand their role in immunotherapy.To test the mechanical properties of the nanoparticles, tensile testing will be performed on strips of the PBAE compositions using a Universal Testing Machine. To test the degradation of the PBAE compositions, a bulk and a particle degradation experiment will be conducted so that trends can be identified in the ability to tune biodegradation speeds for the various compositions. To test the viability of cells with PBAE nanoparticles attached, cell viability will be measured across various PBAE compositions applied to Human Endothelial Kidney cells using an MTT assay.Previous research indicates that the PBAEs we will be testing should be readily biodegradable, they can be elastomeric and available for acoustic purification, and they can be nontoxic. Our goal is to learn more about various PBAE compositions, and to find the ideal fit to serve as a cellular backpack and have a delayed drug response until it reaches the tumor to maximize the amount of drug reaching the tumor.

Catherine Channell

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

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Abstract Name: Determining the Genotype Frequency of SNP rs4988235 That Confers Lactase Persistence in an LMU Population

The enzyme lactase hydrolyzes the milk sugar, lactose, into glucose and galactose. In approximately 65% of humans worldwide, lactase is not expressed after weaning, called lactase nonpersistence (LNP). An LNP individual consuming dairy products can experience mild to severe gastrointestinal symptoms such as bloating, gas, and diarrhea. Single nucleotide polymorphisms (SNPs) in the enhancer region of the LCT gene have been correlated with the trait lactase persistence (LP), the ability to express the enzyme lactase into adulthood. The best-studied SNP is the C/T variant (SNP ID rs4988235) at position -13,910 bp upstream of LCT, where the dominant T allele confers the trait of LP. Frequency data for this SNP has been recorded for some homogenous populations, but an estimate for the heterogenous U.S. population has small sample sizes for minority groups. Our work seeks to fill this gap by genotyping individuals from Loyola Marymount University. DNA was extracted from hair follicles, and PCR-RFLP analysis was used to determine the genotype at rs4988235. We have collected samples from 52 individuals and successfully genotyped 44 of them. From these data we predict that 22 individuals have the LP phenotype and 22 have the LNP phenotype. These results were compared to self-reported dairy consumption and symptoms experienced, as well as demographic data. 70% (31) of successfully genotyped participants reported themselves as lactase persistent, even without the presence of the T allele. We found the T allele was less common amongst Asian, Hispanic/Latino, and Black or African American populations although the sample size is currently small. Continued sample collection and analysis will provide a more reliable estimate of the frequency of LP and LNP in a heterogeneous population. The results may suggest a need to revise U.S. dietary guidelines regarding dairy to reflect the needs of our diverse population.

Chelsea Chao

PA - University of Pittsburgh

Discipline: Health and Human Services

Authors:
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#3 Young Ji Lee

Abstract Name: A review on the role of online nutrition education material for patients diagnosed with cancer

Introduction: The Internet has become a resource for patients seeking information (van Veen MR, et. al); however, unfiltered content presents the risk of encountering information that could adversely affect their health, such as using potentially harmful supplements (ACS). This review aims to examine online nutritional resources available to cancer patients and assess their impact.Methods: We conducted a review using these MeSH terms in PubMed: “cancer,” “nutrition,” and “education.” Our inclusion criteria of the articles: (1) published between 2008-2022, (2) offered nutritional education via the Internet, and (3) evaluated the impact

of nutritional education on cancer patients. Our data extraction focused on: age, type of cancer, language, level of health literacy, type of online resource, method of content validation, and health outcomes. A secondary reviewer (YW) replicated the process, with any discrepancies resolved.Results: A total of six studies were included. The types of cancers identified include: breast, lung, endometrial, bladder, renal, and gastrointestinal. One study indicated online education material designed for low-literacy immigrants. Four of the studies focused on adults and two of the studies included children. Four of the studies included English as the primary language of materials and two of the studies included Spanish. The types of resources that utilized official websites of the cancer organizations as their main source for education material (n = 2). Two studies electronically sent patients reminders (n = 2). Two studies conducted rounds of interviews (n = 2). The content of five studies were validated by several organizations. Health outcomes included improved patient understanding and changes in diet.Conclusion: We found most studies provided validated nutritional information to cancer patients, which improved outcomes. However, the educational material is predominantly in English. This language barrier presents a challenge in delivering equitable healthcare. Future implications include the need for studies that incorporate feedback from healthcare providers.

Chantelle Chapman

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Chantelle Chapman

Abstract Name: Parakeet Lost: Casting Light on North America’s Forgotten Native Parrot

For centuries, the abundance of America’s avifauna was one of its most storied treasures. Early accounts spoke of flocks a mile wide, and forests and shorelines that bristled with feathers. Many of these birds are now gone, driven to extinction through human action and inaction, leaving only fading shadows upon collective memory. Among the vanished birds of the United States, one of the most unique was Conuropsis carolinensis, the country’s only endemic parrot. Though named for the area where it was first studied, the Carolina Parakeet was common throughout the lands east of the Rockies, noted for its tolerance of snow. It seems impossible that such a remarkable creature could have been forgotten within the span of a human life, yet only 84 years after the declaration of its extinction, few people today are aware that an American parrot ever existed. The purpose of this project is to investigate the distinctive characteristics of C. carolinensis, with the aim of constructing a compelling, multi-faceted portrait of this lost species. In-depth research will be conducted into the cultural and natural history of the bird and the causes of its disappearance, comprising an examination of first- and second-hand historical accounts and contemporary ornithological scholarship, as well as preserved biological specimens. Following in the strong tradition natural history illustration, the findings of this research will be synthesized as a series of paintings, executed in gouache on paper; original works of prose poetry will provide context for the images. Collectively, this body of work, presented in the exhibition format, will encourage consideration of the countless creatures which today face oblivion, and invite deeper contemplation of the precarious position held by even the most exceptional of species.

Sydney Chapman

KY - University of Kentucky

Discipline: Mathematics and Computer Science

Authors:
#1 Sydney Chapman
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Tiffany Clark

Abstract Name: Herculaneum Opened Scroll Database

The Herculaneum Papyri are among the most iconic and inaccessible damaged manuscripts in the modern world. Carbonized and buried by the eruption of Mount Vesuvius in 79 CE, the ~1,100 papyrus scrolls excavated from the ancient city of Herculaneum in the late 18th century, offers us a unique window into the classical world. EduceLab has been working on collecting 3D scans, spectral images, and descriptive data of over ~3,500 opened scroll fragments; this information is currently stored in google sheets, csv files, and metadata files. With all of this information scattered across multiple different files there is no way to easily organize, view, and navigate through the data. Our project focuses on making this information easily accessible and navigable to researchers by developing a relational database, available through a secure website, that allows for users to query the data. To accomplish this task a script needs to be developed to automatically collect the information that is being stored in the different files and use their information to develop and update a dedicated database. A website then needs to be developed to allow for users to access the database through the use of queries, and display the resulting information in a user-friendly manner. With the help of user feedback, we are hoping to develop a tool that allows papyrologists and fellow researchers access to scans, images, and descriptive information in order to study the opened scrolls without having to travel to the libraries which house the scrolls.

Niav Chapman

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

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Abstract Name: Total Synthesis of Pestalamine A

Pestalamine A is a secondary metabolite that is naturally found in the mangrove-derived endophytic fungus, Pestalotiopsis vaccinii. It contains various structural features including a cis-alkene, primary aniline, and a furoate ester. This molecule exhibits moderate degrees of cytotoxicity against multiple human cancer cell lines, including MCF-7, HeLa, and HepG2. As such, pestalamine A has potential as a lead compound for cytotoxic cancer therapies and is an attractive target for total synthesis. The current research was conducted to identify synthetic routes for the production of Pestalamine A. The formation of the aromatic core, which represents half of the overall molecule, was constructed through SN2 esterification. The second half of the molecule, which contains a cis-alkene and both a cis-1,2-diol derived furoate ester, is still in the process of being formed. The aromatic core and the second half of the molecule will be combined through Sonogashira Coupling. This reaction requires the use of an alkyne of which will be formulated through a Weinreb amide derived from ethyl-(S)-lactate. Noyori Asymmetric Hydrogenation will be utilized to formulate the second hydroxyl group. Finally, the furoate ester group of Pestalamine will be attached through the chemoselective acylation reaction previously disclosed by us.

Taisha Charles

PA - Albright College

Discipline: Social Sciences

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#1 Taisha Charles
#2 Justin Couchman

Abstract Name: Question Creation as a Tool to Help Students Understand Mathematics

This study applied a cognitive tool to math education to see if it increases positive output in students. Specifically, we were testing whether creating and answering questions related to the topics students were learning would help them perform better on tests and assignments. The self-generation effect is a phenomenon in cognitive psychology in which subjects are more likely to remember items that they generate rather than those provided. The self-generation effect has been used to help memory in multiple situations. Recall and recognition are generally higher for stimuli that subjects generated than for stimuli that was only viewed. In the current study, a group of seventh graders were separated into a control group, who for two weeks went home every night and answered two questions from their assigned homework, and an experimental group, who for two weeks went home every night and created and answered 2 questions related to material from class. Both groups completed a pre- and post-experience assessment with the same questions and two questionnaires related to math anxiety. After compiling, the data showed the hypothesis did come back statistically significant. Students significantly improved in both their completion of the math test but also in how much of it they got correct after the two-week period. The experimental group performed significantly better on the tests.

Rhea Chatterjee

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
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Abstract Name: Ashwagandha and Sexual Health on Women with Hyposexual Desire Disorder

Hypoactive Sexual Desire Disorder (HSDD) affects 40% of women and potentially decreases their quality of life. Currently, the primary treatment for HSDD is Flibanserin, which is a serotonergic agonist and an antidepressant. However, the limited efficacy of Flibanserin encourages the exploration of the utilization of traditional drugs such as Withania somnifera, otherwise known as Ashwagandha, as an alternative treatment for HSDD. Minimal studies examine ayurvedic medications or the symptoms of illnesses that traditional Western medicines are unable to treat. This comprehensive literature review investigated the efficacy of Ashwagandha in improving sexual function in women with HSDD. The paper evaluated how Ashwagandha may positively influence mental health, sexual desire, and overall physical health, potentially resulting in improved sexual health. The evaluation was conducted by analyzing and synthesizing a combination of human and clinical studies. This paper aimed to observe how Ashwagandha's phytochemicals may positively improve sexual health by improving sleep quality and mental function, as well as increasing sexual desire. In addition to the improvement in sexual health, Ashwagandha has minimal adverse effects which may allow it to be a better treatment in comparison to Flibanserin overall. This review proposed that Ashwagandha may improve sexual health for women struggling with HSDD. However, further research needs to be conducted on the long-term effects of the administration of Ashwagandha as many of the trials completed thus far have only occurred for a short period of time.

Tulsi Chaudhari

FL - Florida International University

Discipline: Mathematics and Computer Science

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#1 Tulsi Chaudhari
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Abstract Name: Enhancing IoT Security with QDPC variant of McEliese: A Post Quantum Cryptography Approach

In the era of quantum computing, traditional cryptographic methods may face obsolescence due to advancements like Shor's algorithm, which can efficiently break widely used cryptographic protocols. This research focuses on IoT devices that face issues while adopting cryptographic protocols designed for classic computers because of their limited computational power and communication bandwidth.We propose a Post quantum cryptographic solution with Quasi-cyclic Moderate Density Parity-Check (QDPC) variant of the McEliece System for securing IoT communication against quantum attacks.The research methodology encompasses a theoretical development phase, where the algorithm design is followed by a practical implementation phase involving simulation and analysis in an IoT environment. The algorithm will be tested for quantum resistance, computational efficiency, and practical deployability in IoT devices. Comparative analysis with existing cryptographic solutions will be conducted to evaluate performance enhancements and security fortifications.The expected outcome is a robust, quantum-resistant cryptographic algorithm tailored for IoT devices, demonstrating a balance between high-level security and operational efficiency. The conclusion will discuss the implications of this research for future IoT security protocols and the broader field of post-quantum cryptography, emphasizing the need for proactive measures against quantum computing threats.

Fareeha Chaudhry

MI - Wayne State University

Discipline: Social Sciences

Authors:
#1 Fareeha Chaudhry

Abstract Name: Review of the Efficacy Study Deficit in Anxiety Aid-Claiming Mobile Applications

Anxiety mobile applications on the current app store are misleading users through advertising claims, whilst lacking transparent, published efficacy studies that support their supposed clinical foundations. Broader findings have indicated that a limited number of available mental health apps have peer-reviewed, empirical sources to substantiate their services. However, this line of research has not extended into nor specifically evaluated apps that market themselves on the distinct psychological concern of anxiety. Therefore, this study will address the deficit in the current literature on anxiety-themed applications that purport their effectiveness in managing anxiety and/or alleviating anxiety symptoms. 7 free-to-download mobile apps that are titled using anxiety-specific phrasing (i.e., "anxiety", "fear", "panic attack") and that are common across the iOS and Google Play store will be reviewed on the following: whether they have published efficacy studies that support their services' tools, the content of those studies, and if that information was accessible to users. The findings aim to shed light on the deceit apparent in the mobile market, one that persuades users into downloading apps and making in-app purchases on tools that may not elicit long-term, positive mental health trajectories, due to their lack of scientific evidence. Moreover, a discussion on how transparency lends itself to the mental health of users is necessary, as it will ultimately assist them with mindful downloading, as well as discerning between which apps are effective for their anxiety and which are simply schemes.

Ethan Chavarin

CA - California State Polytechnic University - Pomona

Discipline: Natural and Physical Sciences

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#1 Ethan Chavarin
#2 Justin Cortez
#3 Adrian Torres
#4 Jacob Brannon
#5 Zoe Marr
#6 Andressa Bertolazzo
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Abstract Name: Effect of Linker Modifications on Cis versus Trans C-F Activation with Bis-Bidentate Nheterocyclic Carbene Nickel Complexes

Fluorine plays a massive role in developing effective pharmaceutical drugs, however selectively fluorinating organic molecules is extremely challenging. A common route to installing fluorine involves C-F bond cleavage. C-F bonds are among the strongest bonds in organic chemistry, with a bond dissociation energy of at least 130 kcal/mol and are typically cleaved by second or third row transition metals. A more facile, sustainable, and less expensive approach for C-F activation may be in using base metal catalysts. Monodentate N-heterocyclic carbene (NHC) nickel complexes have been reported to undergo C-F activation, however bis-bidentate NHC (RNHC2R1; R, R1 = alkyl or aryl) analogs have not been reported. This work examines a novel series of RNHC2R1 nickel(0) complexes with varying R1 linkers to determine the effect of linker on C-F activation of hexafluorobenzene. Comparisons include a reference nickel(0) complex with two monodentate NHC ligands, and results show that low valent nickel NHC complexes easily break the C-F bond in C6F6 via oxidative addition. Crystallographic and NMR characterization demonstrate that ligand design and denticity affect the cis versus trans orientation of the final product, with possibility for additional ligand C-H activation. Cross coupling, and mechanistic studies are in progress.

Yuvrajsinh Chavda

NJ - Rutgers the State University of New Jersey

Discipline: Interdisciplinary Studies

Authors:
#1 Yuvrajsinh Chavda
#2 Christine Cahill
#3 Victoria He
#4 Faith Wilson
#5 Drishti Kanakia

Abstract Name: Examining the Ethics and Governance of Generative Artificial Intelligence

Our interdisciplinary research poster examines the ethical and societal implications of Generative Artificial Intelligence to propose recommendations for lawmakers and AI companies to help society safely adjust to this new era. This research is motivated by concerns associated with potential risks of confidential

information leakage and the generation of faulty recommendations with discrimination, led by a team of students from underrepresented groups. From this multidisciplinary perspective, we apply intersectionality and distributive justice theoretical frameworks to understand the complex processes of AI/ML models ("black box"). We provide policy recommendations for policymakers and AI companies to advocate for diverse and unbiased datasets, put emphasis on ethics, and improve transparency in AI with users and clients. Our methodology is a comprehensive literature review approach to critically assess academic journals, current headlines, and white papers. Our research focuses on three key dimensions: 1. Transparency & Bias in AI: To what extent do hidden biases within AI models contribute to ethical concerns and reinforce social inequalities? AI can be viewed as a black box because of its lack of transparency and explainability, which we aim to clarify. 2. Lack of Diversity in AI Talent: What are the consequences of the demographic disparities in individuals maintaining AI datasets and how does the lack of diversity contribute to bias? 3. Role of Data in AI Models: How does the collection of user data for AI datasets impact privacy? Our research examines the fundamentals of data privacy and how AI datasets produce outputs with biased or insufficient data. We will also analyze how a user's everyday use of the internet is collected to feed datasets and the implications that has on privacy, exploring the relationship between datasets and personal information. Our research aims to ensure politically neutral and ethical AI development to accommodate AI's exponential growth while in its early stages.

Lani Chavez

CA - California State University - Long Beach

Discipline: Humanities

Authors:
#1 Lani Chavez

Abstract Name: Linguistic Relativity as Prose: The Hopi and the Sapir-Whorf Hypothesis in Christa Wolf’s Stadt der Engel oder The Overcoat of Dr. Freud

Christa Wolf is considered one of the most acclaimed writers of former East Germany who wrote prolifically from 1961 to 2011. She wrote with particular emphasis on the role of language in literature. However, there exists a lack of scholarship surrounding her work from a distinctly linguistic perspective. The metalinguistic choices Wolf makes in her writing as a part of the framework of what she calls Subjective Authenticity is closely aligned with Linguistic Relativity or the Sapir-Whorf Hypothesis. One is a literary framework while the other is a linguistic theory. By examining them together through a close reading of a passage exploring the Hopi Tribe in her novel Stadt der Engel oder The Overcoat of Dr. Freud and Benjamin Whorf’s original research on the Hopi Tribe, I reveal how Wolf’s inclusion of the passage on the Hopi is a key space for her own linguistic literary theory of prose.

Jeremy Chavez

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jeremy Chavez
#2 Afton Green
#3 Rylan Schmanski
#4 Kendal Beazer
#5 Matthew Nicholaou

Afton Green
Rylan Schmanski

Abstract Name: The Effect of Oral Microbiome on Blood Plasma Nitrous Oxide Levels and Blood Pressure

Cardiovascular diseases are the leading cause of death globally, with elevated blood hypertension being a significant risk factor. Nitrate, nitrite, and nitric oxide in the blood have been shown to be important mediators of human blood pressure. Dietary nitrates are reduced in the oral cavity by bacteria in the oral microbiome, and studies where saliva has been expectorated or where antibacterial mouthwashes have been used after consumption of nitrates have demonstrated a lessened effect on blood pressure, demonstrating the importance of bacteria in the bioavailability of nitrous oxide species. Minimal research has been done on specific bacterial species indicated in elevated blood plasma nitrous oxide species levels. The goal of this research is to associate specific bacteria with elevated levels of blood plasma nitrate levels by taking oral, saliva samples and venous blood samples from volunteers, as well as collecting blood pressure measurements. Specific oral bacterial species will be assessed by quantitative PCR, while blood plasma nitrites will be analyzed using a fluorescent assay read by a microplate reader. If successful, specific bacterial species will show a positive association with plasma nitrite levels; this would be especially informative as microbiome therapies are developed and evolve to treat patients, particularly hypertensive patients.

Alejandro Chavez-Mayoral

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
#1 Alejandro Chavez-Mayoral
#2 Daehan Kwak

Abstract Name: A Deep Learning Approach for Pain Detection in Mice

Identifying pain in mice may be a crucial or fundamental part of an experiment in a lab setting. The Mouse Grimace Scale was developed to classify the pain in mice based on different body parts including their eyes, ears, whiskers, and nose. Similar grimace scales were developed for other animals such as rabbits, cats, rats, and other common animals used in lab settings. Despite the usefulness of this type of pain grading scale, grading images can be time consuming and requires trained humans to recognize signs of pain. To address this issue, a couple of different approaches are taken. Since the input data may be too complex for machine learning models, a more appropriate approach for classifying raw images is deep learning-based models. These models are a popular option due to the accuracy of convolutional neural networks (CNNs) such as InceptionV3 or Resnet50. Despite the mass amounts of data needed to train deep learning models, they are good for handling data with high dimensions. They are also capable of seeing non-linear relationships, which can be useful when dealing with datasets that hold complex features. In this study, we take a deeper dive into looking at the use of autoencoders for dimensionality reduction and feeding the prepared data into fully connected layers for binary classification of pain in Siamese neural network architecture. We also looked at a model using InceptionV3 and compared it to the previously mentioned model. Our aim is to visualize which model can classify mouse pain better and to determine if deep learning grimace scale models can classify mouse pain as good as human raters. We plan to clean up the dataset to only have front-facing mice images trained and use a crop, rotate, and brighten method to images in the dataset to make the model more robust.

Banat Kaur Chawla

GBR - University of Cambridge

Discipline: Natural and Physical Sciences

Authors:
#1 Banat Kaur Chawla
#2 Dr Jia Chen
#3 Professor Daniel St Johnston

Abstract Name: AN ANALYSIS OF MUTANTS PROMOTING BASAL SPREADING AND MIGRATION OF ENTEROBLASTS IN THE ADULT DROSOPHILA MIDGUT

Epithelial tissues in animals represent monolayers of cells which act as barriers between compartments, and also mediate exchange of substances across the barrier. The cells comprising the epithelium are polarised along the apical-basal axis and partake in homophilic interactions with neighbouring cells via adherens junctions, and heterophilic interactions with the ECM via integrins. Junctional contact between epithelial cells differentiates their apical-basal polarity from other polarised cells as their cortical domains are divided into the apical domain, adherens junction, tight/septate junction, and basolateral domain. This polarity is important for the integrity and function of epithelial tissues as loss of polarity contributes to tumourigenesis in various cancers. The adult Drosophila midgut epithelium is a model of alternative cellular polarity as it polarises by a mechanism that is different from other Drosophila epithelia, and has several features that resemble vertebrate epithelia. This study investigates the role of novel proteins previously identified in a forward genetic screen for mutants that disrupt midgut enterocyte polarity and/or epithelial homeostasis. Reverse genetics was employed to generate mutant MARCM cellular clones and immunofluorescence methods were used to analyse the phenotypes of cellular midgut populations mutated for the five candidate proteins. We show that certain mutant alleles do not contribute to defects in enterocyte polarity, but they potentially regulate the proliferation and differentiation of progenitor stem cells within the midgut. These findings provide a strong start to analyse other proteins that may regulate polarity within the adult Drosophila midgut.

Olivia Checkley

GA - Spelman College

Discipline: Natural and Physical Sciences

Authors:
#1 Olivia Checkley

Abstract Name: Modeling the Lattice Vibrations of a Debye Solid

Einstein’s model of specific heat is commonly taught to understand the vibrational frequency of atoms in a solid. This model claims that the frequencies are independent of one another. However, the Debye model states that the atoms are considered coupled together, and therefore, the overall vibrations of the solid are quantized with a range of frequencies. Using conventional transmission 57Fe Mössbauer Spectroscopy, the temperature dependence of the isomer shift is extracted from the spectral analysis for two solid state systems. This phenomenon is understood to be due to an effect called second-order Doppler shift and is approximated by assuming the material to be a Debye solid. The Debye integral is used to evaluate the Debye temperature to understand the second-order Doppler shift further. The approximation of the Debye integral is evaluated with a Fourier series. The extracted isomer shift data sets are analyzed through a Python code built on the Colab platform. A line shape analysis is performed assuming a Lorentzian function to accomplish the least squares fitting of the data. Details of the integral, the modeling approach, and the experimental data will be presented. This work is supported by the LSAMP award and the NSF PREM – Emergent Interface Materials, Grant 2122147.

Minaahil Cheema

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Minaahil Cheema

Abstract Name: Discerning Key Predictors in Positive PCOS Diagnoses of Gynecological Patients

IntroPoly cystic ovarian syndrome, primarily known as PCOS is a hormonal disorder in which ovaries present larger than normal with cysts on the outside of the ovary. This syndrome can present in women through symptoms such as irregular menstrual cycles, excessive hair growth, and infertility due to imbalanced androgen hormones. The present study aims to explore factors related to a positive PCOS diagnosis and quantify the relationship between variables. The dataset was collected on 541 gynecological patients with their respective ages, hormone levels, menstrual cycle regularity, and physical manifestations of PCOS symptoms. The variables specifically analyzed were Anti-Mullerian hormone levels, age, BMI, Luteinizing hormone levels, Vitamin D3 levels which were all continuous. Three binary variables were also observed; weight gain, menstrual cycle, and hair loss.MethodsSAS was utilized to generate descriptive statistics for continuous variables and frequency tables for binary variables. A logistic regression was performed through SAS with eight potential PCOS factors to quantify the relationship between the variables. Out of the eight variables, 4 were found to be significant predictors of a PCOS diagnosis.ResultsThe findings demonstrated Anti-Mullerian hormone levels (p = 0.002), weight gain (p = < .0001), age (p = 0.004) and an irregular menstrual cycle (p = <.0001) were statistically significant predictors of PCOS. These results provide a better understanding of the etiology of PCOS in women's health. ConclusionThis study identified age, Anti-Mullerian hormone levels, weight gain, and an irregular menstrual cycle as significant predictors of PCOS. Comprehending these results can lead to more treatment plans for and earlier screenings to determine if a patient will have a positive PCOS diagnosis.

Jadey Chen

CA - Gabrielino High School

Discipline: Mathematics and Computer Science

Authors:
#1 Jadey Chen
#2 Derek Fong

Abstract Name: Neural Network Solver for Transient State Incompressible Flow on Arbitrarily-Shaped Geometries Defined using Bezier Curves

Computer models for simulating turbulent fluid flow have many industrial applications. However, these models often rely on numerical methods, which are accurate but slow. The aim of this research is to use neural networks to simulate fluid flow much faster than can be done with numerical methods. To enable aneural network to predict the fluid flow around any arbitrary shape, e.g., an airplane or house, the prevailing method is to input the simulation grid into the neural network in the form of a point cloud or image. In this research, we propose a new approach that is simpler and faster. Instead of a point cloud, we define the boundary of an arbitrary obstruction using a handful of points. We then train the neural network to interpolate all intermediate points using Bezier curves to produce a closed shape. Using fewer points allows for

improved training time, inference time, and neural network size. We trained an ensemble of five neural networks for 90 epochs. The resulting ensemble was able to predict transient-state turbulent fluid flow for up to 2000 time steps with a mean squared error of 1.162E-05. Using ensemble stacking, our ensemble had an inference time of 6 seconds, which is a hundred times faster than typical fluid solvers. Our approach is applicable to modeling fluid flow over 3D topographic maps, which can be interpolated using radial basis functions or planes. The lasting impact of this research is that it will move us closer to modeling in real-time or better.

Vicky Chen

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Vicky Chen
#2 Tabea Mittman
#3 Heather Karner
#4 Hani Goodarzi

Abstract Name: Characterization of RBMS3 as a regulator of RNA stability in breast cancer metastasis

Cancer metastasis uses a diverse set of processes with post-transcriptional regulation playing a major role. Because these regulatory pathways have been difficult to study, REMBRANDTS-PRADA is a computational framework that was developed by our lab to predict master regulators of RNA stability. From cell line and patient-derived models of breast cancer, REMBRANDTS-PRADA predicted the RNA binding protein RBMS3 to be a novel regulator of RNA stability. CLIP-seq was then performed to determine the binding preferences and targets of RBMS3, verifying REMBRANDTS-PRADA predictions of target regulons of RBMS3. We hypothesize that RBMS3 suppresses breast cancer metastasis by post-transcriptionally facilitating gene regulation through maintaining RNA stability of its targets, determined by CLIP-seq, by binding to their 3' untranslated regions (3' UTR). To dive deeper into this hypothesis and validate RBSM3 targets, I cloned an mCherry/GFP dual-reporter system with 13 different RBMS3 binding sites and corresponding scrambled control sequences in the 3' UTR of GFP. The pooled reporter library was then expressed in MDA-MB-231 breast cancer cells with RBMS3 knocked down versus control cells to measure differential GFP expression when RBMS3 binds to these 3' UTR. Library preparation of DNA and RNA reporter sequences, followed by sequencing on the Illumina NextSeq platform, will be used to measure the effect of RBMS3 expression on the stability of the target GFP mRNA. It is expected that RBMS3 binding is required to maintain the RNA stability of its targets and suppress breast cancer progression through this mechanism.

Alex Chen

NY - City University of New York - Queens College

Discipline: Mathematics and Computer Science

Authors:
#1 Alex Chen

Abstract Name: Analyzing the Effects of MobileNet as a Model Backbone on Model Training Time and Computational Resource Usage

MobileNet presented itself as the solution to the problem of a constant trend of making computer vision models deeper and more complex to achieve higher accuracy. The increase in complexity has a large effect on the amount of resources a machine will use in training and deployment. The true number of resources used remains unclear and should be well documented for future reference. This paper aims to provide that information by comparing the number of resources used and performance between FasterRCNN, FasterRCNN with a MobileNet backbone, and SSD with a MobileNet backbone on a relatively large handgun dataset along with a comparison of the performance of SSD with a MobileNet backbone on the same dataset with and without data augmentation. The results of the experiment show that FasterRCNN uses more system memory compared to MobileNet backbones and the MobileNet backbones had a decrease in the number of

GPU usage and VRAM usage compared to FasterRCNN. Along with this, for a nonaugmented dataset passed through SSD with MobileNet it used around the same amount of resources but performed 3% better than the same MobileNet model that uses an augmented dataset.

Richard Chen

MA - Boston University

Discipline: Natural and Physical Sciences

Authors:
#1 Richard Chen
#2 Yukitoshi Nishimura
#3 Megan Zhang
#4 Weixuan Liao
Megan Zhang

Abstract Name: Global Navigation Satellite Systems Observations of the Ionosphere During Strong Thermal Emission Velocity Enhancement

Global Navigation Satellite Systems (GNSS) signals experience phase and amplitude fluctuations known as scintillation when traveling through density irregularities in the ionosphere, a layer of plasma in the upper atmosphere. Precise point positioning (PPP) is a positioning method which relies on highly-accurate GNSS signal carrier phase measurements to achieve centimeter-precision: however, scintillation degrades these signals, leading to errors in positioning accuracy which negatively impact communication and navigation networks. Herein, we report the first observations of GNSS total electron content (TEC; a column integration of the ionospheric density) and PPP variation associated with Strong Thermal Emission Velocity Enhancement (STEVE) emissions, a recently-discovered, aurora-like arc characterized by a signature mauve glow, enhanced temperatures, and enhanced ion flow speed. In this study, we used optical imaging data from the Time History of Events and Macroscale Interactions during Substorms all-sky imagers to determine the spatial and temporal dynamics of STEVE. We additionally used GNSS receiver data from the University Navstar Consortium to determine TEC and PPP during STEVE. Although the theory suggests that TEC decreases during STEVE, interestingly, we found an unexpected enhancement of TEC associated with STEVE. TEC enhancement closely followed the path of STEVE longitudinally and was localized to STEVE. PPP exhibited enhanced variance locally around STEVE, indicating that the GNSS positioning error increased significantly. We suggest that the TEC enhancement during STEVE creates local TEC structures in the ionosphere that degrade the performance of GNSS. The TEC enhancement is likely created by energetic particle precipitation and plasma drift across STEVE. These results establish STEVE as a previously unidentified source of high-latitude scintillation and quantify STEVE's impact on ionospheric dynamics and GNSS navigation.

Amy Chen

CA - Irvine Valley College

Discipline: Business and Entrepreneurship

Authors:
#1 Amy Chen

Abstract Name: Streams of Profit: Replaying Spotify's Crescendo to Success in the Post-Modernist Epoch

The transition from record players and cassette tapes to predominantly digital forms of musical media can be attributed to rapid digitalization in an increasingly technologically-reliant society. Compact discs became critical to the transition of music to convenient storage formats and portable media players provided listeners with entire music libraries they could access at any time. Similarly, the advent of illegal file-sharing services, such as Napster, a peer-to-peer network, allowed users to directly share and download music files–leading to copyright infringement claims. Napster's downfall paved the way for Spotify to revolutionize the music industry: changing the modus operandi of music consumption to streaming (Rahimi & Park, 2020). Despite the resulting rise in popularity for music streaming services, the effect of algorithms and product features on Spotify's revenue, in addition to differentiation from competitors in the industry, has been under-researched. This literature review seeks a better understanding of Spotify's brand positioning, analyzing key performance indicators, market share, and other measures of profitability to identify possible factors contributing to its success. Secondary data was obtained from public sources, including quarterly investor relations calls, SEC (Securities and Exchange Commission) filings, journal articles and the Spotify "For The Record" podcast, which provides insider insights on the company's latest earnings and business developments. The results of this study suggest Spotify's diversified product ecosystem creates greater user engagement and customer satisfaction (Gibbons, 2020), improving its value proposition. Furthermore, its data-driven algorithms create music recommendations specifically customized for listeners, which may offer the business a competitive advantage over other music service applications. Potential avenues of research in the future include investigating the effectiveness of marketing segmentation based on immutable demographic factors–in contrast to marketing campaigns launched by Spotify, which utilize behavioral segmentation to group listeners with similar streaming habits.

Jingyi Chen

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
#1 Jingyi Chen

Abstract Name: The Interplay of Social Norms and Legal Systems: Unraveling the Complexity of Domestic Violence in China and Paving the Path for Change

This research investigates the perpetuation of domestic violence (DV) in China, a context where the interplay of social norms, institutional practices, and legal frameworks presents unique challenges. Despite the implementation of China's Anti-domestic Violence Law in 2016, its effectiveness has been subject to scrutiny among researchers. The primary objective of this study is to illuminate the intricate nature of DV in this context, identifying obstacles to achieving justice and reducing harmful behaviors. The hypothesis of this research centers on the idea that deeply ingrained social norms emphasizing family harmony and non-interference in family affairs hinder the Law's efficacy in protecting individuals from DV. Employing a framework rooted in social norms theory, leveraging previous political and sociological research, and analyzing primary sources related to traditional Chinese ideologies, this study examines specific instances of DV in China. The findings indicate that entrenched social and gender norms influenced by Confucianism and traditional Chinese cultural values are closely linked to law enforcement officers' perceptions and responses to the violations of the Law. Institutional norms within the police force regarding handling DV cases also play a pivotal role in law enforcement practices. This research underscores the significance of adopting a social norms approach to effectively address this problem and the need for a transformative shift in societal attitudes and behaviors. It contributes to a comprehensive understanding of DV in China, potentially influencing public discourse and empowering proactive efforts to promote meaningful change.

Monica Chen

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Monica Chen
#2 Michelle Bongard
#3 Kendal Reeder
#4 Alex Dopp

Abstract Name: Investigating the Impact of COVID-19 on Sustainment of an Evidence-Based Practice for Adolescent Substance Use

Nearly 1.6 million U.S. adolescents meet criteria for substance use disorders (SUDs. Evidence-based practices (EBPs) to treat SUDs can help address this pressing public health issue. However, the sustained delivery of EBPs in communities has been difficult within the context of the COVID-19 pandemic; therefore, we need to better understand factors that contribute to sustainment. One important factor for sustainment is the type of organization implementing EBPs. Private organizations tend to demonstrate greater support and more positive attitudes from staff for EBP implementation, compared to public (i.e., government-operated) organizations. It remains unclear, however, whether these organization types showed differential sustainment of EBPs for adolescent SUDs during the pandemic. This study, conducted at the RAND Corporation through the NIDA Summer Research Internship Program, compared the impact of COVID-19 on the sustainment of an EBP for adolescent SUDs between private versus public organizations. Using a cross-sectional observational design, clinicians and supervisors (n = 62) were recruited from organizations that received SAMHSA grants to scale up the Adolescent-Community Reinforcement Approach (A-CRA), a well-established EBP, in 17 states. Participants completed a web-based survey in which they reported organizational characteristics (including private vs. public status) and rated the extent to which COVID-related changes affected their organization's ability to sustain A-CRA on a scale of 1 (much harder to sustain) to 7 (much easier to sustain). A t-test was used to compare ability to sustain by organization type; on average, respondents in private organizations reported significantly greater ability to sustain A-CRA during COVID-19 (t=2.00, p<.05) . A chi-square test was used to test dichotomized (i.e., high vs. low) ability to sustain, but this test did not indicate a significant difference (X^2=2.36, p=0.12). These findings suggest a need to increase support for public organizations working to sustain EBPs through strategies that target facilitating factors like organizational support.

Peiyun Chen

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Peiyun Chen
#2 Jose Pruneda-Paz

Abstract Name: Role of TCP19 in Regulation of Plant Growth and Development

The circadian clock allows organisms to synchronize their physiological functions with daily rhythms in environmental cues to optimize their development. In plants, the clock contributes to plant growth, defense, and other critical survival traits such as flowering. Plant growth and developmental responses are mainly initiated by cell differentiation-controlling mechanisms at the shoot-apex, thus we predicted that the regulation of the shoot-apex clock function should play an important role in controlling plant biomass and flowering time. We have identified that the transcription factor TCP19 specifically regulates the clock function at the shoot-apex. Thus, we hypothesized that TCP19 misexpressions would affect plant biomass

and flowering time. Indeed, our data indicates that TCP19-overexpression resulted in reduced biomass and delayed flowering time. However, plants carrying a tcp19-loss-of-function allele did not result in any notable phenotype suggesting that other factors may redundantly regulate plant biomass and flowering together with TCP19. Given that TCP19 regulates the expression of a core clock component, CCA1, but not a functionally redundant component, LHY, we hypothesized that the function of LHY may mask phenotypes in the tcp19-mutant background. In fact, double tcp19/lhy-mutant plants showed a significant flowering time delay in short days (but not long days) compared to the single tcp19 or lhy-mutants. These results indicate that TCP19 is a regulator of plant growth and flowering. Given that flowering time was only affected in tcp19/lhy-mutants and only short-day but not long-day conditions, our results are consistent with the notion that TCP19 only regulates CCA1 expression and further indicated that TCP19 is functionally redundant to LHY and regulates plants' ability to measure day length.

Tiffany Chen

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Tiffany Chen

Abstract Name: The Impact of Schools Sustainable Infrastructure on Students' Academic Performance and Mental Health.

This research aims to examine the correlation between students' academic performance, mental health, and sustainable school design. The study focuses on the Gwinnett School of Mathematics, Science, and Technology (GSMST) in Lawrenceville, Gwinnett County. GSMST is the highest-achieving high school in Georgia, ranked 19th nationally in 2023 and declared as The National Blue Ribbon School of Excellence in 2016. According to the Georgia Department of Education (GADOE), GSMST leads Georgia's 2022 Standardized Test (SAT) with an average of 1386 score. The school prioritizes high academic achievement and brings out the potential of all students that attend with their boasted 100% graduation rate for the 2021 - 2022 academic school year. The interior of the building consists of natural lighting, enabling motivation and dynamic space. The research inquires if and how this public school is designed to enhance the abilities of students by including spatial features of universities such as collaborative learning environments, focused study areas, and lecture halls. The team utilizes a multi-faceted methodology, including literature reviews, interviews (i.e., with school officials), and analysis of building data. Despite the high-quality sustainable spaces, according to GADOE, in the 2023 Georgia Student Health Survey while the performances are high, the students' mental health is low. The Research Center for Sustainable Communities (RCSC) at Kennesaw State University (KSU) has been conducting analytical studies on how to enhance sustainability and reduce the carbon footprints of school infrastructures statewide in GA. The RCSC seeks ways in which the state could advance healthier and more sustainable, equitable, and cost-effective learning environments. Rooted in this initiative and funded by the KSU Office of Undergraduate Research, the research underlines how the GSMST educational built environment impacts the students' performance.

Monica Chen

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Monica Chen
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#3 A. Janet Tomiyama

Abstract Name: Colliding Identities: Understanding the Influence of Multiple Stigmatized Identities and Intersecting Identities on College Students' Mental Health and Self-Rated Health

Approximately three-fifths of college students have met the criteria for at least one mental health problem. As mental health is associated with poorer academic performance and future unemployment, it is important to identify college students that may be more at risk for poorer mental health outcomes and self-rated health (SRH). The Double Jeopardy Theory and the Intersectionality Framework are two approaches that may help to identify those most at risk. In this study, we first explore how the number of stigmatized identities play a role in mental health outcomes and SRH for college students (i.e., Double Jeopardy Theory). We hypothesize that more stigmatized identities will be associated with poorer mental health and SRH. Next, we use an Intersectionality framework to investigate if specific intersecting identities (i.e., race/ethnicity, gender, and socioeconomic status) are associated with mental health and SRH. We hypothesize that race/ethnicity and SES independently and their interaction will be associated with poorer mental health and SRH, such that non-white and low SES participants will have poorer outcomes. In exploratory hypotheses, we will test the main effects of gender and its interactions with race/ethnicity and SES on mental health and SRH. Lastly, we will test for a three-way interaction between race/ethnicity, gender, and SES. In an online survey, participants (n=200) will complete demographic questions, report their number of stigmatized identities, and complete questionnaires assessing depression, anxiety, perceived stress, eating disorders, substance use, and SRH. Data collection is ongoing. Data will be analyzed using linear regression models. Results may highlight the benefit of using these two theoretical frameworks to identify at-risk college students and inform college counseling and outreach services

Nicholas Cheney

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
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#2 Isaac Slaven
#3 Barbara Carlsward

Abstract Name: An Examination of the Impact of Whitetail Deer on Industrial Fiber Hemp Cultivation

The purpose of this study was to investigate the impact of white-tailed deer (Odocoileus virginianus) on the growth of industrial hemp in East Central Illinois. A controlled burn was completed, and two plots, one enclosed (east) and one open (west) were identified. and the exclosure was built. The exclosure was built with wooden posts and fencing that started approximately 15 cm above the ground to allow for small animals to still access the plot. Two separate types of seeds were then planted in equal amounts in each plot (north and south). Once the seeds were planted, wildlife cameras were placed on the northwest and southeast corners to observe possible cervid interactions with the plot. The plots were observed weekly throughout their growing season and then harvested once fully mature. The average height and total mass of each plot and seed type were recorded and analyzed via a 2x2 factorial ANOVA. The industrial hemp that was contained within the enclosed plot had a statistically significantly higher average height and mass when compared to the industrial hemp that was harvested from the open plot. The North seed variety had a total harvested weight of 29.02 kg in the open plot and a 33.11 kg harvested weight in the closed plot. The South seed variety had a total harvested weight of 18.58 kg in the open plot and a 19.96 kg harvested weight in the closed plot. The closed plot had an average height of 259.33 cm while the open plot had an average height of 206.45 cm.

Viviana Cheng

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
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Abstract Name: Cartoon Viewing & Coping

The purpose of this study is to investigate if watching children's cartoons is effective as a way of coping. Data collection will begin in Fall 2023 and end Spring 2024. During the last 30 minutes of two different class periods, participants will do the following: (1) complete measures of stress and affect, (2) view approximately 20-minute cartoon or informational video, (3) and complete measures of affect and coping .The goal of the study is to understand coping tactics in college students who experience daily stressors. This form of coping branches from escapism, utilizing other things to be a distraction from reality, like watching cartoons. This study was developed by an observation as a student overhearing other student talk about the show Bluey, a newly popular Australian children's show about an Australian shepherd family and their daily lives. Many claimed that watching cartoons is their way of relieving stress. This study will explore the role that children-marketed animated cartoons can serve as a form of coping from stress in adults. Though there is a potential way this might work is through nostalgia within one's childhood.

Grace (Yu Ching) Cheng

IL - Northwestern University

Discipline: Natural and Physical Sciences

Authors:
#1 Grace (Yu Ching) Cheng

Abstract Name: SPOTs — High-Throughput Synthesis and Screening for Transition Metal Nitride Catalysts

Since the industrial revolution, the world's unprecedented population growth has led to a high demand for fertilizers derived from ammonia. However, the primary synthesis method for ammonia, the Haber-Bosch process, is the most energy-intensive industrial chemical process, responsible for 1-2% of the global energy consumption and 1.44% of the global CO2 emissions. One promising alternative is to use mixed-metal transition metal nitride catalysts, which have shown remarkable selectivity and efficiency in heterogeneous catalysis under ambient conditions. While the numerous possible metal combinations and ratios among mixed-metal nitrides can become quickly overwhelming, it lends itself well to a high-throughput approach to catalyst discovery and optimization. In this work, a high-throughput method for synthesizing and screening mixed-metal nitride catalysts under ambient conditions has been developed. To generate a library of mixed-metal precursors, a novel liquid handler — surface-patterned omniphobic tiles (SPOTs) — has been designed and created using MATLAB and a CO2 laser. The procedure was optimized by varying the concentration of the metal suspensions as well as the operating conditions of the CO2 laser. The mixed-metal precursors could then be nitrified into metal nitride catalysts using pulsed laser synthesis (PuLS), followed by catalytic performance testing utilizing electrochemical methods. PuLS is a promising technique for synthesizing metal nitrides as the successful generation of vanadium nitride in liquid nitrogen has been verified with X-ray diffraction and X-ray photoelectron spectroscopy. The optimized SPOTs procedure has been able to print metal precursors precisely and uniformly as confirmed by microscopy. The integration of SPOTs into mixed-metal nitride catalyst syntheses with PuLS under ambient pressure has enabled the discovery and optimization of catalysts and ultimately paves the way for greener ammonia production.

Naga Sukeerthi Chennakesavula

MN - University of Minnesota - Twin Cities

Discipline: Health and Human Services

Authors:
#1 Sukeerthi Chennakesavula
#2 Atsushi Asakura

Abstract Name: Assessing the Effects of a Mutated Human JAG2 gene on Muscle Stem Cell Functionality

The evolutionarily conserved Notch signaling pathway is essential for the development and maintenance of a variety of tissues. In skeletal muscle, the Notch pathway is involved in the myogenesis and self-renewal of muscle stem cells. The JAG2 gene is associated with muscular dystrophy, an inherited muscle disease; this protein product, also called JAG2, is a membrane protein that interacts with Notch1 in its intracellular domain as a ligand for Notch-mediated transcriptional activation. There are many mutations that can cause Muscular Dystrophy and understanding mutations in JAG2 more in depth will help to continue research and analysis of other mutations and diseases. The question that our research will answer is how mutations to the JAG2 gene affect muscle stem cell function and therefore aid in accomplishing our goal of understanding more about the dysfunction JAG2 mutations cause in humans. Currently, I am constructing retroviral human JAG2 expression vectors with wild-type and point mutations. To make a mutation that models the mutations of patients with muscular dystrophy, I altered the DNA sequences to cause the 243th or 728th amino acids. My research goals are to understand the function of the JAG2 gene and the dysfunction caused by mutations in muscle stem cells. The results of this study will help us achieve our goal of better understanding the dysfunction that JAG2 mutations cause in humans.

Tsu-Ming Chiang

GA - Georgia College and State University

Discipline:

Authors:
#1 Tsu-Ming Chiang
#2 Hasitha Mahabaduge
Hasitha Mahabaduge

Abstract Name: Student Research Circle - A Bottom-Up Approach to Undergraduate Research

Close mentorship between faculty and students has been linked with a plethora of positive learning outcomes. Undergraduate research (UR), senior capstones, and service learning also enhance student retention and persistence to graduation. Past research highlights UR's role in developing critical thinking, problem-solving, and communication skills, crucial for competitive employment. Employers value recent graduates with diverse perspectives and effective communication skills. The demand for graduates skilled in cross-disciplinary communication accentuates the need for interdisciplinary research. This session proposes a bottom-up approach, shifting from traditional top-down faculty-led mentoring to empowering students in research initiation. At this Public Liberal Arts university, UR is one of the designated High Impact Learning Practices (HIPs) integral to graduation. Students learn about HIPs in their first-year seminar, exploring diverse laboratories. The university supports UR by facilitating conference presentations, such as at the National Council on Undergraduate Research (NCUR). A student-initiated, multidisciplinary Student

Research Circle (SRC) emerged from this support, encompassing STEM and humanities majors with consistent mentors. This session explores SRC's student-led model, emphasizing peer mentoring and fostering a sense of belonging for student researchers. With the growing emphasis on teamwork and communication in the workplace, this initiative equips students with interpersonal and knowledge-sharing skills. These mentors will share insights into the student-led program, emphasizing its implications for peer mentoring and fostering a sense of belonging among student researchers. Recognizing the increasing prevalence of teamwork in the workplace, this session highlights the importance of interpersonal skills and effective knowledge communication through undergraduate research. The SRC model contributes to preparing students for collaborative, interdisciplinary work environments. This session aims to inspire a new cohort of researchers by highlighting a model of a student-led approach, emphasizing its impact on peer mentoring, interdisciplinary collaboration, and cultivating a supportive research community.

Adhishree Chidambaram

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Discipline: Natural and Physical Sciences

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Abstract Name: TMEM94 Haploinsufficiency Limits ER Mg2+ Uptake and Perturbs Ca2+ Cycling in Cardiomyocytes

Mg2+ and Ca2+ are the two primary divalent cations in eukaryotes. While Ca2+ and Mg2+ have distinct roles, they exhibit functional interdependence. Intracellular Mg2+ acts as a physiological antagonist of Ca2+ by controlling voltage and ligand-gated Ca2+ channels, impacting processes such as cardiomyocyte contraction. In cardiomyocytes, Ca2+ travels in repetitive and synchronized fluctuations known as Ca2+ oscillations which are crucial for coordinated heart muscle contraction. While Ca2+ has been thoroughly studied, Mg2+ and its dynamic still majorly remain a mystery. Our recent findings revealed that TMEM94 is an ER-localized Mg2+ uptake machinery. TMEM94 is a highly conserved P-type ATPase protein that contains a signature Mg2+ binding motif (GMN). Remarkably, human molecular genetic analysis revealed that mutations in TMEM94 lead to severe developmental detriments including congenital heart malformations, neurodevelopmental disorders, and facial dysmorphism. Based on preliminary data, we hypothesize that the absence of TMEM94 perturbs Ca2+ cycling in cardiomyocytes as a consequence of limited ER-Mg2+. Here we evaluated the physiological importance of TMEM94 by studying Ca2+ and Mg2+ oscillations in isolated wildtype and TMEM94 heterozygote murine primary cardiomyocytes, as well as siRNA knockdown in human induced-pluripotent stem cells derived cardiomyocytes (hiPSC-CM). TMEM94+/- cardiomyocytes exhibited high frequency in Ca2+ oscillations but failed to display synchronized Ca2+ waves as seen in WT cardiomyocytes. Further, iPSC-generated cardiomyocytes transfected with TMEM94 siRNA demonstrated the absence of Mg2+ oscillations suggesting that suppression of TMEM94-dependent ER-Mg2+ uptake likely leads to aberrant Ca2+ cycling and cardiac dysfunction.

Reese Childree

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Reese Childree

Abstract Name: Essentialist Thinking and Affirmative Action Policies in College Admissions

Affirmative action policies aid in providing equal opportunities for marginalized groups. Previous research has shown relationships between biases and attitudes towards affirmative action, which factors affect attitudes on affirmative action more heavily, and differing viewpoints of affirmative actions in various countries. However, little research has focused on the relationship between essentialist beliefs and attitudes towards affirmative action policies in the United States. This study proposes that essentialist beliefs held by an individual will affect their attitudes towards affirmative action policies in college admissions. We will recruit 100 college students from Kennesaw State University's research participant system, SONA. The study will be conducted online via Qualtrics. We will use a 9-point Likert scale to measure social essentialist beliefs on both naturalness and cohesiveness dimensions. We will conduct regression models to test the relationship between essentialist scores and support with affirmative action policies. We hypothesize that higher essentialism in individuals will lead to greater negative attitudes towards affirmative action policies in college admissions. Results from this study may broaden the research on the social consequences of essentialist beliefs towards affirmative action.

Cristina Chirvasa

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 Cristina Chirvasa
#2 Martin Holdrege
#3 Karen Beard
#4 Andrew Kulmatiski

Abstract Name: Understanding how changes in precipitation intensity will affect vegetation in the western U.S.

Precipitation events are becoming more intense as the atmosphere warms, but it remains unclear how precipitation intensification will affect plant growth in arid and semiarid ecosystems. There is conflicting evidence suggesting that larger precipitation events may either increase or decrease plant growth. Here, we report the growth responses of herbaceous and woody plants to experimental manipulations of precipitation intensity in a cold, semi-arid ecosystem in Utah, USA. In this experiment, precipitation was collected and redeposited as fewer, larger events with total annual precipitation kept constant across treatments. Results from the first two growing seasons revealed that more intense events 'pushed' water deeper into the soil, leading to an increase in woody plant growth. To provide a longer-term and more mechanistic understanding of this response, here we will be analyzing an additional two years of shrub stem radius growth, soil water content, new root growth, root area, and herbaceous plant growth. Additionally, we performed a depth-controlled water tracer experiment to describe grass, forb, and shrub rooting distributions in different treatments. Results have implications for understanding the increase in woody plant abundance around the world in the past 50 years, a phenomenon known as shrub encroachment, and for forecasting semi-arid ecosystem responses to climate change.

Raniyah Chishti

CA - Chapman University

Discipline: Natural and Physical Sciences

Authors:
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#2 Lucas Jeay-Bizot
#3 Aaron Schurger
#4 Uri Maoz

Abstract Name: Investigating the Causal Role of the Motor Cortex on the Coupling of Breathing and Volition

Do physiological signals play a role in movement-onset? Previous research suggests the initiation of a movement in humans is coupled with their phase of respiration, with movement more likely to be initiated during the expiration stage of breathing. Following that research, our study has two goals. First, we aim to replicate these previous results. Second, we would like to investigate the neural sources of this coupling between respiration phase and movement onset. We simultaneously used theta-burst stimulation (TBS; repeatedly stimulating using a focal magnetic field, a brain region to lower excitability temporarily) and respirometry (the measurement of respiration). Using TBS, we disrupted the neural sources of the brain's electroencephalographic signals associated with movement initiation and analyzed whether the expected respiration cycles remained consistent after this disruption. We applied TBS to the primary motor cortex (M1) and the supplementary motor cortex (SMA) in 15 participants, who completed 100 trials of a standard self-initiated movement task (i.e., the Libet task) before and after stimulation.We successfully replicated the coupling phenomenon, though the phase of breathing-action coupling was not as strong in our study (suggesting a lower effect size). We also found a trending effect of the region of TBS breathing-action coupling (p < 0.05). We plan to gather more participants to solidify the effect of the TBS target on the breathing-action coupling.

Jazmine Chism

CA - University of California - Los Angeles

Discipline: Health and Human Services

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#2 Lara Cushing

Abstract Name: Environmental Racism at the Heart of Extraction: Chemical Usage in LA County Oil Fields with Respect to Community Demographics

Los Angeles has a long history of oil extraction that has been linked to segregation and redlining. Oil fields like Inglewood, Beverly, and Cheviot Hills have been extracting resources for nearly a century. However, residents living near these oil fields have different sociodemographic circumstances that may affect oil extraction practices and contribute to environmental racism. Oil extraction uses chemicals in well maintenance and stimulation that maintain the integrity of the well and promote oil extraction. Some of these chemicals are known to be hazardous to human health. To evaluate the correlation between sociodemographics and chemical usage in LA County oil fields, I will construct Geographic Information Systems (GIS) generated maps using R to analyze the sociodemographic distribution of oil field adjacent residents and the chemical distribution of LA County Oil Fields. I will evaluate the South Coast Air Quality Monitoring District (SCAQMD) chemical usage from 2015 to 2019 based on chemicals per oil field event. I will utilize statistical tests to argue if chemical usage in oil fields adjacent to lower-income BIPOC communities will be higher than in more affluent white neighborhoods. This research will be essential for environmental epidemiology as LA County plans to phase out oil extraction by 2042. The county must

efficiently clean oil operations to ensure LA communities that have experienced environmental racism are treated equitably.

Victoria Chizuk

NY - SUNY Geneseo

Discipline: Humanities

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#2 Susana Castillo-Rodriguez

Abstract Name: Linguistics and Belonging: Exploring Gender Inclusive Language for Non-Binary Identities in Spanish

In English, gender-inclusive language has been adopted relatively quickly, while in other languages, like Spanish, an attempt to be inclusive usually collides with confusion and conflict, both socially and grammatically. New expressions of gender and gender identities are gaining recognition and acceptance by many communities around the globe, however not all languages are built equal regarding the linguistic rights and visibility of non-binary people. In the way that language reflects society, the words we use about gender-nonconforming people can shape their sense of belonging, as well as other people's perspectives. This can be difficult for languages like Spanish that at their core rely on a gendered perspective, and require new ideas for encouraging inclusivity. Based on the review of the theory, literature, and institutional programs, I will present the outcomes of my research by taking into consideration the needs of non-binary Spanish speakers and their linguistic rights. In this paper, first, I aim to identify and explain what exactly is gender-inclusive language and which arguments support or oppose it. Second, I will analyze what strategies and programs Spanish-speaking countries have enacted up to now. Finally, I will make recommendations on how gender-inclusive language can be promoted within these Spanish-speaking communities. I had the opportunity to spend a semester learning Spanish in Latin America, where I met a non-binary Spanish speaker. Throughout the time I spent with them, I observed their interactions with others, and despite it being provided, few people seemed to respect their preferred subject pronoun. It is important for people to feel like they have a place in their own language, and moreover their community. By educating others on the importance of gender-inclusivity in all languages, we can make our society more inclusive and change the way it views non-binary people.

Cecelia Chmelik

MN - Hamline University

Discipline: Natural and Physical Sciences

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#2 Aurora Anderson

Abstract Name: To What Extent Does Gene Flow Occur Among Earthworm Populations?

Earthworms are not native to Minnesota, but are now common across the state. Earthworm feeding diminishes the duff layer of forest floors and alters soil conditions in ways that can be detrimental to the growth of native plants. While now widespread, little is known about the extent to which earthworms naturally disperse. To investigate this, we sampled earthworms from areas of differing distances apart in

Itasca State Park (in northwestern Minnesota), and used allozymes to genetically analyze individuals to assess the extent of gene flow among populations. Gene flow is an important process promoting genetic diversity in populations from migration of individuals and introduction of alleles among populations. Populations with greater genetic variation are more resilient to environmental/ecological change. Typically, populations further apart or isolated from each other by a physical barrier experience less gene flow. We sampled earthworms from plots at various distances along a 16 m transect, and from at two other sites several km away (one near the shore of a lake, and one on an island within the lake), and assayed the worms for two allozyme loci. Allele frequencies were used to calculate genetic distances among areas sampled. Consistent with expectations, the island population was the least genetically diverse and the most genetically distant from the other sites. 'Populations' sampled along the 16 m transect differed from each other somewhat, but not to the extent that they did to the two other populations (lakeshore and island). These results imply that dispersal and gene flow maintains relative genetic homogeneity at distances within 16 m, but that genetic differentiation occurs at further-spaced distances, especially when physical barriers inhibit dispersal (e.g. mainland vs. island). Future research will extend the transect sampling to try to determine the geographic distance at which earthworm populations become distinct from each other.

Seoeun (Katie) Cho

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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#2 Paul (Seung Yup) Lee

Abstract Name: Low-Cost Shortwave-Infrared Spectroscopy (SWIRS) for Stroke Risk Screening in Pediatric Sickle Cell Disease: Computational Study

Sickle cell disease (SCD) has a profound effect on the brain. In sub-Saharan Africa, where most SCD patients (~75%) live, access to medical care is limited and ~11% of SCD children will develop a stroke by the age of 20. Although early identification is critical to treatment, transcranial doppler ultrasound (TCD), the standard screening tool, is not widely available due to its high cost and need of trained personnel. Speckle contrast optical spectroscopy (SCOS) may provide a user-friendly and cost-effective solution to this unmet need. SCOS is an emerging optical technique that can quantify blood flow in deep tissues at an inexpensive instrumental cost. However, the technique suffers from insufficient signal-to-noise ratio (SNR) and the detected signals are significantly contaminated. Therefore, we propose SCOS operating in the shortwave infrared (SWIR, 900-1700nm) region rather than its traditional near-infrared (NIR, 700-900nm) light source for enhanced depth penetration. To investigate the feasibility of SWIR SCOS, we performed computational verifications to compare against the NIR SCOS system. Both wavelengths were simulated with Monte Carlo Simulation MC Extreme (MCX) onto a two-slab layered model mimicking scalp-skull, and brain layers. The results indicated that SCOS data at 1064nm with an added noise model was less noisy compared to SCOS data at 785nm, and had more photons detected. The overall estimation accuracy of estimating blood flow for 1064nm SCOS was also higher than 785nm SCOS. These initial results give a basis for developing a more realistic MRI-based human head atlas model. As a next step, we will set up a benchtop SCOS system for experimental verification and initiate the design of a low-cost prototype based on these results.

Hannah Cho

CA - Santa Ana College

Discipline: Mathematics and Computer Science

Authors:
#1 Hannah Cho

Abstract Name: Physics Informed Neural Network for Solving the Shallow Water Equations on Grids of Arbitrary Geometry

Many physical phenomena exhibit wave behavior, including fluids, acoustics, and electromagnetics. When simulating wave behavior, one difficulty that is often encountered is wave reflections, which can lead to numerical oscillations, especially on grids with complex geometries. In this research, we investigated if a neural network can accurately model wave behavior when extensive reflections are involved. If proven true, such a neural network would be very useful, as neural networks are amongst the fastest techniques for solving mathematical models. To test this idea, we trained a neural network to simulate the shallow water equations on a grid where the right boundary is fitted to a 5-point, 8-point, or 11-point spline. The simulation scenario called for a wave to be given an initial velocity in the right direction, causing it to impinge upon and then reflect off of the right boundary. To make the task even more difficult, we allowed the initial wave location to be a random point on the grid. Our training methodology involved both supervised learning with sample data points and unsupervised learning with the residuals of the shallow water equations acting as a loss function. Throughout the course of five experiments, the neural network learned to model wave reflection with a mean squared error of 9.7797E-06 for the simplest scenario and 1.6595E-05 for the most complex scenario. We have proven that a neural network is capable of learning wave behavior with reflections, with applications in computational acoustics to the modeling detonation wave reflection.

Kaylin Choe

CA - University of California - Santa Barbara

Discipline: Health and Human Services

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#2 James Harber

Abstract Name: An Oral Microbiome Portable Analysis Device, LifeSmile, Can Indicate Symbiosis or Dysbiosis Using CRISPR-Cas12a and CANTRIP in a Two-color Bacterial Abundance Ratio Readout

Keystone bacteria within an oral microbiome can be indicators of gum health and diseases. Preterm labor, cardiovascular disease, cancers, and neurodegenerative illness are tied to two keystone species. The LifeSmile, an oral microbiome diagnostic device, is designed to rapidly generate an “abundance ratio” of the number of Fusobacterium nucleatum, an anaerobe to Streptococcus sanguinis, its facultative partner bacteria. Tooth microbiomes collected from individuals with Next Generation Sequencing (Nextgen) surprisingly had easily measurable levels of the abundance ratio. Nextgen sequencing is not a portable or rapid method. Previously the LifeSmile technology approached the problem of determining the abundance ratio with DNA extraction, LAMP, and CRISPR-Cas12a with two offsite color FRET targets. This portable, palm-sized device, displayed the abundance ratio, indicating positive dysbiosis. We hypothesize that a new compatible technology, CRISPR-Cas12a and Activated Nuclease poly-T Reporter Illuminating Particles (CANTRIP) could be run in parallel in the same reaction, giving two individuals signals (Fusobacterium on CANTRIP red fluorescence channel and Streptococcus on green fluorescence Cas12a offsite cleavage target). The addition of CANTRIP as a second signaling detection assay is hypothesized to serve as a faster, more efficient method to generate the keystone bacteria ratio due to its dual detection system from combined enzymes (CAS12a and terminal deoxynucleotidyl transferase TdT), which generate easily visible green fluorescence and red copper dual signals. The LifeSmile, a project developed by student researchers, is envisioned to be a robust point of care oral healthcare diagnostic device to provide patients with on demand, preventative assessment of oral symbiosis or dysbiosis.

Jayoung Choi

GA - Kennesaw State University

Discipline:

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Abstract Name: Pathways to Undergraduate Research Success: Voices from a Qualitative Researcher and Mentees in Educational Research

The benefits of undergraduate research embedded in courses for academic excellence is well known. However, mentors' and mentees' experiences with qualitative education research, which typically has challenges involving undergraduate researchers, is scarcely researched. My presentation has two foci. First, I will share my insights gained through mentoring undergraduate researchers from diverse disciplines on my interconnected research, Supporting Multilingual Learners and Their Teachers, Parents, and Communities (MLTPC) at a public R2 university. I will present my mentoring strategies by qualitatively analyzing materials that I have developed and reflections that I have kept for the last two years. Second, I will examine experiences of 10 undergraduate researchers who have engaged with me on the MLTPC project. I will qualitatively analyze their research logs, which include their reflections, conversations in meeting recordings, and other pertinent artifacts produced by them. Furthermore, three of the students as co-presenters will reflect on their research experiences with me from their own perspectives. Individual and focus group interviews will be conducted to generate the focal students' voices in the research process. Preliminary findings of the data sources will likely include students' deepened connections with their own immigrant parents through the research and increased critical understanding about linguistically minoritized populations in their country of origin and in the U.S. The students will also draw connections between their experiences in educational research and potential contributions to their fields. The mentees and I, the mentor, will also share what has worked and what has not, which will have implications for future directions. This presentation will be beneficial to all students, faculty, and/or staff involved in undergraduate research. It will particularly be inspiring for mentors who conduct small-scale qualitative research in fields known as soft sciences and who do not have much experience with undergraduate research mentorship.

Miso Choi

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

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Henry Berger

Abstract Name: Predicting Social Anxiety Symptoms: Examining the Varied Impact of Brooding and Self-Reflection

Brooding and self-reflection are interrelated rumination processes, but they are distinct constructs. Brooding (or rumination) refers to repetitive, negative thoughts, which do not help generate a solution for a given problem. In contrast, self-reflection involves acknowledging strengths and weaknesses, and learning from mistakes and is generally a growth-oriented process. However, there is little research on whether the two

different rumination styles are associated with social anxiety disorder (SAD). This research aimed to examine whether brooding and self-reflection predict various aspects of social anxiety symptoms after controlling for demographic features and general emotional distress. As a part of a larger clinical outcome study, participants underwent a diagnostic interview and were divided into two groups based on their SAD diagnostic status: social anxiety disorder and non-socially anxious. All participants completed the Rumination-Reflection Questionnaire, which assesses brooding and self-reflection. Additionally, measures of social anxiety-related symptoms were assessed, including overall fear and avoidance of social situations (LSAS-SR), fear of evaluative situations (BFNE), and negative interpretations of social situations (ASC). Results of hierarchical regression analysis showed that brooding and self-reflection were significant predictors of social anxiety symptoms in the non-socially anxious group, particularly cognitive symptoms such as fear and concern about negative evaluation. However, brooding and self-reflection style did not predict social anxiety symptoms among those diagnosed with social anxiety disorder. These findings indicate that for those who are developing social anxiety symptoms, self-reflection may function as a protective factor whereas brooding may serve as a risk factor. Further research is warranted.

Jena Choi

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Chemical and Optical Characterization of Produced Water from the Permian Basin Oil Field

Oil field-produced water is generally a mixture of petroleum, dissolved organic matter, rare metals, and contaminants. For recycling and metal recovery, knowledge about the chemical matrix of this produced water is indispensable. Forty samples were collected from the largest US petroleum basin and analyzed for major ions, dissolved organic carbon (DOC), and chromophoric and fluorescence dissolved organic matter (CDOM and FDOM). Concentrations of major ions (mg/L) ranged from 4,101-63,953(average 17,490±14,338) for Na+, 920.4-11,334.9 (4,054±2300) for Ca+2, 57.6-719.2 (403±184) for K+, and 128-1850 (689±421) for Mg+2, surpassing those of Na+ and Ca+2 in seawater and similar for K+ and Mg+2. Molar ratios of Mg+2/Ca+2 ranged from 0.21-0.56 (average 0.28±0.06), which are much lower than those in contemporary seawater (4.9-5.3). Concentrations of DOC ranged from 7.6-96.5ppm (average of 38.3 ± 23.3ppm), while CDOM (absorption coefficient at 254nm, a254) varied from 59.72-480.1m-1 with an average of 156.2±97.1m-1. There exists no significant correlation between DOC and CDOM, indicating that this produced water contained different sourced DOM. Specific-UV-absorbance at 254nm (SUVA254), an indicator of aromaticity, ranged from 0.0027-0.0933 L/mg-C/m, with an average of 0.024±0.019L/mg-C/m. Spectral slope (S275-295), inversely correlated with molecular weight, varied from 0.0013 to 0.0604nm-1. Parallel-factor analysis (PARAFAC) on fluorescence-EEM identified 4 major fluorescent components: three protein-like or oil-like (C1, C3, C4) and one terrestrial humic-like (C2). Fluorescence-index (FIX), humification-index (HIX), and biological-index (BIX) varied widely, indicating diverse DOM sources (terrestrial, microbial and oil), consistent with the poor correlation observed between DOC and CDOM. Our results provide an improved understanding of sources and properties of oil field-produced water and scientific bases for better disposal, recycling, and metal recovery.

Ella Chorlton

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

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Abstract Name: Impacts of diapause on blood-feeding behavior and fecundity of the invasive Asian tiger mosquito, Aedes albopictus

The Asian Tiger Mosquito, Aedes albopictus, is a public health threat because it transmits mosquito-borne pathogens (MBP), exhibits aggressive diurnal biting, and is highly invasive. MBP are transmitted by the bite of an infected female mosquito during blood-feeding. The invasion of Ae. albopictus in temperate regions can be attributed to the survival of eggs in cold conditions through a slowed metabolic state known as diapause. Diapause is induced by shortened photoperiods, after which females lay diapause eggs that are cold and desiccant-resistant. These eggs require greater metabolic resources. Given the greater metabolic requirements and biological differences of diapause eggs, this study was designed to evaluate how blood-feeding behaviors differ between non-diapause and diapause-induced female Ae. albopictus from a colony of mosquitoes that originated in Illinois, USA. We reasoned that increased resource demands placed on females preparing to lay diapause eggs could prompt an increase in feeding events, contributing to greater pathogen transmission potential. Non-diapause (27℃, 85% RH, 16:8 L:D) and diapause-induced (21℃, 80% RH, 8:16 L:D) Ae. albopictus adults were offered a blood meal and allowed to feed for 45 minutes. Feeding was videoed and the number of feedings and engorgement were recorded at five-minute intervals. Using Tracktor software, videos were analyzed to quantify the total time spent feeding in each trial. Non-blood-fed control and post-blood-fed mosquitoes were cold anesthetized, weights and wing measurements were recorded. After blood-feeding, female mosquitoes were provided with paper as an egg-laying substrate for seven days. The papers were photographed and the eggs were counted. The data suggest that inducing diapause changes blood-feeding behaviors, which could have implications for seasonal risk of pathogen transmission by Ae. albopictus in temperate regions.

Rashda Choudhary

VA - George Mason University

Discipline: Social Sciences

Authors:
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Abstract Name: The extent to which creative art interventions can help mitigate symptoms of anxiety in adolescents with a focus on generalized anxiety disorder and social anxiety disorder

In this systemic review, the central questions are (1) to identify literature concerning effectiveness research on creative arts expression on adolescents with social anxiety and generalized anxiety disorder, (2) to review the results of this research, and (3) to draw conclusions on the effectiveness of creative arts expression in the treatment of anxiety levels in adolescents. The review reports the extent to which art therapy and creative art interventions can help mitigate symptoms of anxiety in adolescents with a focus of diagnosis of social anxiety disorder and generalized anxiety disorder.To access the effects that creative art interventions can have on anxiety levels a cross sectional quasi-experimental design was implemented in order to compare the mitigating effects that creative art interventions can have on an adolescent's anxiety levels. Additionally, a pretest and posttest design were also implemented into order to compare participants anxiety levels before and after the creative art intervention. A separate analysis on adolescents with generalized anxiety disorder and social anxiety disorder was also completed within the same study.It was concluded that adolescent's

anxiety levels did decrease as a result of the creative art intervention. It was further concluded that adolescents with generalized anxiety disorder and social anxiety disorder had even more decreased levels of post anxiety scores.

Nilay Roy Choudhury

AL - University of Alabama

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Natural Language Navigation for Robotic Systems: Integrating GPT and Dense Captioning Models with Object Detection in Autonomous Inspections

Autonomous Unmanned Aerial Vehicles (UAVs) are rapidly transforming industries requiring inspection and surveillance. However, conventional UAV systems often require complex control schemes and lack adaptability, limiting their efficacy in variable environments such as indoor inspections. This paper introduces an innovative system integrating the cutting-edge Generative Pretrained Transformer (GPT) models and dense captioning models for autonomous navigation and fault detection in indoor environments. Our approach, displaying human-like flexibility, allows the drone to interpret and respond to natural language commands, vastly enhancing its accessibility and user-friendliness. Simultaneously, the drone utilizes object dictionaries derived from dense captioning of its captured images, facilitating an advanced understanding of its surroundings. These capabilities equip the drone to adapt its behavior and effectively handle unexpected scenarios, significantly enhancing the efficiency and accuracy of indoor inspections. This research contributes to revolutionizing building inspections, making the process more user-friendly, and localizable to a broader user base.

Luke Christensen

TX - The University of Texas - Permian Basin

Discipline: Social Sciences

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Abstract Name: Psychological Factors, Social Factors, and Potential Barriers Related to the Non-Use of University Writing Services

Our current research seeks to inform the ongoing development of first-year academic intervention at the University of Texas Permian Basin and add to the larger body of research regarding use of tutorial services. Our university is a public 4-year Hispanic-serving institution in a small southwestern city. Writing centers have often struggled with extreme underuse of their services, especially within academically at-risk populations. The factors contributing to this under usage is an oversight within composition and writing center studies. Looking at the psychological and social factors, and potential barriers involved within non-use

of writing tutorial services can help to increase their utilization. As writing consultations correlate with student success outcomes, understanding these factors can help improve first year retention, reduce academic probation cases, and increase graduation rates. Our research will take the first step in accomplishing this by collecting both qualitative and quantitative data on undergraduate students. Quantitative self-report data will be collected on writerly self-efficacy, academic help-seeking behavior, student self-determination, writing apprehension, self-stigma, accessibility, service satisfaction, awareness of services, and academic motivation via a survey. Additionally, differences in native language, socioeconomic status, first-generation status, and other demographic variables will be examined. Focus groups will collect qualitative data concurrently to supplement the survey with practical examples of student experience and discover potential unseen factors. The researchers are all previous or current student mentors, writing tutors or supplemental instructors within the university's student Success Center. The current study has a recruitment goal of 180 undergraduate participants at the University of Texas Permian Basin. Special emphasis for recruitment will focus on non-users, specifically those in their first or second year of university, and those in remedial English classes. Data collection will be complete by March 2024.

Emily Christensen

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
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Ariana Vogel
Mackenzie Martin

Abstract Name: Exploratory Study of UWEC/UWEC-BC Students in Recovery

This exploratory study builds on earlier research conducted in 2020 by Dr. Aaron Willis at Salisbury University. The present study was created to build off the findings from three years ago and begin the process of understanding the unique needs of UWEC/UWEC-BC students who identify as being in recovery from drugs or alcohol. The purpose of this study is to estimate the number of UWEC/UWEC-BC students who identify as being in recovery from substance misuse and if they would benefit from having recovery-related resources available on campus. An online anonymous survey through Qualtrics was used to gather results. An email was sent campus-wide and included the study information and a link to the survey. Posters with the same criteria were posted around popular campus buildings as well. The survey is still open and we have not analyzed the current results yet. The findings from the previous study indicated that 16.4% of Salsibury students identify as being a person in recovery from drugs and/or alcohol. The 2020 study also concluded that only 25.6% of Salisbury students believe that there are adequate resources available at Salisbury University for people in recovery. The anticipated results would support the previous findings. We expect there to be concerns regarding recovery-related services on the UWEC/UWEC-BC campuses. The upcoming results will either confirm or contradict with the previous study’s findings. Depending on the findings, there may need to be some changes in the way the University of Wisconsin-Eau Claire approaches support and services for those in recovery.

Jacob Christensen

AZ - Embry-Riddle Aeronautical University

Discipline: Engineering and Architecture

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Abstract Name: Analyzing Security on IoT-based IP Camera Systems

With millions of devices connected in cyberspace, attackers now have many opportunities to exploit Internet of Things (IoT) systems. Most IoT vendors do not consider implementing security mechanisms in the devices that they produce, whether it be due to cost or resource restrictions.Threat modeling systematically identifies possible attack vectors against a system or device and then prioritizes the issues based on their severity. Once the system is implemented, vulnerability assessments are done periodically to identify potential exploits or weaknesses in a system. The result of the process allows cybersecurity experts to propose solutions that can mitigate these risks. The purpose of this project is to use forensics methodologies that are normally used in information technology (IT) enterprise intranets, in the context of IoT systems.Surveillance camera systems are now considered to be IoT-based due to the possibility of integrating cameras over an internet or local area network. This project presents a test implementation of an IoT-based camera system using open-source technologies and protocols commonly implemented in commercial solutions. The prototype monitors a given area in a remote location using servo motors that are connected to Raspberry Pis to support pan and tilt (PT) functionality for the cameras. In this project, we use OWASP's Risk Rating Methodology to identify and rate the likelihood and technical impacts of potential risks on our IoT surveillance network. We used well-known and trusted vulnerability assessment tools to assess vulnerabilities in our implementation of the system. Based on the results of the vulnerability assessment, we performed a series of attacks on the system to compromise the confidentiality, integrity, and availability of the system and data. Using forensics methodologies, we collected and analyzed data including logs and network traffic to identify who performed the attacks, how they were conducted, and what data, if any, was compromised.

William Christian

GA - Morehouse College

Discipline: Social Sciences

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Abstract Name: The Cognitive Effects of Birding as A Recreational Activity on Mood, Stress, and Anxiety

Participating in birding results in a decrease of stress and feelings of anxiety within individuals as well as an increase in the rate of experiencing a positive mood. To test this hypothesis, the researcher designed a quasi-experimental study which administers a survey which analyzes the mood, stress levels, and anxiety levels of both birders and non-birders in the form of a birdwalk. At the conclusion of the birdwalk, the participants completed a post-test in the form of the same survey as the pre-test minus the demographics' assessment. The data was analyzed using a related samples T-test. The birdwalk did not have a significant difference on the moods, and stress levels of the participants. Due to the small size of the data set used in this study, the findings of this study are not necessarily accurate. This procedure needs to be replicated and repeated more times to provide more reliable findings in response to this research question.

Megan Christian

WI - Carthage College

Discipline: Social Sciences

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Abstract Name: The Influence and Impact of Content Creation in Public Relations: Influencers, Consumers, and Brands

Content creation has become one of the most powerful forms of communication in our current era of digitalization and media. It is essential to understand content creation's impact within public relations, as it is an entirely new way of connecting with people, particularly when it comes to our existing environment. Content has the ability to convey messages, which bolsters engagement with publics and stakeholders and overall helps to maintain brand image and reputation. When creating content, creators have the ability to tell a story, which has proven to be much more engaging in video form as opposed to other forms of media such as text or advertisement banners. Short-form content such as TikTok videos has the ability to foster a strong and reputable relationship with viewers, in turn creating a positive brand image.

Kyle Christy

UT - University of Utah

Discipline: Natural and Physical Sciences

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Abstract Name: Predisposition Gene Identification for Obesity-Associated Melanoma

The potential links between various cancers and severe obesity (BMI≥35 kg/m2) have long been investigated. Previous studies of the heritability of both obesity and melanoma independently suggest that the genetic components outweigh the environmental components. Utilizing a unique approach with rare resources, potential rare, shared coding variants to likely predispose individuals to both melanoma and obesity were identified. Currently, Genetic Epidemiology has 400 melanoma cases with whole exome sequence (WES) data with some in pedigrees. 30 of these cases also have severe obesity. The sequence data of cousin pairs with both melanoma and BMI≥33 was analyzed to generate a list of 120 candidate variants. All cousins belonged to high-risk melanoma pedigrees that were identified using Utah genealogy data that has been tied to multiple public and medical records. Using the data of other family members with both melanoma and obesity where available segregation was assessed. The association of each candidate variant with obesity and melanoma was assessed through previous Genetic Epidemiology predisposition studies, Ingenuity, and UK Biobank. 2 variants in genes POMC and KLHL29 were carried together in one other affected individual in the same family. Both the POMC and KLHL29 genes have been independently associated with melanoma and obesity separately. Taking this unique approach has identified several candidate predisposition variants for both obesity and melanoma including the POMC and KLHL29 variants that segregated with both obesity and melanoma in the pedigree it was observed.

Phoebe Ellin Chua

PA - Drexel University

Discipline: Natural and Physical Sciences

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Abstract Name: Tuning Drug Release from PLGA Particles

Nanoparticles have been used in various biomedical applications including drug delivery. Particle size influences critical factors such as cellular uptake and drug release. However, the current laboratory protocol for poly(lactic-co-glycolic acid) (PLGA) particle synthesis yields a broad particle size distribution, leading to inconsistent results. Here we developed a protocol to isolate particles of various sizes and assessed the relation between particle size and its drug release kinetics. Particles were synthesized using the double emulsion method and separated by size via centrifugation. Using Dynamic Light Scattering (DLS), we verified that particles were separated into 50 nm increments using the newly developed method. Preliminary data show that smaller particles display a higher drug release at early timepoints than larger particles. In addition, we also observed that same-size particles with higher Molecular Weight (MW) exhibit a slower drug release. These findings improve particle synthesis and expand our ability to tune particle properties. We are currently investigating the effect of particle size, and therefore drug release kinetics, in macrophage phenotype using Drug 1, a potent anti-inflammatory drug as the cargo.

Alexis Chua

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

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Abstract Name: Worms like Coffee too: Mapping the Sensorimotor Circuits That Coordinate Coffee Sensation

The coffee industry reaches over 80 billion US dollars in revenue partially due to the numerous chemicals that allow for coffee's highly attractive aroma and flavor. Many people integrate coffee into their everyday routine; therefore, understanding why people are attracted to coffee can allow us to 1) characterize its attractive nature and 2) better understand how humans interpret a complex smell and taste on a molecular and cellular level. Although many are coffee consumers, the mechanism and characterization of coffee attraction have yet to be fully understood. We report that the model worm, C. elegans, with only 302 neurons, can smell and perform strong attraction behavior towards various coffee types. Using the model worm, we have identified worms to be strongly attracted to coffee. We have also characterized the neural architecture that drives this sensori-motor behavior. Ultimately, we provide a platform to thoroughly understand the mechanisms and future neuronal circuits that mediate sensory-guided behavior to a complex human-sensed stimulus

Krishna Chunduri

CA - Aspiring Scholars Directed Research Program

Discipline: Natural and Physical Sciences

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Vishnu Srinivas

Abstract Name: Jet Optimization Using a Hybrid Multivariate Regression Model and Statistical Methods in Dimuon Collisions

Heavy ion collisions, in this case, muons, result in jets and noise. Jets are crucial event-shaped observable objects that are used in high-energy particle physics, i.e., they are one of the many objective variables that we can measure to determine the properties of a collision. However, many ionic collisions result in large amounts of noise, taking away from the jets' energy, increasing the energy lost, and thus reducing the efficiency of collisions with heavy ions. Our focus is specialized to dimuon collisions and improving the efficiency of said collisions. The purpose of our study is to analyze the relationships between properties of muons in a dimuon collision to optimize conditions of dimuon collisions and minimize the noise lost. We used principles of Newtonian mechanics and their use cases at the particle level, allowing us to further analyze and conjecture different models and equations. Tools we used were simple Python algorithms as well as linear regression models with tools such as sci-kit Learn, NumPy, and Pandas (1 & 2). Our hypothesis: the invariant mass, the energy, and the resultant momentum vector play a large role in determining the noise in a dimuon collision. If we constrain these inputs optimally, there will be scenarios in which the noise of the heavy-ion collision is minimized.

Michelle Chung

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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Abstract Name: Association Between Area Deprivation Index and Outcomes After Subarachnoid Hemorrhage

Subarachnoid hemorrhage (SAH), a type of life-threatening hemorrhagic stroke caused by bleeding in the arachnoid space of the brain, often results in long-term disabilities and poor quality of life (QOL). Individuals living in more advantaged neighborhoods report higher levels of QOL post-stroke, but little has been reported about QOL and neighborhood data after SAH. This study examined the relationship between neighborhood data using the area deprivation index (ADI), measures of functional outcomes, and QOL at 3- and 12-months after SAH at a single stroke center. General outcome was assessed using modified Rankin scale (mRS), where 0 is no deficit and 6 is death. Physical QOL (PCS) was assessed using 20 items of the 36-item short form survey (sf36). The ADI was obtained using the University of Wisconsin School of Medicine

Neighborhood Atlas and patient zip codes, where higher scores indicate increased deprivation. Demographic and clinical data was obtained from the patient, chart, or caregiver.Outcomes were obtained by interviews with the patient or caregiver. A retrospective analysis of 215 SAH patients (mean age 54 years, 76% female, 84% white) used logistic and linear regression models to examine ADI measures (state decile, national percentile) and outcome variables controlling for stroke severity, age, race, and gender. Significant relationships were identified between ADI measures and PCS at both 3 and 12 months after SAH. For each one unit increase in ADI, the change in 3 month PCS was -3.711 (p<0.001). For each one unit increase in ADI, the change in 12 month PCS was -4.364 (p<0.001). There was no relationship between ADI measures and MRS at 3 or 12 months.This analysis suggests that individuals from areas of higher deprivation report poorer physical QOL as measured by the sf36. Targeted interventions for patients in areas of higher deprivation warrant investigation.

Kaitlin Cirillo

NC - Elon University

Discipline: Natural and Physical Sciences

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Abstract Name: The Impact of Exercise on ADHD Phenotypes in Zebrafish

Diagnoses and prescriptions for attention deficit hyperactivity disorder (ADHD), a human disorder prevalent in children, have increased dramatically in the last decade for unknown reasons. Currently, medication is the most common treatment for ADHD, and the most commonly prescribed medication, methylphenidate, is a stimulant with many adverse effects. However, some studies show that exercise is beneficial in managing signs and symptoms of ADHD, both in addition to and instead of medication, depending on the severity of ADHD. This research used zebrafish as the model organism to examine the effects of lead and exercise on a behavioral variable to measure ADHD severity due to their gene conservation and easily monitored behavior patterns. To conduct this research, a swim tunnel was constructed to exercise the zebrafish for 30 minutes daily for 10 consecutive days to represent chronic exercise. The behavioral variable, thigmotaxis, is the percentage of time spent on the outer edge of a petri dish. Thigmotaxis data was collected from video recording fish from above after interventions were implemented, including lead exposure at 1 milligram per liter to induce ADHD-like behaviors as well as exercise to combat them. The values for thigmotaxis of all the fish in three groups (control, exercised, lead-exposed) were averaged and the percentages from each intervention were compared using ANOVA analysis, followed by paired t-tests when statistically significant. Analysis revealed decreased thigmotaxis with lead exposure compared to control and exercise groups, both in the acclimation period ($p = 3.7 \times 10\text{-}3$) and the thigmotaxic period ($p = 1.3 \times 10\text{-}5$). No significant differences in thigmotaxis were observed in either the first minute or the last minute across groups or within any particular group.

Lavender Cisneros

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
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Abstract Name: The Role of Nursing in Preventing Ventilator-Acquired Pneumonia Through Oral Care: An Evidence-Based Project

Abstract:Objective. This work undergraduate project sought to evaluate the potential impact of nurse-led oral hygiene practices on the incidence and outcomes of ventilator-acquired pneumonia (VAP) in adults in the intensive care setting.Background. Despite the availability of guidelines and protocols, there is a lack of consistency and adherence among nurses in performing oral care. This project attempts to address this issue by identifying possible barriers to oral hygiene practices and proposing strategies for improvement. It provides a comprehensive review of the evidence on the effectiveness of performing oral hygiene and its impact on VAP incidence and outcomes.Methods. This evidence-based project answered the question of "What role do nursing-led oral hygiene practices impact the incidence and outcomes of ventilator-associated pneumonia in intensive care units?" The databases utilized were from the University of Central Oklahoma Chambers Library using keywords about the topic. With many of the barriers being lack of education, accountability, and inadequate technique, a solution of enrollment of competencies, skills review, proper documentation, and follow-up surveys will be utilized as preventative measures. Conclusion. The results of this project are based on the literature and indicate that when oral hygiene is performed consistently and correctly, the incidence and outcomes of VAP in ICUs will be significantly reduced. Some barriers to implementation by the staff include lack of knowledge, lack of training, time constraints, and lack of readily available resources. The findings from this project will be used to influence evidence-based guidelines, create standardized oral assessments and documentation, enhance education and communication among staff, and propose further research to close any gaps in the literature. Overall, the goal is to improve the quality of care and outcomes for ventilated patients in ICUs.Key words. critical care, mechanically ventilated adults, nurse education, oral care, oral hygiene, compliance, ventilator-acquired pneumonia.

Lauren Claas

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Discipline: Natural and Physical Sciences

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Abstract Name: Locating a Mass Execution Trench From The Holocaust/Shoah: Subsurface Imaging Within a Coastal Dune System, Šķēde, Latvia

Unmarked graves within conflict zones have been a prevalent occurrence in all parts of the world. In the present day, the precise locations of many of these burial sites' remain uninvestigated. One such site is in Šķēde, Latvia, where 2,700 women and adolescent Jewish residents were killed by Einsatzgruppen Group A and complicit Latvian collaborators during the Jewish Holocaust in 1941. The goal of the research is to utilize ground-penetrating radar (GPR), a geophysical tool that can image the subsurface, to aid in locating one of the trenches depicted in the 1945 Polish Commission Report. According to archival photos of the execution, the Jewish citizens were shot and fell into a trench dug parallel to the Baltic Sea. Data was collected using a Sensors and Software_ pulseEKKO® GPR Pro system with an antennae frequency of 500 Megahertz (MHz). Traces were collected every 0.02m triggered by an odometer wheel. Lines within the grid were collected

0.25m apart. Three grids were collected in the summer of 2023, with the primary focus of the project interpreting the northernmost grid measuring 14x15m. The grid was collected behind an established foredune, in an area of continuous low herbaceous vegetation. Within the grid, an elongated depression is apparent on the surface, evident of anthropogenic influence.The lines within the grid were collected towards the east, while the elongated depression was oriented north and south, parallel to the shoreline. On the profile, reflections depict dipping starting on the 9 meter mark on the y axis. Dipping reflections can be seen bordering both sides of the elongated depression declining inwards. The disturbance within the stratigraphy appears to be human influenced. With that, and what has been documented in historical imagery, it can be insinuated that the elongated depression is associated with the Šķēde executions.

Julie Clampitt

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
#1 Julie Clampitt

Abstract Name: Emma

Created from a found object (a porcelain doll), a microcontroller connected to a speaker and a proximity sensor, and an original sound file, Emma is an interactive sound sculpture designed to express how my mind felt during my recent struggles with anxiety and grief—that seemingly unending feeling of dread, the sadness, and the inability to think clearly inspired this piece. The sound used is from an original composition made using VCV Rack. That composition was then edited in Adobe Audition until it became a sound that felt like it could have been the soundtrack to my experience with dealing with grief. I chose to use a doll because dolls usually evoke thoughts of childhood; however, this doll has a haunted air and a darkness accentuated by the sound that starts as a person approaches her. This piece is influenced by Graphite Ground by Liz Phillips, an interactive sound installation that used natural conductors to create sound based on proximity. I chose to work with electronics as I’m interested in how software and coding can further my art pieces, and I wish to experiment with incorporating my sound art pieces into sculptures. While working on this piece, I learned more about coding and the use of electronics in art, including the complexities of wiring a project. I also learned how attaching a sensor to a project can change the entire feel of the piece.

Natalie Clark

GA - Georgia College and State University

Discipline: Social Sciences

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#1 Natalie Clark

Abstract Name: COVID-19 Impact on Children’s Social Emotional Behaviors Mediated by Various Factors

The impact of COVID-19 on young children has significant social-emotional implications. Studies currently show mixed findings with limited post-COVID data. Young children missed essential experiences early in life relating to social, emotional, and language development due to COVID-19, which is correlated with worsened adult-child relationships in children under six years of age (Erwin & Frey, 2023). Schooling disruptions led to negative parental mood, worse child behavior, and increased loss of temper in children aged 3-8 (Gassman-Pines et al., 2022). However, a potential positive emotional effect was found on mental

well-being for children 7-11 due to reduced academic stress and increased attention from caregivers, but this same study also indicated significant somatic, cognitive, and worry reactions, especially in older children (Larsen et al., 2022). Still, other studies found no significant behavior effect in financially stable parents of 3–5-year-olds, although hyperactivity and loneliness were slightly elevated (Linnavalli & Kalland, 2021). Another factor related to social-emotional behavior and peer interaction is language. Recent studies showed that preschool children affected by COVID-19 are experiencing significant problems with verbal language and social communication, likely due to distance education, limited exposure to the social environment, and lower family interaction (Erbay & Tarman, 2022). Children with already-known language delays experience a higher decrease in language production due to COVID-19 (Hsu & Wong, 2023). However, research indicates speech therapy can contribute to positive social-emotional outcomes. Past studies showed intensive speech therapy increased confidence and social participation, leading to more successful conversations with people in various environments (Pennington et al., 2020). The current project aims to examine COVID-19's impact on social-emotional behaviors in young children (ages 3-4) in various programs, including speech therapy. Data consists of ratings from teachers using Social Competence Behavioral Evaluation forms (LaFreniere, et at. 1995) and observations. Detailed results and implications will be shared at the conference.

Jason Clark

WI - University of Wisconsin-Milwaukee

Discipline: Engineering and Architecture

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#1 Jason Clark

Abstract Name: Methods for Designing XR Multi-User Experiences

The research objective is to identify and generate a design methodology for creating digital galleries by using interactive experiences in virtual reality (VR) multi-user environments. This research integrated accessible User Experience (UX) and Extended Reality (XR) as theoretical and technical foundation (Bustos, et all 2021). The resulted methodology has three-phases: I. [Conceptualize] We used established 3D architectural modeling programs, developing 3D scanning technologies, as well as traditional physical design methods to create a conceptual model. Student's physical models were scanned using photogrammetry and were formatted for import into the conceptual model. II. [Visualize] The model was converted, using plug-ins specially developed for the 3D-design program, into a virtual and augmented reality (AR) platform which allowed us to examine visual aspects of the design and make adjustments. III. [Implementation] The converted concept model was placed into a meeting room, using the platform, for students to participate in a multi-user experience. The experience was then evaluated from two sets of perspectives, evaluators (students) and observer (creator). Students utilized virtual reality headsets and controllers to move around the gallery and view the models on display. Feedback was positive and provided insight for areas to adjust the model and user experience. Developments in XR environments and technologies have created more opportunities for galleries and museums to extend their reach with larger audiences, facilitate community engagement, display artworks from museum archives, provide additional revenue streams, empower the knowledge ecology (Sibley, 2019), enhance the perception of interactive space, and increase the viewership of curated exhibitions. Successful implementations would provide desirable experiences for a wide audience and have a greater level of accessibility than the physical environment could allow. KEYWORDS: Digital Accessibility; Virtual Museums; Extended Reality, User Experience, MUVE (Multiuser Virtual Environment)

Taylor Clark

TX - Tarleton State University

Discipline: Social Sciences

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Abstract Name: Effectiveness of Social and Academic Resources In Low-Income Neighborhoods

The purpose of the study is to assess the effectiveness of social and academic resources in low-income neighborhoods. Cresson Pods was established in 2019 as housing for low-income households. The housing pods provide a secure living space for 275 households. However, the pressing issue was the houses were in the middle of nowhere and left many families with nothing to do outside of the home. United Way partners with various agencies to provide youth with resources such as dinner events, game nights, festivals, and spring break camps that are also enjoyable for parents. They wish to create a safe space that also promotes a healthy environment. Student researchers reviewed a total of 12 scholarly journal articles. The journal articles represent thousands of people who reside in similar size rural areas. All of the articles include how important community centers, and their academic and social activities are to rural neighborhoods and their residents. This research helps our study by highlighting what services are helpful for rural community centers to provide their residents, and how the services can help the population of rural communities. The student researchers use the information gained from the programs to understand the effectiveness of community centers in lower income areas. The study is focused on active members of the Cresson Pod community and their families. The group's research question is, "What is the effectiveness of social and academic resources provided by community centers in low-income neighborhoods?" The student researchers developed a survey with close ended and open-ended questions. Their target sample size is 100 participants. They will use the data to better advocate and support the needs of low-income neighborhoods through community centers.

Reilly Clark

MA - Bridgewater State University

Discipline: Education

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Abstract Name: The Math Guidebook for Educators: Helping Students Who Struggle In Math

"93 percent of Americans indicate that they experience some level of math anxiety" (Blazer). The fear of math is a prevalent issue in today's society, and needs to be addressed. The goal of this project was to create a comprehensive, accessible Math Guidebook for Educators of all grade levels. The finished product explores the main topics of math anxiety, math specific disabilities, accessibility tools, and helpful strategies. The primary method of research for this project was an extensive literature review using textbooks, relevant videos, and scholarly articles. The Math Guidebook for Educators will spark the conversation about math anxiety and math specific disabilities while educating teachers and students about this subject. During the Fall 2023 and Spring 2024 semesters, further work will be done to add more information to the Guidebook, creating and implementing a survey for higher education students and k-12 teachers to ask questions related to math anxiety, and ultimately resulting in a math discussion conference during the spring semester.

Nikolai Clark

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

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Abstract Name: Understanding Oxygen Movement and Catalytic Properties of Cobalt Doped Perovskites: LaFe1-yCoyO3-δ

Various oxygen transport membranes (OTMs) have been synthesized for their potential in industry for pure-oxygen generation by separation from air or for production of renewable energy such as syngas. Oxygen transport membranes provide a cheaper alternative to current industry practices, in addition to being a reusable and more eco-friendly catalyst. Often these membranes are perovskites, ABO3, with different amounts of A and B-site doped metals. In this work, perovskites of varying amounts of cobalt doped on the B site, LaFe1-yCoyO3- (LFCO), will be synthesized and their purity analyzed with x-ray diffraction. These iron and cobalt perovskites will be analyzed using the programs Soft BV and Vesta to calculate where oxygen can move through the structure and how much energy is required to do so. The various structures of LFCO will then be tested for syngas production via Gasboard-3100. If these perovskites are deemed viable for use as an OTM, further experimentation can be done on a larger scale for their uses in industry.

Meredith Clark-Wiltz

IN - Franklin College

Discipline:

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Jessica Mahoney

Abstract Name: Strong Roots, Flowering Legacies: The Importance of Nurturing Community-Facing Student Research in Special Collections

Implementing sustainable practices that support undergraduate research is imperative for faculty mentors and administrators invested in supporting student learning through these high-impact, engaged opportunities. As community-engaged scholars and public historians have emphasized, methods critical to research with external constituencies and partners require acknowledgment of the contributions and expertise of all parties, as well as, continual reflective practice of shared inquiry. Recent scholarship emphasizes the need to consider power differentials between and among participants, organizations, and communities. Furthermore, collaborative efforts to make special collections more accessible are valued as stewardship to a global audience of researchers. Giving student researchers the autonomy to select, preserve, and contribute to the sharing of primary sources empowers them as active voices in scholarly conversation. Using our mentorship experiences in two Council of Independent Colleges Humanities Research for the Public Good grants and the Community Engaged Alliance Faculty Fellow Program, we examined how faculty can sustain student research that maximizes accessibility of special collections to benefit student learning, institutional advancement, and the surrounding community. With assistance from the Indiana Historical Society and Private Academic Libraries Network of Indiana (PALNI), undergraduates researched multiple campus citizens making substantial contributions to the college and public good, cataloged archival materials, and conducted oral histories to intentionally preserve and emphasize a diversity of campus voices. Students organized their research in ways that make it more widely accessible to local, state, and the broader public.

Throughout this exercise, we have found several ways to expand the reach of these initiatives so they enhance the learning of more students, fit better within existing faculty efforts, augment institutional resources, strengthen community partnerships, and offer public access to information. Through practice, we have developed successful strategies that increase the sustainability of these high-impact, high-effort undergraduate research projects

Brianna Clayton

GA - Clark Atlanta University

Discipline: Social Sciences

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#1 Brianna Clayton

Abstract Name: The Effects Social Media has on the Quality of Relationships

The purpose of this study is to test the theory of how social media impacts the relationship of young men and women that compares the time spent on social media to the quality of relationships, both platonic and romantic, for students studying psychology at Clark Atlanta University. Past research on generation Z adults indicated that there has been a great decrease in interest in being in a monogamous relationship. This study is unique because not only does it focus on romantic relationships, but it includes friendships and how social media may play a significant factor in the decline. The hypothesis of the present study were that students who utilize their phones, or social media, at an excessive rate will not be in serious relationships or friendships with a strong foundation compared to those who do not utilize social media excessively. The participants were Clark Atlanta students studying psychology. The data collection method was a survey created on Qualtrics. The results indicated that the participants do love their partners; however, desire more. Research shows that they are not necessarily satisfied in their relationships and that it does not meet their original expectations. Within their friendships, they have disagreements every so often, but they are able to maintain a healthy relationship as they practice good communication between one another. The majority stated that their most used application is a social media platform with an average of 15 hours a week. The expectations were thus confirmed. Implications of the results for future studies include new generations consumed by social media do not long for commitment. The results of this study can contribute to the field of psychology and help initiate positive change for young adults and adolescents who are consumed by social media and false realities they acquire due to their excessive usage.

Kaitlyn Clemenceau

OK - University of Central Oklahoma

Discipline: Education

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Abstract Name: Alan Fletcher: An In-Depth Study of Graphic Design Excellence

Alan Fletcher, a luminary in contemporary design, revolutionized graphic design with his distinct style, communication, and originality. He is well-known for his expressive typography, color, perception, pattern, style, and illustrations. These are all great traits for a graphic designer. His influence has touched the minds of many other designers, new or old, and has changed their perspective on concepts through impactful visuals. It has inspired them to embrace diversity and experimentation in their work. Many designers struggle with and seem to repeat the same thing they have already made or are stuck. It is essential to seek help and inspiration from others because the human mind constantly thinks of new ways to improve something. It might be outstanding or bizarre, but it is better than nothing.

Dillon Clifton

AZ - Northern Arizona University

Discipline: Health and Human Services

Authors:
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#2 Arista Bohnas
#3 Victoria Gaitan
#4 Natalie Gillatt

Abstract Name: Community Connectedness: Flagstaff Family Food Center

Project Purpose: This intervention aims to decrease feelings of loneliness, increase feelings of connectedness to loved ones, and increase feelings of community togetherness for recipients of Flagstaff Family Food Center (FFFC).Background: Northern Arizona has a large amount of its population facing negative mental health issues. These outcomes disproportionately impact people who have low SES and live below the poverty line.Methods: Our Northern Arizona University (NAU) HS403C team has collaborated with the FFFC to provide resources and support to food-insecure individuals to build social connectedness to improve mental health outcomes. To accomplish this, we connected these individuals with loved ones through mailing, emailing, texting, and calling programs, as well as signing them up for email addresses.Conclusion: Through a pre and post-social isolation survey, we found that 62.5% of program participants felt more connected to their community post-intervention. Even with our promising results, further interventions may prove beneficial as nearly 40% of participants said they often feel socially isolated post-survey. This demonstrates a need to continue similar interventions.

McKenna Clinch

KY - University of Kentucky

Discipline: Engineering and Architecture

Authors:
#1 McKenna Clinch
#2 Poornima Sunder
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#4 Steve Rankin
#5 Bert Lynn

Abstract Name: Effects of Methyl Jasmonate and Jasmonic Acid Loaded Nanoparticles on Defensive Secondary Metabolites in Hairy Root Cells

Secondary metabolites in plants help with defense mechanisms against pathogen infection and abiotic stresses, including drought, extreme temperatures, etc. While an increase in these metabolites will benefit plants, they also provide potential benefits to humans as possible therapeutics. Methyl jasmonate (MeJ) and jasmonic acid (JA) are both known to elicit defensive secondary metabolites when delivered to plant cell cultures. Amine functionalized mesoporous silica nanoparticles (MSNPAs) loaded with these elicitors are hypothesized as carriers for delivery into the plant cell. This work focuses on the delivery of methyl jasmonate and jasmonic acid into Lobelia cardinalis hairy root cells using high surface area MSNPAs (with 2.5 nm diameter pores). Synthesis and amine functionalization of these nanoparticles are performed first, resulting in a porous particle with a positive surface charge, confirmed by zeta potential. Using evaporative loading techniques, MeJ/JA is loaded into the pores and quantified using thermogravimetric analysis (TGA). Hairy root cell cultures are then treated with one of five different treatments of elicitor and particle combinations. The control group contains hairy root cells in plant media. Other treatments include root cells with elicitor in media, nanoparticles in media, elicitor loaded nanoparticles in media, and unloaded

nanoparticles and elicitor suspended in the same media. Ultra high-performance liquid chromatography (UHPLC) coupled with electrospray mass spectrometry (ESI-MS) is used to analyze the metabolites synthesized with each treatment. Focusing on jasmonic acid as the elicitor, data manipulation is performed to determine which secondary metabolites are elicited in significant amounts. T-tests are then performed to determine which treatments are statistically significant from the control group. Current work focuses on analysis of each metabolite and determining which treatment showed the greatest impact on area counts.

Caleb Cloud

MO - Missouri State University

Discipline: Humanities

Authors:
#1 Caleb Cloud

Abstract Name: Embracing Saidar: How Women are Represented in Robert Jordan's The Wheel of Time Series

Robert Jordan is one of the bestselling fantasy authors of the early twenty-first century. With fifteen books in his The Wheel of Time series, he was able to create a new world with scores of imagined countries and cultures. Although women have historically been poorly represented throughout literature, there is a noticeable deficit of well-developed female characters in fantasy. Robert Jordan set about to create a world in which women and men were equal. This thesis examines the portrayal of women in Robert Jordan's The Wheel of Time series and studies how Jordan included powerful women in his series while allowing his female characters to experience challenges similar to those faced by contemporary women. Examined are the Aiel Maidens of the Spear; queens and other female rulers; local women leaders; and finally, the Aes Sedai, the organization of women magic wielders.

Hunter Coates

GA - Georgia College and State University

Discipline: Humanities

Authors:
#1 Hunter Coates

Abstract Name: The Harrowing of Hades in Christian Apocrypha and the Controversy over Universal Deliverance

The Harrowing of Hades is an under-discussed event in Biblical circles today. There are several places in Scripture where the Harrowing is mentioned. Matthew 12:30 claims that Jesus was kept in the "heart of the earth" for three days. Ephesians 4:9 claims that Jesus descended into "the lower parts of the earth." The most detailed mention of the Harrowing is in 1 Peter 3:18 where it is said that Jesus preached to the spirits in prison during the period between His crucifixion and resurrection. However, this final text is notoriously ambiguous on who in Hades was preached too and who accepted the gift of salvation. Contemporary scholarship has taken an interest in how Christian apocryphal texts like The Questions of Bartholomew and The Gospel of Nicodemus approach the Harrowing. Specifically, the question is whether Jesus saved all or only some prisoners in Hades. In this paper, I argue that the earliest manuscripts of both texts teach that Jesus delivered everyone from Hades. Over time, due to evolving theological concerns of Christian scribes, this narrative was edited out to fit a limited eschatology of deliverance. This shows that ideas of universal

deliverance were very common at the time these traditions were first formed around the second-third century but by the later manuscripts, these ideas had become purposefully edited out in favor of narratives that do not teach that Jesus saved everyone. Christian orthodoxy had moved on from the belief in universal deliverance and sought to erase prior history that associated it with this.

Avery Cobb

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Avery Cobb
#2 Kristofor Voss

Abstract Name: Investigation of the toxicity of coriander oil as an alternative to synthetic pyrethroids to non-target aquatic organisms

Mosquitoes are insect vectors of deadly and harmful diseases to humans; these insects are most frequently controlled using synthetic pesticides known as pyrethroids. Although these pesticides are lethal to mosquitoes, they also can kill, or sub lethally harm non-target species that serve key functional roles in aquatic ecosystems. Essential oils are often cited as a “greener” alternative to synthetic insecticides, but in order to be truly “green”, these compounds must not harm non-target organisms at concentrations that are lethal to mosquitoes. By conducting 48-hr toxicity assays on non-target organisms including the common water flea (Daphnia magna) and a crawling water beetle (Peltodytes sp.), it was assessed whether essential oils derived from the coriander plant (Coriander sativum) can act as a greener alternative to synthetic pyrethroids. The synthetic insecticide permethrin was toxic to Daphnia magna (LD50 = 0.33 ppb) and Peltodytes sp. (LD50 = 0.21 ppb) at concentrations of staggering magnitude lower than the coriander oil (Daphnia magna LD50 = 117 ppm, Peltodytes sp. LD50 = 42 ppm). Compared to the non-target organisms, literature estimates of LD50 for mosquito (Aedes aegypti) larvae were higher for permethrin (LD50 = 1.3 ppb) but lower for coriander oil (LD50 =27 ppm) Therefore, coriander oil can be considered a “green” alternative to permethrin since the concentration needed to kill mosquitoes was lower than that required to kill non-target organisms. Using coriander oil rather than permethrin as a mosquito larvicide may therefore simultaneously prevent mosquitoes from spreading deadly diseases while also protecting aquatic ecosystem diversity.

Camila Cobos

TX - Lone Star College

Discipline: Natural and Physical Sciences

Authors:
#1 Camila Cobos

Abstract Name: Chlorophyll in Spearford Gully: An Analysis of Chlorophyll Trends Relative to Rainfall

This research examines the relationship between rainfall events and chlorophyll present in the water at Spearford Gully on the Lone Star College-University Park campus in order to assess the impact of pollution in precipitation runoff on water quality. Previous scholars in the fields of biology and ecology (Smith & Schindler, 2009) have found direct links between the pollution of water sources and the use of pesticides and fertilizers in gardens and corporate agriculture due to surface runoff. Furthermore, additional studies note a

positive correlation between rainfall events and the growth of chlorophyll α levels, which in excessive amounts can disrupt aquatic life and produce harmful toxins within a water source. Research for this project involved collecting data over a span of 28 days in the month of February 2022 by utilizing a water sonde that measures chlorophyll submerged within the gully and a Harris County rain gauge. The water within the gully was analyzed for chlorophyll α levels and depth changes with additional visual confirmation from campus cameras. Results indicate no positive correlation between rainfall events and the growth of chlorophyll α levels within the gully thus showcasing a contradiction from previous existing research. However, the analysis showed a growth of chlorophyll α and depth change unassociated with rainfall. These findings suggest the growth of chlorophyll α observed was potentially a result of a nutrient-rich discharge that entered the gully upstream and was deposited downstream where the water sonde was located. Future research is needed to determine the source of the pollution runoff entering upstream. Results of this study emphasize the importance of analyzing water sources located in urbanized areas to identify potential sources of pollution from human activity and seek methods to advocate for reducing these harmful behavior

John Cochrane

OR - Western Oregon University

Discipline: Natural and Physical Sciences

Authors:
#1 John Cochrane
#2 Ava Howard

Abstract Name: Relationship Between Annual Girth Growth and Water Stress in Quercus garryana (Garry oaks): A Species of Conservation Concern

Quercus (oak trees and shrubs) are important for maintaining biodiversity worldwide. In the Pacific Northwest, Quercus garryana (Garry oak trees) are the most abundant species in this genus, but have declined substantially in the past few decades. To support oak conservation, and protect the mammals, fungi, and plants dependent on Q. garryana, we need to understand how environmental stressors affect the growth and physiology of this key species. In this study, we investigated the relationship between the annual girth growth of Q. garryana and both short-term water stress (Ψp) and long-term water stress (δ13C). We collected branch samples from the canopies of 47-64 mature Q. garryana in the Willamette Valley of Oregon. Samples were collected each year from 2019 to 2023 in late summer during the daytime (the diurnal period of maximum water stress) and nighttime (the diurnal period of minimum water stress). Immediately following collection, Ψp was assessed on the healthiest leaf. Samples were transported on ice to the laboratory where leaves were homogenized and assayed for δ13C using isotope ratio mass spectrometry. We used linear regression to model the relationship between annual girth growth and water stress. Greater tree water stress was significantly associated with greater annual girth growth. Long-term water stress assessed as variation in δ13C explained a higher proportion of variation in annual girth growth (R2= 0.297, p < 0.05), than short-term water stress assessed as Ψp (R2= 0.193, p < 0.05). These results indicate that Q. garryana will tolerate water stress associated with habitat restoration measures and future climate change in the Pacific Northwest. Future conservation efforts should focus on minimizing other environmental stressors such as shade suppression to promote growth of mature Q. garryana which have the highest value for conservation of biodiversity in the region.

Clayton Coe

CA - California State Polytechnic University - Pomona

Discipline: Natural and Physical Sciences

Authors:
#1 Clayton Coe

Abstract Name: Synthesis of Two Novel bis-Imidazolium Bromide Salts as NHC Precursors

N-heterocyclic carbenes (NHCs) are a useful moiety for stable organometallic species due to their strong σ-donation ability. Three potential imidazole derivatives were investigated for their ability to link together via a methylene bridge. These derivatives were then refluxed in toluene and methylene bromide for several days, which, by previous work, should allow the formation of a linked salt product. Two novel bis-imidazolium salts with methylene bridges are reported, and the synthesis of one potential bis-imidazolium salt was attempted but was not successful. Both synthesized salts have been characterized by 1H NMR and 1H-COSY NMR spectroscopy. Although a low yield was obtained for the syntheses, it was proven possible, adding to the library of possible NHC ligands. Further research will consist of searching for more efficient reaction conditions, and the synthesis of bidentate NHC transition metal complexes using these bis-imidazolium salts.

Madison Coers

MI - Hope College

Discipline: Humanities

Authors:
#1 Madison Coers

Abstract Name: Having it's Cake and Eating it Too: The Case of AfricaMuseum and it's Prevailing Colonial Legacy

The Royal Museum of Central Africa (RMCA) was founded with the profits King Leopold II collected from the Congo Free State. The RMCA opened in 1910 by King Arthur I after King Leopold's death. The RMCA was a colonial museum that sought to glorify Belgium's role in Congo. Responding to critics, the museum underwent a renovation from 2013-2018 with the goal of decolonizing the museum's narrative. The museum opened under the name AfricaMuseum in December of 2018. My analysis of the reopened exhibits and museum reveals that AfricaMuseum has continued the colonial legacy they promised to condemn.

Elisabeth Cohen

VA - Longwood University

Discipline: Natural and Physical Sciences

Authors:
#1 Grace Cohen

Abstract Name: Chimeric PD1 Expressing T cells as a Therapy for Squamous Cell Carcinoma and Lewis Lung Carcinoma

Currently, the overall 5-year survival rate for lung cancer is 23% in the United States. Treatments for lung cancers can have many harmful side effects including nausea, vomiting, fever, infections, and exhaustion. Therefore, a new treatment option to increase survival and reduce side effects is desperately needed for individuals with these cancers. Using immune cells to treat cancer is quickly becoming a new option. One

type of immunotherapy uses chimeric antigen receptor expressing T cells (CAR T cells). CARs are modified receptors that use genetic engineering to create a novel receptor that targets tumor-associated antigens and enhances T cell responses. We developed a CAR, chimeric-PD1 (chPD1), with the Programmed Death 1 (PD-1) receptor as the tumor-targeting domain attached to CD3 zeta activation and Dap10 costimulatory domains. Since the ligands for the chPD1 receptor are expressed on most tumor types and not on healthy cells, they are ideal for CAR T cell therapies. Previously, chPD1 T cells were shown to effectively treat murine models of pancreatic, colon, prostate, and other cancers. The purpose of this study was to test the anti-tumor efficacy of chPD1 T cells against squamous cell carcinoma and Lewis Lung carcinoma. Flow cytometry and RT-PCR were used to determine that the tumor cell lines expressed PD-1 ligands. Therefore, these tumor cells were potential targets for our chPD1 T cells. Using LDH cytotoxicity assays, we demonstrated that chPD1 T cells increased lysis of tumor cells compared to control T cells. ELISAs and LEGENDplex assays were used to assess cytokine secretion by chPD1 T cells. For all tumor types tested, chPD1 T cells secreted pro-inflammatory cytokines, including IFN-γ, TNF-α, and GM-CSF, but did not secrete the anti-inflammatory cytokine IL-10. Based on these results, chPD1 T cells could provide an effective treatment alternative for squamous cell carcinoma and Lewis Lung carcinoma.

Brianna Cohen

NY - SUNY Geneseo

Discipline: Humanities

Authors:
#1 Brianna Cohen

Abstract Name: Redefining the Will of God: From Christian Polygamy in Utah to Islamic Polygamy in Senegal

In the United States, the concept of polygamy is a taboo that contradicts the normative relationship pattern of monogamy. However, in some West African countries such as Senegal, polygamy is common practice, and legal. Despite its illegality in the United States, polygamy continues primarily in Mormon Christian communities in Utah. In contrast, polygamy in Muslim countries like Senegal is regulated not only through the government but also through the Quran. The validity and ethics of polygamous relationships come into question as women often bear the brunt of hardships in terms of jealousy, heartbreak, divorce, and gender stratification. Not only are typical binary gender roles performed and stereotypes visible but they are amplified in this situation where women often have no choice but to accept the desires of their husbands. This can be seen in the novel Une si longue lettre (So Long a Letter) by Senegalese author Mariama Bâ who writes of the trials of women in the 1970s as they navigate their familial relationships in connection to polygamy. My research, supported by existing scholarship, critically yet thoughtfully discusses this sensitive topic in the context of America and Africa. The two-fold objective of my work is to deconstruct the nuanced realities of polygamous relationships and to attempt to revisit and redefine the normalization and regulation of polygamy by Mormon Christianity and Islam of the perceived equal treatment of co-wives. Lastly, this paper, supported by existing literature, will thus shed new light on the pitfalls of polygamy as it pertains to women in both the United States and Senegal.

Rachael Cohen

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Rachael Cohen

Abstract Name: Using GIS techniques to test a model of coexistence between two montane ground squirrels

Predator-prey interactions extend beyond direct predation and can influence prey behavior and habitat use. This “ecology of fear” has been studied in a variety of taxa, and differences in perceived predation risk have been demonstrated to impact species coexistence. Previous research on the golden-mantled ground squirrel (Callospermophilus lateralis) and the least chipmunk (Tamias minimus) indicated that these species have differing foraging efficiencies at different distances from cover; T. minimus is more efficient close to cover, and remains close to safety, while C. lateralis is able to exploit “riskier” habitat in the center of a meadow. The aim of this study was 1) to test the continued coexistence of C. lateralis and T. minimus to determine if their patterns of meadow usage are stable and 2) to use geographic information systems (GIS) to refine methodologies used by Smith (1991) and Baas (2011). Raster analysis was utilized to locate meadows with appropriate habitat and determine the distance from cover and area of each meadow. Meadows were observed visually and with camera traps to record the presence of one or both species. Both distance from cover and area of a meadow were found to contribute to species composition. Results are consistent with past studies, indicating that the coexistence of these two species is stable. This research provides further evidence that non-consumptive effects of predators promote species diversity.

Sophia Cohen

FL - University of West Florida

Discipline: Business and Entrepreneurship

Authors:
#1 Sophia Cohen
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Abstract Name: Impact of Average Daily Rate on Hotel Cleanliness in Game Theory

Despite the acknowledged influence of the Average Daily Rate (ADR) on hotel cleanliness, establishing a definitive connection between the two in both suburban and resort destinations during high and low seasons has remained inconclusive. Hotel managers tend to prefer having specific cues to guide their decision-making rather than being overwhelmed with excessive information, making it challenging to arrive at a decision. In this study, two matrices were constructed based on various indices, and game theory strategies were applied to predict the outcomes of the relationship between ADR and cleanliness.A sample of ADRs and cleanliness in suburban and resort hotels in the US was retrieved from Smith Travel Research and TripAdvisor during the 6-year period from 2018 to 2023. Using vector error correction model, the study has conducted the game theory to examine the impact of the ADRs on the cleanliness in the yearly seasonal cycle of the high season (April to September) and the low season (October to March).Findings indicate that during the peak season, when the ADR rises in resorts and falls in suburban areas, cleanliness standards are at their best in both types of accommodations. During the off-peak season, the highest levels of cleanliness are achieved when both resorts and suburban accommodations increase their ADRs. This suggests that cleanline can draw both leisure and business travelers to suburban areas during the low season and more leisure travelers to resorts during the high season. Further research should be conducted to other areas of the United States. The contributions of the study are (1) Game Theory would be used to develop hotel strategies. (2) When hotels in suburban and resort destinations set their prices in opposite directions for customers, an equilibrium of mutual benefit can be reached depending on whether it is the high or low season.

Josh Cola

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Josh Cola

Abstract Name: A Clean Slate: Public Art and Ecological Science in Contemporary Appalachia

The rugged hills of Appalachia have supplied the United States with a large percentage of the country’s energy in the form of coal for generations, but the poorly regulated industry has left the region with scarred landscapes, damaged towns, and ecological devastation affecting the lives and health of millions. Where most see an impossible problem, AMD&ART, a small nonprofit of historians, engineers, and artists sees opportunities to repair the landscape, provide recreational opportunities, and spur economic development. Utilizing the archival collection AMD&ART, 1994-2005, at the University of Kentucky Libraries Special Collections Research Center, research will focus on the artistic interventions used at one site chosen for remediation in Vintondale, Pennsylvania. The collection contains photographs, plans, and correspondence that provide a detailed look into the art objects created as part of the project. The research project includes an analysis of archival documents, photographs from an in-person site visit, and other primary source materials. It uncovers the impact of the three public art installations that AMD&ART brought to the surrounding community and exemplifies how environmental art can be used at similar sites in need of revitalization. These three artworks respectively commemorate the past, guide the present understanding, and instill hope for the future of ecological partnership in the arts and sciences. Such installations inform how contemporary art practices intertwine art, history, and science into the larger contemporary art world. Vintondale’s reclamation of not only its water but also its cultural heritage serves as a model for future projects that aim to rehabilitate and advance the beautiful landscapes of Appalachia and beyond. The interdisciplinary approach of the project demonstrates how the humanities and technical aspects complement each other to achieve goals deemed unreachable.

Tobi Coleman

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Tobi Coleman

Abstract Name: Resurgence of Latina and Chicana Women’s Murals in Mexico and the United States in the 21st Century

Murals by me have received considerable attention in scholarship. However, murals by women have been seldom addressed. This research examines murals by Latina and Chicana women in Mexico (Paola Delfin, Adry Del Rocio and Tahnee Flohr) and the United States (Las Mujeres Muralistas, Judy Baca, Celia Rodriguez, Rosalinda Palacios, Antonia Mendoza, Irma Lerm Barbosa and Barbara Desmangles) in the twenty-first century. This study's significant questions are as follows: What social and political events in each country generated interest in murals by Latina and Chicana women? How has the safety, sexism, acceptance, and subject matter of the murals by Latina and Chicana women in each country differ, if at all, and why? Research determined that the United States support of the Deferred Action for Childhood Arrivals (DACA)

and the Development, Relief and Education for Alien Minors Act (DREAM) generated interest in the restoration of the 1970s and 1980s murals by the Latina and Chicana artists aformentioned. On the other hand, in Mexico, the feminist movement culminating in the National Gender Equality Policy (2013-2018) provided a more accepting environment for female muralists. However, in both countries, Latina and Chicana women continue to experience discrimination, unequal opportunities to produce murals, and unequal compensation. Unsurprisingly, murals in Mexico and the United States have the same underlying theme of female activism. This study, based a formal examination of the murals within the cultural and political context of the respective societies, is significant considering the most recent attacks on the DACA and DREAM policies, and the Latina/o and Chicana/o population in general.

Carvin Coleman

MI - University of Detroit Mercy

Discipline: Natural and Physical Sciences

Authors:
#1 Carvin Coleman

Abstract Name: Determining the Molecular Function of PDH1

Putative 2-methylcitrate dehydratase (PDH1), is a Saccharomyces cerevisiae mitochondrial protein that plays a role in respiration. It is known to be involved in the propionate metabolic process, but its specific molecular function has not been identified. To determine this function, cells deleted for PDH1 deletion cells were grown on a series of medias to test its fitness. Glycerol media is a non-fermentable carbon source and is used to identify whether a deletion mutant can withstand the diauxic shift, which is when the yeast undergoes cellular respiration instead of glycolysis, the preferred energy generating mechanism in high glucose. Additionally, another fitness treatment that was employed in this study was exposure to ultraviolet radiation, which is known to trigger DNA damage checkpoints. Some reports have shown that oxidative stresses from UV can hinder the growth of mitochondrial proteins resulting in a defect. Interestingly, our results indicate that cells deleted of PDH1 are able to grow on glycerol media, which was surprising given most mitochondrial proteins show defects on non-fermentable carbon sources. Additionally, we found an increase in fitness when exposed to UV. Further research is required to identify the mechanism by which cells deleted for PDH1 are unaffected by glycerol media and display an increase in fitness upon UV exposure.

Chartise Coleman

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Chartise Coleman
#2 Priscila Chaverri

Abstract Name: Microbial Diversity: Evaluation of Microbes in Soil Within Close Proximity of Beech Trees

Understanding the relationship between trees and soil microbes is essential for evaluating its microbial diversity. In this study, we employed bioinformatic analyses to unravel the microbial communities in the soil near the base of American beech trees (Fagus grandifolia). Soil samples were collected from soil near the base of beech trees at Bowie State University campus. DNA extraction was prepared for metabarcoding of fungal (ITS data) and bacterial (16S data). Our bioinformatic analyses revealed a diverse bacterial and fungal

communities within the soil samples collected. Our analysis also highlighted the relationship between the bacterial and fungal components. Fungal communities were dominated by Eurotiomycetes and bacterial communities by Acidobacteria.

Chartise Coleman

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Chartise Coleman
#2 Priscila Chaverri

Abstract Name: Microbial Communities in American Beech (Fagus grandifolia)

Studies have suggested that the microbes found in the surrounding environment of a plant will likely colonize those plants via horizontal transmission. The objective of this class project was to compare the microbial communities in the soil, bark, and healthy beech leaves. We hypothesized that leaf and bark tissues would host some of the microorganisms also found in the soil, and that the closer the soil to the tree, the more similar the communities. We characterized the microbial communities using metabarcoding of nrITS (fungi) and 16S (bacteria) markers. Results show that plant tissue communities are different from soil communities, with little overlap. This suggests a possible substrate and tissue specialization.

Mia Collazo

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Mia Collazo
#2 Beth Fisher

Abstract Name: Soil Aggregate Analysis

Soil aggregates are coherent groups of soil particles that are held together by organic matter, roots, and fungal hyphae. An aggregate breaks along the lines of structure inside the soil, and assists in indicating how much structure a soil has which directly correlates with soil health. When soil particles occur as aggregates, the soil experiences many benefits including an increased capacity to infiltrate and store water, resistance to erosion, better management and delivery of nutrients, and much more. When a soil has more structure it creates pathways for root growth as well as animal and microorganism activity. The stability of soil aggregates when they are wet has become an important indicator of soil health, but the quantitative measurement of wet aggregate stability requires a labor-intensive laboratory analysis. Recent advances in image recognition approaches for aggregate stability may provide a promising means of evaluating the stability of soil aggregates with less laboratory time and equipment. Image recognition of aggregate stability may also provide a simple way for farmers and others who are concerned with soil health to provide visible demonstrations of soil health indicators that are also quantitative. Here we compare the results from a laboratory aggregate stability method with image recognition methods on several soil types from Minnesota.

Anna Collins

TN - Middle Tennessee State University

Discipline: Interdisciplinary Studies

Authors:
#1 Anna Collins
#2 Sam Zaza

Abstract Name: How Agricultural Productivity is Effected by Broadband Access in Rural Areas

Technology plays a pivotal role in the evolving landscape of the agriculture industry. However, with the digital divide present in rural areas, farmers cannot fully utilize the technology available to them. This research aims to understand the effects a lack of internet access has on farming operations' productivity. These efforts and results will serve as a guideline for grant money allocation, advocacy efforts, and legislation moving forward. Amid the challenges brought on by the COVID-19 pandemic, rural areas have become the focus of research in terms of healthcare, education, and age-related implications of the digital divide. These understandings have helped shape this study of agricultural productivity as it relates to broadband in rural America. Preliminary interviews show that internet access is crucial to farming operations as it allows farmers to order equipment, research innovative practices, and access available resources. Even daily tasks such as record-keeping rely on internet-based programs. Results from a comprehensive survey and an extensive literature review will allow us to fully understand the importance of broadband on farming operations. This research contributes to the goal of fostering productive and sustainable agricultural practices by offering practical suggestions and opportunities to improve connectivity in rural areas across the Southern United States.

Isabella Collins

IL - Eastern Illinois University

Discipline: Social Sciences

Authors:
#1 Isabella Collins
#2 Ryan Burge

Abstract Name: The History and Implications of Presidential Executive Orders

This paper conducts an in-depth analysis of presidential executive orders (EOs) in three different eras, ending with a discussion of the implications that are faced in the modern United States political atmosphere. First, an analysis of the U.S. Constitution and the Framers' intentions for the executive branch are discussed using transcripts from the Constitutional Convention. This discussion leads directly into the first executive orders issued by presidents from the Colonial Era, considering how many were issued, how they were used, and what circumstances drove their usage. Comparisons between different presidents are used to understand what situations prompted higher usage of EOs in the early years of the United States. Next, the purpose and frequency of executive orders shifted during and after the Civil War, and a case study of Abraham Lincoln and his unprecedented use of executive orders is analyzed to understand why and how this shift occurred. Finally, the Modern Era of executive orders is discussed, specifically looking at President Franklin D. Roosevelt's heavy usage of executive orders along with some analysis of how recent presidents have considered executive orders such a President Barack Obama. After these analyses have been conducted, implications of this research are discussed, including how the use of executive powers in the current political environment has shifted the balance of power between the three branches of the government. This research concluded that while Presidential executive orders have a much larger scope in modern politics as compared

to the Colonial Era. In their modern implementation they are used as a relief valve for the gridlock and institutional imbalance that partisanship has created within the other branches of the federal government in the 21st century.

Anna Collins

TN - Middle Tennessee State University

Discipline: Business and Entrepreneurship

Authors:
#1 Anna Collins
#2 Justin Gardner

Abstract Name: The Ordinary Price of Zero

The standard economic model is a key player in Shampanier et al.'s Zero is a Special Price: The True Value of Free Products published in 2007. The authors argue that consumer behavior, when presented with a price of zero, or free, is irrational and inconsistent with the standard economic model. This research claims the standard model presented by that work is an inaccurate characterization of consumer theory and that their experimental research design cannot differentiate between the model they presented and the concept of utility maximization restricted by a budget constraint. Shampanier and colleagues propose a correction to their model that, upon further examination, can easily be accounted for when the research design allows for substitution and income effects. This research demonstrates these effects using mathematical programming to simulate consumer decision-making with various utility functions, such as the Cobb-Douglass functional form. The results show that standard economic theory does an exceptional job of predicting consumer behavior when one good is free. The predictive power of these models relies on their ability to include both income and substitution effects, which are excluded from the "standard" model. Our study shows that Shampainer and colleagues' model is a special case of standard consumer theory and confirms why the literature has been able to reliably verify their results.

chase colson

TX - Tarrant County College

Discipline: Natural and Physical Sciences

Authors:
#1 Chase Colson
#2 Paul Luyster

Abstract Name: The Effect of Excess CO2 Exposure on Brassica rapa (Wisconsin Fast Grower) and Its Chemical Composition

Increasing atmospheric CO2 levels in recent years have raised concerns regarding the future of plant health. Many new studies predict atmospheric CO2 levels to rise to nearly 1100ppm by the year 2100. The aim of this research is to further understand the relationships between plant biochemistry and elevated atmospheric CO2 levels. Researchers predicted that if Brassica rapa was exposed to 1100ppm of CO2, plant tissue would have increased amounts of protein and chlorophyll. In this research, two groups of Brassica rapa (Wisconsin Fast Grower Plants) field mustard plants were grown in controlled environments. Two groups of plants were grown, one labeled the 'experimental group' and one the 'control group'. The experimental group was subjected to elevated CO2 treatments of 1100 ppm, while the control group was subjected to CO2 levels

consistent with 2023 atmospheric levels. After the plants were grown, plant samples containing both stems and leaves were obtained and subjected to a series of extractions and tests. Mechanical breakdown using pestle and mortar paired with a 95% acetone solvent were used to isolate the plant proteins. Chemical analysis of plant tissue using spectrophotometry and electrophoresis revealed that Brassica rapa plants exposed to elevated CO2 levels have increased concentrations of chlorophyll and decreased concentrations of protein. Elevated chlorophyll concentrations could suggest increased rates of photosynthesis and energy demand. Decreased protein concentrations could suggest increased plant efficiency, with less demand for proteins to facilitate photosynthesis. These results point to the possibility of higher energy demands, and more efficient use of CO2 when exposed to 1100ppm CO2 levels.

Margaret Colwell

AZ - Embry-Riddle Aeronautical University

Discipline: Social Sciences

Authors:
#1 Margaret Colwell
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#3 Andrea Irish
#4 Kyle Wilkerson

Abstract Name: Psychophysiological Measures of Stress and Fatigue in Air Traffic Controllers

Due to increasing frequency of near miss aircraft events, a burgeoning area of research is in the efficacy of air traffic control (ATC) and pilot communication. ATC personnel must continually monitor ever-changing runway and air traffic conditions and make split-second decisions. Currently 3 of the 313 ATC facilities around the country are fully staffed; understaffing can lead to increased fatigue and stress being experienced by ATC personnel. Previous research has found that stress and fatigue can lead to poor decision making. This current study seeks to use previously identified physiological markers of stress and fatigue to determine if these markers can predict increments or decrements in performance on ATC tasks. In this study, we will employ BIOPAC technology (a means of recording changes in the sympathetic nervous system via electrodes on the skin) to identify markers of stress and fatigue including heart rate variability, electrodermal activity, and brain waves during simulated ATC scenarios. These scenarios include standard procedures about airfield clearances, issuance of traffic advisories, managing wake turbulence separation minima, course deviation and alterations, and making altitude adjustments. Anticipated outcomes include data illustrating that decreased heart rate variability and increased electrodermal activity, both of which are associated with increased sympathetic arousal, and increases in alpha wave activity, indicating a lack of attention, during periods of stress and fatigue, will result in poorer performance on the ATC tasks. By identifying if these markers of stress are impacting ATC performance, it would allow this technology to be used, in real time, to pinpoint when ATC controllers are likely to make an error, potentially avoiding the near miss aircraft events that have been occurring and provide evidence for potential safety regulation changes within the Aviation industry leading to potential legislative changes issued by the FAA.

Laney Conner

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Laney Conner

Abstract Name: The Creative Mind of Paul Rand

Paul Rand was one of the most influential designers because of his innovative branding ideas and creative thinking. Starting from the bottom and working his way up, Paul was loved by most people who knew him. He even went on to become a professor at several universities, such as Yale. During this time, Rand was becoming an even bigger sensation in the design community. In the early months of the 1960s, this is where he would start to become the famous man we know and love today. Paul Rand was working commercially when he helped create the logos for several top-rated companies. The first was Westinghouse, then ABC (American Broadcasting Company), followed by UPS (United Postal Service), and lastly IBM (International Business Machines Corporation), plus many others. These designs are still used and loved today. I think that shows how much of a success Paul Rand truly was. Once he grew older, he chose to write several books off of all the "chicken scratch" he had written down throughout the years. Paul was nothing but an encouragement to young artists who wanted to spread their wings and enter the design field. He did many interviews and was always open for a conversation. Paul Rand passed away in November of 1996. After a lifetime of hard work, Paul inspired millions of people and is still a design hero.

Emilie Conners

TN - Middle Tennessee State University

Discipline: Business and Entrepreneurship

Authors:
#1 Emilie Conners
#2 Lucy Matthews

Abstract Name: The Body Positivity Movement: Bettering College Women's Body Image and Health

Body image concerns among college-aged women continue to be an immense issue across college campuses. As technology advances, it has become more common for young girls and women to edit their social media photos and ultimately focus more on their flaws. Body image has a substantial impact on mental and physical health, therefore, it's vital that these concerns are addressed and fought. One movement that has been used recently as a possible way to combat this concern is the body positivity movement. For this research project, a Qualtrics survey was sent out to 9,175 female students attending Middle Tennessee State University with the intent to better understand how the body positivity movement is impacting college women's body image and health. The survey questions focus on body positivity movement advertisement campaigns and social media. Specifically, the questions concentrate on the respondent's self-image and awareness of the body positivity movement. Attitude-based scales were pulled from existing research studies and literature and the results were analyzed using SPSS data analysis software. The main differences found in this study show that younger women tend to struggle with body image more than older participants. The attitudes of the survey respondents were recorded before and after watching two body positivity advertisements. The increase in acceptance and satisfaction with one's body and flaws after watching the two advertisements was significant. Many respondents expressed an interest in seeing more body-positive content especially when it comes to the brands that they love. Recommendations based on the data collected from the research were provided to direct further advancement of the body positivity movement to continue to improve college women's body image and health.

Katherine Conover

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Katherine Conover
#2 Kathryn Mansfield Matera

Abstract Name: Amyloid Beta (1-42) Aggregates in the Presence of Insulin

Alzheimer’s disease has been correlated with the build up of amyloid-beta plaques due to aggregation of these amyloid peptides. The amount of aggregation of amyloid-beta (1-42) has been shown to increase more substantially over time when in the presence of insulin, leading to a higher risk for the development of Alzheimer’s disease in patients with diabetes. The interaction of amyloid-beta (1-42) and insulin was examined under a variety of conditions to investigate aggregation patterns. Through SDS-PAGE and western blot techniques, the aggregation of amyloid beta was studied over various time intervals with combinations of polyethylene glycol (PEG) and insulin to mimic a physiolgically accurate system in which the aggregation levels were observed. Additionally, Thioflavin T assays and Bradford assays were used to quantify the aggregation under each condition. Aggregation was found to be the highest when amyloid-beta was combined with PEG and insulin, in comparison to lower values when aggregated separately. Further research will be done to understand the effects of drug therapies added to an environment in which aggregation levels are the highest.

Michael Conrad

NY - Pace University

Discipline: Social Sciences

Authors:
#1 Michael Conrad

Abstract Name: Foreign Intervention in Laos: A Political and Economic Development Handicap

This research sets out to explain how two pivotal eras of intervention in Laos, the French Colonial Era and the contemporary Chinese Influence Era, have negatively impacted the country’s growth politically and economically. This research aims to fill the gap where the small amount of preexisting literature that is relevant to Laos fails to connect Laos’ history and colonial ties to its modern issues. As such, this research compares and compiles a variety of primary, secondary, and tertiary sources and puts forth unique arguments about the state of Laos. The French, driven by imperial ambitions, viewed Laos merely as a strategic tool for Indochinese expansion, hindering economic progress and education. The legacy of French rule left Laos underdeveloped and economically stagnant. In the present, China's influence, particularly through hydroelectric dam projects and the Laos-China Railway, presents a new form of dependency. Burdened by insurmountable debt, Laos experiences environmental degradation, agricultural challenges, and social upheaval. Chinese investments, ostensibly for economic cooperation, mirror historical patterns, serving China's interests while perpetuating a cycle of external control. Comparatively, French and Chinese interventions prioritized their goals over Laos' development, strained regional relationships, and suppressed democracy. The paper underscores the parallels between these historical periods, emphasizing that lessons from history are crucial for Laos to shape a more balanced relationship with external partners. Acknowledging its historical roots, Laos must prioritize self-determination, equitable development, and caution in foreign entanglements to transcend the shadows of its past and emerge as a sovereign nation. A renewed commitment to agency and autonomy is imperative for navigating the complexities of its relationship with China.

Brooklyn Conrad

MN - Augsburg University

Discipline: Business and Entrepreneurship

Authors:
#1 Brooklyn Conrad

Abstract Name: The Effects of Minimum Wage on Teenage Pregnancy Rates in the U.S.

The effects of minimum wage on teenage pregnancy is a relevant research topic that explores whether changes in minimum wage laws have any influence on the incidence of teenage pregnancy. It raises important questions about the economic and social factors that can impact the reproductive decisions of teenagers. Minimum wage is the legally mandated lowest hourly wage that employers must pay their workers, and teenage pregnancy refers to pregnancies of individuals who are 19 or younger. A study by Lindsey Bullinger (2017) showed that a $1 increase in the minimum wage decreased teenage pregnancy by 2%, or by about 5,000. Another research article stated that raising the minimum wage to $15 an hour could reduce the number of adolescent births by 35,000 per year. If further research shows that minimum wages influence teenage pregnancies, then policy makers might consider raising the minimum wage to reduce teenage pregnancy rates. Other policy implications may include healthcare access, and support services for those teens that do get pregnant. The data used in this study is from the U.S. Census 2011 and 2014. These years were chosen to determine if there is a significant effect from the passing of the Affordable Care Act in 2012 that requires insurance companies to cover the costs of birth control. All 50 states and Washington D.C. are used in the dataset. Minimum wages for each state were taken from the U.S. Department of Labor website. To determine the effect of minimum wage on teenage fertility, regressions will be run with teenage fertility rate as the dependent variable, and minimum wage as the independent variable, among other demographic variables, such as income and poverty rate. It is expected that the higher the minimum wage, the lower the teenage pregnancy rate.

Isata Conteh

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Aria Mason
#2 Isata Conteh
#3 Rakesh Upadhyay
Isata Conteh

Abstract Name: Oxylipin Biosynthesis Pathway Encoding Genes, Lipoxygenase 1 and 2 Expression Profiling

Lipoxygenases (LOXs) (EC 1.13.11.12) catalyze the oxygenation of fatty acids and produce oxylipins, including the plant hormones jasmonic acid (JA) and its methyl ester, methyl jasmonate (MeJA). A novel LOX gene family was identified comprising nine LOX genes in the aquatic plant, duckweed (Spirodela polyrhiza) (Upadhyay et al., 2020). The 13-LOX subfamily, with seven genes, predominates, while the 9-LOX subfamily is reduced to two genes, an opposite trend from known LOX families of other plant species. We were interested to know as why this 9-LOX sub gene family is reduced to 2 genes contrary to land plants. To further use these two genes in genetic engineering, the first task is to find out if the genes are expressed or comparatively more expressed than the other one. Our results from this CURE project indicates that both LOX1 and LOX2 genes express but at a varying levels. LOX1 gene expresses approximately 3-fold higher than the LOX2 indicating its early activation or requirement.

Eunice Contreras Martinez

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Eunice Contreras Martinez

Abstract Name: Drawing on the Depth of Processing: Does Drawing Improve the Memory Trace?

The purpose of this study is to examine memory processes drawing on the research of Clark and Tulving (1975). Clark and Tulving demonstrated that episodic memory, rather than being an automatic by-product of operation, is a cognitive process that increases the durability of the trace (called “depth” of processing) which refers to a greater degrees of semantic involvement with the item. Multiple experiments were run to understand the relationships between degrees of semantic involvement and memory. Participants were induced to process words to different depths by answering various questions about the words: shallow encoding was achieved by asking questions about typescript, intermediate levels of encoding was accomplished by asking questions about rhymes, and deeper levels were induced by asking whether the word would fit into a given category or sentence frame. Clark and Tulvin concluded that the deeper encoding took longer to accomplish and were associated with higher levels of performance on memory/retention tests. The second experiment performed was designed in which a complex but shallow task took longer to carry out but showed lower levels of recognition than an easy, deeper-level task. The authors concluded that a minimal semantic analysis is more beneficial than an extensive structural analysis.The purpose of the present study is to determine if encoding is better when using a deeper level of processing (Clark & Tulving) that involves drawing a picture. In the “Board Game” study, participants were shown a 12 item word list and given 30 seconds to study the list, followed by a recall task. After, they were given a second list on a whiteboard and given 30 seconds to draw a picture of each word - again followed by a recall task. Using the whiteboard resulted in better recall, supporting the notion that drawing requires deeper processing then simple memorization.

Lindsey Conway

NC - High Point University

Discipline: Interdisciplinary Studies

Authors:
#1 Lindsey Conway

Abstract Name: Refined Violence: Dualities in Cy Twombly’s Fifty Days at Iliam (1978)

Depictions of war and violence have been a part of the traditional art historical canon for many centuries. This paper examines the works of Cy Twombly, who challenged traditional and modern perspectives and illustrations of violence. Contemporaneous expressionist artists often portray violence as a gendered dichotomy: violence is an act you perpetrate, seen as masculine, or it is an act you receive, seen as feminine. Twombly subverts this dichotomy, and addresses both gendered perspectives on the depiction of violent art in the grand message of cyclical aggression as seen in his Fifty Days at Iliam series (1978).This paper will dissect Classic and contemporary definitions of masculinity and femininity to further nuance the discussion of violence in art. This paper does not attempt to offer a novel definition of violence but will offer several multidisciplinary constructs to address the impact of violence on constructions of gender. From this

framework can a deeper analysis of Twombly's contemporaries be conducted. Francis Bacon, Chaim Soutine, and Ana Mendieta will be discussed to establish a contextual framework that strengthens the understanding of gendered dichotomy in art. I will also discuss violence within the context of dynamism and the act of artistic creation. This study focuses on The Fifty Days series, with the Shield of Achilles and Ilians in Battle highlighted to illustrate Twombly's approach that blurs gendered conceptions of violence. This paper suggests his evocation of the phallus, his method of artistic production, and his reference to complex symbols from Alexander Pope's translation of Homer's Iliad are tools with which Twombly enacts this strategy.

Terrie Cook

TX - Lone Star College

Discipline: Humanities

Authors:
#1 Terrie Cook

Abstract Name: Infinite Accessibility: Star Trek and the Shifting Portrayal of Physical Disability in American Culture

This study traces the shifting depiction of physical disability in Star Trek from the 1960s to the 1990s with the aim of examining the portrayal of disabled people within American science fiction. Using a comparative analysis of the portrayal of disabled characters in inclusive settings it may be possible to discern a shift in popular attitudes toward disability. This analysis focuses on examples from Star Trek: The Original Series, The Next Generation, and Deep Space Nine featuring a character with a visible physical disability whose impairment is directly tied to the episode's plot. Each episode's examination relies upon two main conceptual frameworks: Ilana Lehmann's detailed studies of disability which showed their general acceptance and Ashley-Marie Maxwell's literary analysis of popular culture found a removal of all impairments. The episodes under review are based upon the guidelines of Shepard's Portraits of Individuals with Disabilities in Star Trek which evaluated the characters based upon their ability to educate about disabilities. This study revealed that the limitations each character faced evolved from a situation in which disabled people were deprived of choice (1960s), to one in which coping mechanisms and assistive technologies better equipped the disabled (1990s). Additionally, the level of agency and self-advocacy of the disabled character also reflects the shift. This paper delineates the significance of how science fiction, a genre with roots in medical and technological advances, depicts and may even mirror the public views of disability. Furthermore, this study highlights the significance of more research into the changing portrayals of disability in popular culture, such as other long running television series and the effect on public changing attitudes towards disability inclusion and accommodation.

Jesse Cooke

MI - Hope College

Discipline: Social Sciences

Authors:
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#2 Olufemi Oluyedun

Abstract Name: Associations among dimensions of friendship quality, accountability, and sport commitment

More recently, sport commitment has garnered increased attention among sport and exercise psychologists.

Previous research suggests athletes are committed to sport in two forms: enthusiastic commitment (EC – ‘want to’) or constrained commitment (CC – ‘have to’). In tandem with sport commitment literature, sport peer relationship research has flourished with findings suggesting peers are motivationally salient members of the sport context. Friendship quality (positive & negative aspects of friendship) and accountability (the condition of an individual being responsive to and responsible for their actions towards important others) play a role in our understanding of peer relationships. Despite this knowledge, sport peer relationship research is understudied. The purpose of this research was to gain a nuanced understanding of the complex relationships teammates share. More specifically, we examined sport friendship quality and accountability as predictors of sport commitment. Collegiate athletes (N = 100; Mage = 21.0 years) from 10 separate sports provided demographic information and completed established measures of sport friendship quality, accountability, and sport commitment. Canonical correlation analyses showed a multivariate relationship emerged (p < .05) indicating a moderate association between the predictor variables (friendship quality dimensions & accountability) and criterion variables (EC & CC). Higher reported positive sport friendship quality and accountability were associated with higher EC and lower CC. Negative sport friendship quality was not related to sport commitment. Our work also helps showcase the relevance of the accountability construct in understanding athlete’s sport commitment. In essence, examining a robust social tapestry of an athlete seems to best enrich our understanding of social relationships in the sport context. The significant relationship found between accountability and the two forms of sport commitment is informative for future work.

Nazari Cooke

NY - SUNY Geneseo

Discipline: Interdisciplinary Studies

Authors:
#1 Nazari Cooke

Abstract Name: Everybody Wants to be Black, but Nobody Wants to be Black: Redefining Our Influence, Stereotype, and Perception.

In the age of globalization and interconnectedness, the exposure to and sharing of cultures are becoming increasingly normalized. The internet and social media have changed culture by putting everything at our fingertips. With today’s easy access to the once-known-as far-away customs and ways of life of foreign countries, fellow humans are revamping and broadening their social interests as they get accustomed to cultures other than their own. Existing literature shows that Black people, in particular, have been pioneers in many fields throughout history and are known to have many rich and attractive cultures. From educational figures like Booker T. Washington to entertainers such as Josephine Baker and Aretha Franklin, the list of legends that epitomized black influence is long and traceable not just in the United States but all over the world. Hip-hop was and is still a tangible example of black culture in America, a genre of popular music that originated in the early 1970s by African Americans in the Bronx, which took the world by storm and still has a palpable influence mainly on the youth worldwide. Despite the obvious infatuation with black culture, there are still negative perceptions and evident stereotyping of black people within other communities. How could one explain such worldwide infatuation with black cultures concurrently with such discomfort vis-a-vis black people? This research will first explore the many ways in which black people are imitated throughout other cultures and how black culture is relevant to others. Then, we will dive into black stereotyping and attempt to redefine the misperception of blacks by others despite their fathomable rich culture that connects us all as humans.

Joseph Coolidge

NY - Colgate University

Discipline: Natural and Physical Sciences

Authors:
#1 Joe Coolidge
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#5 Amanda Subalusky
#6 Christopher Dutton
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#8 Therese Frauendorf

Abstract Name: Seasonal Snacks: Invertebrate Diet Shifts between Wet and Dry Seasons in the Mara River, Kenya

Invertebrates in the Mara River in East Africa play a crucial role in the cycling of nutrients, including nutrients egested by hippopotamuses. However, little is known about the food-web dynamics in this important river. Mara River invertebrates fall into three established functional feeding groups based on their ecological role and primary feeding strategy: scrapers consume material off of rock and sediment, collectors capture and ingest food suspended in water, and predators prey on invertebrates and other animals. This study aims to better understand the common food sources of Mara River invertebrates, with consideration for seasonal changes and the number of hippos present in the river. Gut contents of invertebrates collected upstream of hippo activity during different seasons were analyzed using ImageJ software to compare the food sources of scrapers, collectors, and predators during the wet and dry seasons. Invertebrates were found to cumulatively consume a more diverse diet during the wet season than the dry season. Scrapers and collectors consumed more insect material and other autochthonous (food from within the river) sources during the wet season than in the dry season. Predators exhibited the opposite behavior and consumed more insect material during the dry season. These data can be compared to that of river invertebrates affected by hippo activity further downstream to determine how hippo dung can change the food-web dynamics of the Mara River.

Jean-Claude Coomer

UT - Utah Valley University

Discipline: Mathematics and Computer Science

Authors:
#1 Brandon Ro

Abstract Name: Revolutionizing Sustainable Architecture: Biomimicry and Digital Tools

This research focuses on leveraging advanced digital tools to drive eco-friendly architectural innovation, aligning with the growing need for environmental sustainability, By blending architectural design, computational modeling, and biomimicry, the study aims to usher in an ecological age. The core hypothesis centers on imitating nature's organic structures to enhance sustainability in architecture. Two key approaches are implemented: computational modeling of organic forms and the structural analysis of these forms. Computational modeling, powered by Autodesk's Dynamo software, involves simulating and refining biomimetic structures. The goal is to analyze their tensile and compressive strengths, expecting improved structural integrity. Autodesk's Robot Structural Analysis software will be used for experimental validation. The study explores designs inspired by natural elements like hollow tubes, shells, exoskeletons, tension structures, woven structures, and planar surface transformations. A complimentary component of the research will explore the construction of a cost-effective bioprinter to democratize bioprinting technology. Utilizing readily available 3D printers, such as the 'Ender 5', open-source bio-extrusion modifications like the

‘Replistruder v3.0’ are integrated to facilitate the printing of non-plastic materials. Detailed assembly instructions and firmware programming are provided to make affordable experimentation with bioengineered materials, such as hydrogels, accessible for collaborative architectural applications. It envisions a new era in architectural design driven by ecological principles, fostering sustainability, resilience, and harmony in our world. Ultimately, this research seeks to redefine the relationship between the natural and the built environments. It envisions a new era in architectural design—one where ecological principle guides our creative process and innovation leads us to a more sustainable, resilient, and harmonious world.

Alexa Cooney

FL - University of Central Florida

Discipline: Natural and Physical Sciences

Authors:
#1 Alexa Cooney
#2 Angel Arnau
#3 Madeline Butler

Abstract Name: The Effects of Agrochemicals on Mosquito Life Histories and Immune Function

Anthropogenic perturbation of the environment can lead to unforeseen consequences. An area of concern is the overuse of agrochemicals; while important for food production, off-target biological impacts are unknown. The most widely used herbicide, glyphosate (Round-up™), has been shown to impact animal nervous systems. In the African malaria mosquito, Anopheles gambiae, glyphosate reduces immunity and increases malarial transmission risk. Immunity can be reduced by inhibiting phenoloxidase (PO); a component of insect defense against many parasites including bacteria, protists, and viruses. Agricultural lands are excellent breeding grounds for mosquito species, many of which transmit arbovirus diseases, suggesting glyphosate has profound impacts on vectored disease dynamics. However, there are potential limitations with previous studies, accounting for only one species vectoring a protist and using unrealistic doses. To investigate, more research conducted in environmentally realistic conditions on arbovirus vectoring species is needed. We address the hypothesis that agriculturally relevant doses of glyphosate delivered in an environmentally meaningful manner impact mosquito immunity and life histories. We use the southern house mosquito Culex quinquefasciatus, whose larvae develop in agricultural run-off and vector arbovirus diseases including West Nile, St. Louis encephalitis and Western equine encephalitis. We exposed larvae and adults to increasing glyphosate doses, assessed their PO activity, immune gene transcription, and life histories. We found glyphosate negatively impacts larval survival and development time. Further, adult mosquitoes exposed to small amounts of glyphosate in the larval environment showed impaired PO activity as adults. We found no effect of glyphosate on adult immune gene transcription. This experiment provides insight on negative impacts agrochemicals have on mosquito life histories and immune function at agricultural doses. Future research should assess the effects of agriculturally relevant glyphosate doses on arbovirus transmission rates. If these have an impact, new policies addressing the use of agrochemicals in disease hotspots should be implemented.

Noelle Cooper

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Noelle Cooper
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#3 Anna Cook
#4 Andrew Arrant, Ph.D.
#5 Jeremy Herskowitz, Ph.D.

Abstract Name: The Role of Progranulin Deficiency and TDP-43 Pathology in Prefrontal Cortex Dendritic Degeneration: Implications for Frontotemporal Dementia

Frontotemporal Dementia (FTD) is one of the most common forms of early-onset dementia, and it is characterized by prominent behavioral symptoms like impaired social dominance. Half of FTD cases exhibit TAR DNA-binding protein-43 (TDP-43) pathology. In FTD, TDP-43 mis-localizes from the nucleus to the cytoplasm, leading to insoluble TDP-43 aggregates within the neuron. Mutations in the GRN gene, which codes for progranulin, a growth factor that regulates lysosomal activity, cause FTD with TDP-43 pathology. Our research aims to answer the following question: How do mutations in GRN, which cause a loss of progranulin, and the existence of TDP-43 pathology cause impaired social behaviors in FTD? To address this question, GRN heterozygous mice were crossed with TDP-43 overexpressing mice to represent pathological aspects of FTD, including impaired social dominance behavior. I hypothesize that loss of progranulin with TDP-43 pathology will induce degeneration of dendritic spines in the medial prefrontal cortex among layers II and III pyramidal neurons. Through a combination of iontophoresis microinjection of fluorescent dye, high-resolution confocal microscopy, and innovative morphometry analysis I tested this hypothesis and discovered that GRN heterozygosity coupled with TDP-43 pathology drove a reduction in mushroom spine density in the prefrontal cortex. Loss of mushroom spines is consistent with the exhibition of aberrant social behavior in this mouse model. These studies yielded a deeper understanding of the mechanisms that drive cognitive impairment in FTD.

Spencer Cooper

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
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#2 Nicholas Barmore
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Abstract Name: Nanostructured Zinc Oxide Gas Sensors

Metal oxide semiconductors are used as gas sensors in a variety of applications to detect the presence of various gases. Here, we report the synthesis, characterization, and sensor development of nanostructured zinc oxide (ZnO) semiconductors for gas sensing of CO2 and O2. Using a general hydrothermal reaction between zinc precursor salts (zinc nitrate, sulfate, acetate, and chloride) and a base (hexamethylenetetramine) at concentrations between 0.05 and 1.0 M, we show that nanostructured zinc oxide crystals can be grown directly onto glass substrates. The nanostructures generated vary significantly in size, morphology, and surface area depending on reagent and concentrations used, including nanorods (zinc acetate), nano-honeycombs (zinc nitrate), and nanoplates (zinc sulfate). We also report improvements to the adhesion and film homogeneity via spray pyrolysis, wherein substrates are pre-treated with an aerosolized spray of zinc salt precursors at high temperature. Lastly, we present the development of ZnO-coated substrates as CO2 sensors via preliminary resistance measurements in air and under CO2.

Jesse Cooper

MA - Bridgewater State University

Discipline: Mathematics and Computer Science

Authors:
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#2 Paul Kim

Abstract Name: How Accessible is My Website?

It is important that websites are accessible for everyone. Some people have trouble processing speech or printed text due to a sensory deficit. It can also be difficult or impossible to click the mouse button while holding it still and to use the keyboard for someone with limited use of their fingers or limbs. Designers should design websites and other tech with people with disabilities in mind. The Web Content Accessibility Guidelines recommend that websites be made perceivable, operable, understandable, and robust.However, most designers are healthy with good vision, hearing and dexterity, and it could be hard for designers to know how accessible their sites are. We want to make it easier for designers to know if their websites are accessible for people with disabilities. Therefore, in this project, we will develop an automated system that will quickly check websites for accessibility issues based on the Web Content Accessibility Guidelines, evaluate scores and give feedback about how to improve the website in terms of accessibility. The user will enter a website address into a textbox, press a button, and our website will generate a report for accessibility issues. We expect that this project will also raise awareness around accessibility on the web.

Kathryn Cooper

GA - Georgia College and State University

Discipline: Humanities

Authors:
#1 Kaitlyn Newman

Abstract Name: Kantian Critique of the Development of Obstetrics and Gynecology

Throughout history, medical researchers have conducted ethically questionable experiments, with some resulting in severe harm or death to the subjects. Despite the abuse of medical test subjects, immoral medical experimentation was often justified because it led to medical discoveries that benefited the rest of humanity. Specifically, women's healthcare has historically been an underdeveloped field based upon insufficient and sexist research, and its genesis is fraught with ethical concerns. The catalyst for developing the modern field of obstetrics and gynecology in America was Southern slaveholder's desire to increase the birthing capabilities of enslaved people after Congress ended the transatlantic slave trade. James Marion Sims is lauded as the "father of modern gynecology," but he gained this title by performing experiments on enslaved women of color without pain medication or any semblance of ethical regard for the humanity of his subjects. Sims' experiments, namely his revolutionary method for repairing vesicovaginal fistula, form the basis for gynecological practices today. Contemporary scholarship discusses these issues in texts like Medical Violence, Obstetric Racism, and the Limits of Informed Consent for Black Women from the Michigan Journal of Race & Law and Medical Bondage: Race, Gender, and the Origins of American Gynecology from the University of Georgia Press. I analyzed these sources using Immanuel Kant’s Groundworks on the Metaphysics of Morals to argue that the obstetric practices of Sims are immoral through a Kantian ethical framework. The severity of Kantian ethics provides an immovable framework to expound upon the atrocities used to develop today's modern gynecology.

Brynn Coppedge

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Brynn Coppedge

Abstract Name: Design Hero: Mary Blair

This paper explores the life and career of Mary Blair, a legend and icon within the graphic design and illustration communities. Beginning with Mary's childhood, readers are informed about her family and living conditions. Readers will then learn about her education at San Jose State College and Chouinard School of Art before learning about her work for Walt Disney Studios, including "It's a Small World After All." Finally readers will learn about Mary's time with Little Golden Books, as well as her freelance work. Mary Blair has left an impact on the world of graphic design, beginning in the early stages of her career and continuing long after.

Hailee Corbin

CA - University of California - Santa Barbara

Discipline: Humanities

Authors:
#1 Hailee Corbin

Abstract Name: Working with Natural History: Commemorative Materialities and the Developing Visual Language of Nahua Christianity

The Hearst Chalice, housed at the LA County Museum of art is a liturgical object made in late 16th century colonial Mexico whose fabrication combines featherwork, miniature boxwood carvings, lapidary art, and silversmithing. Previous scholarship has asserted its status as a work possibly commissioned by a Nahua Christian elite in colonial Mexico and outlined some of the artistic traditions relevant to its exquisite design; however, a more contextualized analysis of the object that explores its specific production in the 1570s had not been undertaken. By engaging closely with the materials of the chalice, Nahua and Spanish primary sources, as well as art-historical scholarship on Postclassic Mesoamerica and colonial Mexico, this paper proposes that the chalice is tied to the crisis of the Franciscan Millennial project in the mid sixteenth century and the related burgeoning of the field of natural history. In the 1570s, the Franciscan Bernardino de Sahagún and a group of Nahua intellectuals spearheaded a considerable expansion of Book 11 of the Forentine Codex, devoted to "Natural Things," under the idea that natural history was a more inert terrain in which Nahua knowledge could be recorded. This paper contends that the chalice served as a refined visual expression of that knowledge, which, through the specific selection of materials, further articulated a Nahua Christianity. These findings are consequential because they bring together the study of natural history with the field of art history and shed light on the visual traditions of the first endemic Christianity to the Americas.

Lilliana Corona

CA - University of California - Merced

Discipline: Engineering and Architecture

Authors:
#1 Lilliana Corona
#2 Joliette Li
#3 Colleen Naughton

Abstract Name: Environmental Life Cycle Assessment for Solar Canals in the San Joaquin Valley

Earth's climate continues to experience unprecedented impacts from climate change creating challenges for communities and ecosystems, affecting the San Joaquin Valley (SJV) with no exception. The SJV has recently experienced extreme heat waves during their summers and floods from heavy rains, which affect communities and their agriculture. With the agricultural industry being the largest in California in the SJV that produces a substantial portion of U.S. and global food commodities, SJV farms rely heavily on water provided by irrigation canals. Another important aspect is energy, which the communities in the SJV use for power. California has ambitious goals to decarbonize across all sectors by the year 2045, which calls for an increase in renewable power sources. As a result, constructing solar panels over irrigation canals (referred to as Solar Canals) and aqueducts have been proposed as a solution and a pilot project will be installed in Turlock, California. Solar Canals have multiple potential benefits to (1) generate electricity, (2) reduce water evaporation through shading, (3) reduce aquatic weed growth with less exposure to UV light, and (4) reduce land use by placing solar panels over pre-existing infrastructure rather than other land. We will employ cradle-to-gave Life Cycle Assessment (LCA) method to quantify the environmental impacts and co-benefits of Solar Canals. Preliminary results will consist of baseline fuel usage and CO2 emission calculations of canal cleaning to determine potential reduction from Solar Canals that may reduce aquatic weed growth and need for as frequent cleanings from shading the canals.

Irvin Corona Aquino

NY - Borough of Manhattan Community College

Discipline: Business and Entrepreneurship

Authors:
#1 Irvin Corona Aquino

Abstract Name: Re-envisioning the community college system as a forest

What if my community college was a forest? A forest, known as the lungs of the planet, exists to benefit the ecosystem, playing a crucial role in the well-being of society. Extending this concept to a community college involves fostering an environment of learning, growth, and collaboration, mirroring the diverse ecosystem of a forest. Similar to a forest, a school should be a place where students have opportunities for learning and growth in an enriching environment.A healthy school, similar to a thriving forest, provides opportunities for collaborative learning spaces that foster community engagement and promote student life. This extends to enhanced learning in the classroom, focusing on interdisciplinary studies, hands-on projects, and real-world applications. This research reimagines our school facility as a fully functioning ecosystem through the use of analytical research, incorporating concepts such as biomimicry and ecosystem management.In conclusion, for schools, especially community colleges where the average student stay is not more than three years, it is crucial for all aspects of the institution, including different departments, to work in harmony with the objective of producing the most benefit for the students. Ultimately, this benefits society, in the same way, a forest contributes to the environment.

Irvin Corona Aquino

NY - Borough of Manhattan Community College

Discipline: Business and Entrepreneurship

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Abstract Name: Re-envisioning the community college system as a forest

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Justice Corpora

WI - University of Wisconsin-Superior

Discipline: Humanities

Authors:
#1 Justice Corpora

Abstract Name: Ernest Hemingway: The Snowball Effect of Stress-Inducing Circumstances

“Just then, death had come and rested its head on the foot of the cot and he could smell its breath” (Hemingway). Hemingway demonstrates his fascination with death using the character of a soldier in a hospital from an unpublished work, exemplifying how his fiction has been shaped by his experiential mental states. This research is built on other studies regarding Hemingway’s biographical aspects as they apply to his fiction. However, other studies do not address the parallel themes between his life and his short story work in relation to suicide. The analytic techniques used by Hemingway scholars are reconstructed to reveal how Hemingway’s life affected his writing. I will argue that the impacts left on Hemingway by his involvement in World War I and the impact that his father had on him are contributing factors to Hemingway’s suicide in 1961, and these circumstances have been fictionalized by Hemingway either subconsciously or intentionally. Hemingway reflects on his experiences of isolation and loss in the following primary short stories: “A Way You’ll Never Be” and “In Another Country.” Hemingway’s experiences from the impact his father had on him are recorded in the following primary short stories: “Indian Camp,” “Fathers and Sons,” and “My Old Man.” In exploring what led Hemingway to end his life, key father-son moments and wartime experiences will be considered both in light of specific settings (including liminal zones) that impacted him personally and how such moments of trauma contributed to his decision (as shown through movement).

Sebastian Correa

COL - EAFIT University

Discipline: Business and Entrepreneurship

Authors:
#1 Laura Estrada Garcia
#2 Natalia Gonzalez Salazar
#3 Sergio Alonso Castrillon Orrego
#4 Sebastian Correa

Abstract Name: Informal Actors in The Commercial Sector El Hueco - Medellín 2016-2023

This research falls within the domain of business history but also seeks support from other disciplines within the social sciences. Its objective is to characterize informal actors in the commercial sector of El Hueco - Medellin, individuals who are integral to the city's business milieu and have engendered logics of action and practices contributing to the construction of sustained economic, social, and political trends. From this perspective, there arises a need to investigate, characterize, describe, understand, analyze, and comprehend how informal actors in this commercial sector influence the economic development of the city, constituting a group with high adaptability that has managed to thrive in a globalized world.The study is carried out between 2016 and 2023, a period where we will demonstrate the practices given around informality in the El Hueco-Medellin. Currently this place has an appropriate space for 4,500 street vendors, but according to Guillermo Giraldo, national president of the General Union of Workers, there is a tripling in number from 12,000 to 35,000 since early 2022. This context, exacerbated by the lack of implementation of public policies to guide informal traders and their families, underscores the relevance of the research (Zuleta, 2022).The project is qualitative in nature with hermeneutic analysis supported by the prosopographical method, incorporating interviews, surveys, participant observation, and group sessions with individuals associated with the sector. It will be complemented by a documentary review of public and private archives. Support will be provided by Centro Unido, a major entity that brings together most entrepreneurs and traders in the sector, as well as the Union General de Trabajadores Informales (UGTI), and by seedbeds at EAFIT University. This process will facilitate the understanding of an economic, political, social, and cultural phenomenon experienced by the city, contributing to various fields of study.

Jordan Corrigall

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
#1 Jordan Corrigall
Courtney Roth

Abstract Name: A Tale of Two States: Comparing the Impact of Alcohol Regulation on Suicidality in Two Midwestern States

While the toxicological effects of alcohol on the human body are widely known and studied, intersecting regional patterns of alcohol use and mental health trends are less understood despite their synergistic impact on human health. The State of Wisconsin, known for its infamous relationship to alcohol, is characterized by legislative practices and cultural attitudes which are widely considered to be at blame for high rates of alcohol dependency that are distinguishable from many other U.S. states, including its neighbor Minnesota. Likewise, Wisconsin’s rising rate of suicide outpaces its neighbors despite robust investment in mental health

treatment and prevention services throughout much of the state's history.Using publicly available State and Federal health data from the start of 2006 to the start of 2018, the authors seek to investigate, on a biennial basis, if the rising rate of suicide in Wisconsin over the last decade is connected to its statewide rate of alcohol consumption. To accomplish this, the authors of this study first seek to systematically quantify, on a biennial county-wise basis, state and county legislative policies that regulate alcohol consumption, distribution, and production in Wisconsin or Minnesota, two states that experience similar trends in health outcomes despite their cultural and legislative differences. Second, the authors seek to determine how, on a biennial county-wise basis, prevalence of suicide over a decade-long period correlates with: a) access to mental health and substance abuse treatment services, b) state and county alcohol-related ordinances, and c) prevalence of alcohol consumption. Finally, we will draw inter-state comparisons using the resulting trends and discuss if they reflect observed differences in legislation and cultural attitudes concerning alcohol.

Fernando Cortez

OK - University of Central Oklahoma

Discipline: Business and Entrepreneurship

Authors:
#1 Fernando Cortez
#2 Gary Thomas
Gary Thomas
Fernando Cortez

Abstract Name: Illicit Market Impact: The Dollar and the Economic Fall Out of Argentina's Educated

This study investigates the impact of the black market for U.S. dollars on Argentina's urban populace from 2003 to 2015, marked by hyperinflation and political instability. We focus on hourly wages across different educational levels, which can reveal that stringent government regulations on the foreign currency market led to increased black-market activities. The existing research suggests that the rising black-market rates disproportionately affected the urban workforce, particularly those with lower education, due to limited access to stable financial resources. This economic burden was more pronounced for the less-educated group, while the middle-educated group faced increased costs for essentials and restricted upward mobility. This project employs open databases from Argentina to analyze economic indicators and develops a multivariate model using survey data to assess the dependence of various socioeconomic groups on dollars. Categorizing urban populations by education levels, this study explores the interplay between these levels and economic factors. Our contributions include insights into the black market's impact on labor markets. This research adds depth to the understanding of government actions on the populace, especially in foreign exchange markets, enriching knowledge about wage stagnation during hyperinflation and informing future efforts to stabilize monetary policies.

Shina Cortez Garcia

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Shina Cortez Garcia
#2 Claire Lukens

Abstract Name: Exploring Subsurface Weathering and Chemical Depletion Fraction in Yosemite's Sequoia

Groves: Implications for Nutrient Dynamics and Ecosystem Sustainability

This project explores subsurface weathering in Yosemite's Sequoia groves, aiming to measure the extent of soluble element loss, focusing on rock-derived nutrients affected by weathering processes. Understanding the influence of weathering intensity on nutrient availability for tree growth is vital for ecosystem sustainability, as Sequoias play an integral role in the park's ecosystem. The study links weathering processes to carbon sequestration, exploring two distinct rock types—metavolcanic rock, prevalent in the grove, and granite. The investigation assesses whether metavolcanic rock supplies different or more nutrients than granite. Fieldwork in Mariposa Grove at Yosemite required using a hand trowel to collect two soil samples at each location from depths, one about 10 centimeters and the second about 10-20 centimeters. Surface rock outcrops were sampled using a hammer, chisel, and gas-powered rock drill. Subsequently, lab work was conducted at UC Merced, where rocks and soils were pulverized to a fine powder, organic matter was removed by heat treatment, and samples were analyzed for elemental geochemistry using a Bruker X-ray Fluorescence Spectrometer. Comparing the elemental chemistry of fresh bedrock and weathered soils was done using the Chemical Depletion Fraction to assess the extent of soluble element loss due to weathering processes. Increased weathering intensity may lead to increased rock-derived nutrient levels due to the breakdown of rocks and minerals, thereby contributing to the nutrient shed. Thus, understanding these dynamics is essential for preserving and managing Sequoia ecosystems, particularly in the face of prolonged drought conditions and climate change. It highlights the importance of tailored conservation strategies considering the specific geological substrates underpinning these magnificent forests.

Matteo Coscia

CO - University of Colorado at Boulder

Discipline: Interdisciplinary Studies

Authors:
#1 Matteo Coscia
#2 Mazen Al Borno

Abstract Name: Vibrotactile versus Visual Stimulation in Learning the Piano

Vibrotactile stimulation has been explored to accelerate the acquisition of motor skills involving finger movements (Gemicioglu et al. 22, Markow et al. 2010, Seim et al. 17). This study evaluates the effectiveness of vibrotactile stimulation compared to visual feedback in learning a 14-note one-handed tune on the piano. In the experiment, 14 subjects with no prior piano experience were exposed to both vibrotactile and visual stimulation to determine which was more effective. Subjects were randomized 1:1 in a group that first receives vibrotactile stimulation, then visual stimulation or in a group that first receives visual stimulation, then vibrotactile stimulation. Effectiveness was measured by evaluating the timing error and accuracy. Results from our study indicated that the timing error for vibrotactile stimulation was 12.1% (SD 6.0%), while the equivalent for visual stimulation was 22.3% (SD 10.3%). The accuracy for vibrotactile stimulation was 69.2% (SD 27.2%), while the equivalent for visual stimulation was 91.3% (SD 13.5%). It was observed that vibrotactile stimulation was generally more effective at minimizing the timing error at which the notes were hit compared to visual stimulation, and no statistically significant differences were found in accuracy.

Kennedy Couch

OH - Marietta College

Discipline: Natural and Physical Sciences

Authors:

#1 Kennedy Couch
#2 Suzanne Parsons

Abstract Name: Analysis of Paraben Induced Caspase-3 Activation in Human M624 Melanoma Cells versus Normal HaCat Epithelial Cells

Paraben, a common antimicrobial agent used in a wide variety of industrial, cosmetic, and pharmaceutical products, has been used for many years due to their ability to maintain a neutral pH and their odorless and colorless properties. While parabens have been found in everyday products for a number of years, controversies over their use have arisen as they have been linked to adverse effects and multiple skin cancers including malignant, melanoma, and contact eczema in the last several years. In this study, human melanoma cells and human normal epithelial cells were treated with 0.05-10mM paraben solution, consistent with IC50 values. Parabens were dissolved in ethanol or methanol solvent and added to complete DMEM for cell treatment. Methylparaben (methyl 4-hydroxybenzoate) and two paraben derivatives, mononitroparaben and helptylparaben, were used. A colorimetric Caspase-3 microplate assay kit was used to assess the ability of these compounds to induce apoptosis. Previous research has shown parabens have induced apoptosis in human melanoma cells, while this study will assess parabens' ability to induce apoptosis in normal human epithelial HaCat cells versus human melanoma M624 cells and provide support for the continued study of paraben as a possible topical treatment for melanoma.

Cooper Coursey

WV - West Virginia University

Discipline: Natural and Physical Sciences

Authors:
#1 Cooper Coursey
#2 James Kotcon

Abstract Name: Advancements in Culture Microscopy to Characterize Nematode Parasitism in Multicellular Organisms at the Molecular Level Consistent with Disease Tolerance and Resistance

Nematodes, or roundworms are among the most diverse but least studied organisms on Earth. They occur as parasites in animals and plants or as free-living multicellular organisms in soil, freshwater, and marine environments. In microbial and agricultural settings, nematodes contaminate pastures and mammalian species, and in medicine, serve as model organisms to the study of cancer and emerging tolerant parasitic diseases. Thus, relevant research options are necessary. We hypothesized that developing techniques against nematodes may be a promising alternative treatment. As such, we generated microbial environments and manipulated pathways to understand the roles of individual environmentally occurring microorganisms' abilities to interact and disrupt the impact that nematodes ultimately hold. Nematophagous fungi are a versatile carnivorous group of organisms that specialize in trapping and digesting nematodes. Our main goal is to compare the interactions of nematodes against various isolates of nematophagous fungi, and evaluate the possibilities of these molecular interactions to treat surfacing contaminations and parasitic disorders. Our research has resulted in the modification of environmentally occurring processes of fungi associated in conjunction with nematodes. In the future, we hope to produce biological control outcomes against different types of roundworm isolates.

Wesley Cousin

MT - Montana State University

Discipline: Health and Human Services

Authors:
#1 Mari Eggers

Abstract Name: Rosebud Watershed: Stream Contamination and Cumulative Risk in Human Health

The purpose of this research was to analyze ground and surface water contamination within the Rosebud watershed, with the intended purpose of calculating the cumulative risk between the mean and median level of contaminants as it relates to human health. I chose this watershed because it had a very high level of lead contamination, which interested me, because of the recent high levels of lead contamination found in drinking water in Montana schools all across the state. I speculated that it could be possible that the high lead levels in public school drinking water could perhaps be a symptom of contamination from mines. The Rosebud watershed has two major active coal mines; one is in Rosebud County and the other is in Big Horn County. Using data from the Ground Water Information Center (GWIC), I carefully selected the data that would allow me to investigate ground and surface water contamination and cumulative health risks. Surface water poses risk to humans because we get our drinking water from surface water. Within the watershed, arsenic and uranium have levels above the EPA standard of 1.0 or greater, meaning that the water is unfit for lifetime consumption. It is fair to assume that these contaminants may influence the health of those who consume these waters. Rosebud County has a life expectancy rate of 74.93 years which is lower than both Montana (79.1 yrs.) and the United States (79.09 yrs.). Mortality rates are high in Rosebud. We can postulate that arsenic could be a determining factor in the high rates of chronic illnesses in Rosebud County. Environmental Health is a great field because I feel people must know what they are putting in their bodies. People have a right to make decisions about their health.

Audrey Covington

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

Authors:
#1 Audrey Covington
#2 Mwanday Yamegni
#3 Marisa Gomez
#4 Madison Mailee
#5 Kathryn Mouzakis
Mwanday Yamegni
Marisa Gomez

Abstract Name: Measuring the Impact of an RNA Stem-Loop on the HTLV-1 gag-pro Frameshift Efficiency

Many viruses use programmed -1 ribosomal frameshift (-1 PRF) sites to permit the synthesis of viral proteins encoded in alternative reading frames. The HTLV-1 gag-pro frameshift site includes a slippery sequence, a spacer, and an 11 base-pair stem-loop. While the slippery sequence and frameshift site function were previously established, its frameshift efficiency is unknown and the role of the downstream RNA structure is unexplored. There is substantial conservation in sequence and structure between the HTLV-1 and HTLV-2 gag-pro frameshift sites. Thus, we hypothesized that the HTLV-1 gag-pro frameshift efficiency is similar in magnitude to the corresponding site in HTLV-2 and its stem-loop is critical to frameshifting. To achieve the objectives of the study, we cloned p2luc plasmids encoding for the HTLV-1 wild type, HTLV-2 wild-type, and HTLV-1 no stem-loop frameshift sites. This involved the design of DNA inserts that encode each frameshift site, the ligation of a restriction enzyme digested insert to the p2luc vector, transformation of that DNA into E. coli, and the purification and sequencing of the cloned DNA. Presently, we are synthesizing and purifying reporter RNAs for each construct. These RNAs will be used in a dual-luciferase assay to measure

each frameshift efficiency. The frameshift efficiency of the HTLV-1 gag-pro frameshift site with and without its stem-loop will be compared to HTLV-2 to evaluate our hypothesis and fill important gaps in knowledge related to HTLV-1 -1 PRF.

Eli Cowan

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Eli Cowan

Abstract Name: Movie posters through the 60's till now

Movie poster design as well as poster design has been around for many years as early as the 1800s, but throughout time especially in the 1910’s through 40’s, it has changed a lot in the United States. Starting with propaganda posters and advertisements for recruitment for war. With the collage style of art that was used in films like Casablanca, there has been a change from the circus-like movie posters to the more graphic design-based illustrations that we're now starting to show a lot in the 1960s. The main thing to remember is that throughout the decades designs that are on movie posters change in conjunction with the style or trend of that decade based on the imagery and text.

Marion Cowles

NY - SUNY Geneseo

Discipline: Interdisciplinary Studies

Authors:
#1 Mae Cowles

Abstract Name: “Medicalized Racism in Black Mental Health”

Over the last several decades psychology as a discipline has grown and prospered. With many advancements in the diagnosis of illnesses and acceptance of mental health, the field has progressed making mental health more acceptable to discuss. While the field has shown such great progress in providing proper care to patients, Black psychology is often not discussed and is often missing from academia within the psychology field. Westernized psychology often “generalizes” how the mind works based on Eurocentric perspectives. The Black experience is very different from the white one, therefore, there should not be a generalized, white, approach to the understanding of the mind. Institutional and medical racism has prevented the ability of Black and African people to receive care for any conditions that an individual might have. Through analyzing Black literature and research articles, we can see that there are large discrepancies such as a lack of research opportunities, lack of mental health care, and discriminatory practices within medical institutions when it comes to Black and African individuals. These discrepancies have led to individuals experiencing high levels of depression and suicidal ideation. Depression is a major health concern for Black and African individuals aged 12 years and older (Madubata et al. 2018). By reviewing the evidence that previous research has shown and analyzing the work that Black psychologists are currently doing within the field, we can recognize the discrepancies that are currently taking place. We can then look to the past to discover how history has led us to medicalized racism and the historical context of racism in medicine. Finally, we can review the solutions and resources that we can make present within the field to make it so Black and African Americans can reach out for care and also feel more welcome as practitioners and care providers.

Megan Crawford

TX - Tarleton State University

Discipline: Health and Human Services

Authors:
#1 Megan Crawford
#2 Elissa Gowin
#3 Zoie Jordan
Elissa Gowin
Zoie Jordan

Abstract Name: Environmental Factors of Reporting Agencies and Their Effect on the Likelihood of Sexual Assault Crimes Being Reported

Past research has shown women ages 18 to 24 are the most at-risk population to experience sexual assault. This research will specifically focus on responses from this age group. When sex crimes go unreported to the police, victims may not be able to obtain necessary services to cope with victimization, offenders may go unpunished, and law enforcement and community resources may be misallocated due to a lack of accurate information about local crime problems. This research focuses on the environmental factors of government agencies that affect the likelihood of sexual assault crimes being reported. For purposes of this study, a government agency focuses on a police environment specifically the rooms where sexual assault crimes are reported. The student researchers also observed how the Vulnerability Theory and the Standpoint Theory informed their research. They developed a 41-question survey with demographic, quantitative, qualitative, and 3 are Likert scale questions. This exploratory research included a sample size of 80 participants using purposive sampling techniques. They ran qualitative and quantitative data through Statistical Package for Social Sciences (SSPS). The purpose of this study is to create an understanding of how environmental factors of government agencies affect whether sexual assault crimes are being reported. In the case that sexual assault crimes are not being reported, the student researchers would like to examine if it is the environment of the governmental agency itself that is keeping individuals from reporting. In the case that environmental factors of government agencies are impacting the reporting of sexual assaults, the student researchers would like to encourage government agencies to be mindful of the emotion being cultivated by their agency. This research has the potential to impact interventions that are being created and to get an idea of the accuracy of the number of crimes being reported.

Isabella Crawford-Parker

KS - University of Kansas

Discipline: Social Sciences

Authors:
#1 Isabella Crawford-Parker

Abstract Name: Parental Influence on Atheist Rhetoric in Czech Republic

Czech Republic has a conflicted history with atheism due to the way the Communist Party enforced a non-religious regime. This study explores the relationship Generation Z Czech Republic citizens have with atheism due to parental influence. The research will connect to previous studies by evaluating the current religious affiliations and rhetoric of a younger generation, as opposed to people alive during the Communist

Party's rule. Parental influence has likely affected young people's feelings toward atheism through church, education, or other variables. The study will use Zoom interviews to acquire first-hand data and to compare the opinions and ideas towards atheism of people aged 18-26 in the Czech Republic. To analyze the data, thematic coding will organize key words together like "non-religious," "religious education," and "faithful" to discover influences and opinions towards atheism. The study could signify parent influence has shaped atheist belief through choice of education or parenting styles, but also other influences such as religious presence on social media (positive or negative) could appear. In the study, findings will create framework for future research on the relationship between children and religious parental influence, politics and religion, and the relationship young people have built with religion in a post-communist society, as compared to the relationship older generations had built in a different world.

Ashley Cridlebaugh

MN - Minnesota State University - Mankato

Discipline: Social Sciences

Authors:
#1 Ashley Cridlebaugh

Abstract Name: Examining the Relationship Between Athletic Participation and Academic Success in Athletes and Non-Athletes

For many students, athletics are a major part of their college experience. In 2022, over 500,000 students were members of the NCAA (Statista, 2023). Despite this, research documenting the effects of sports participation on college students, the results are mixed. For example, Bradly et al. (2012) reported that the academic achievement of males who participated in rowing was higher than for peers not involved in sports, but rugby and soccer were not. More broadly, Maloney & McCormick (1993) reported that athletics negatively affects academic performance, while Deere et al. (2019), reported the GPA of athletes is higher than the GPA of non-athletes. These conflicting results are typical of research on how sports participation affects academic success.The purpose of this study is to examine differences in academic success between athletes and non-athletes. The hypothesis of this study is: There will be a significant difference in academic success between athletes and non-athletes. It is hoped that the results will shed some light on this important issue and help college students to better understand how participation in sports impacts their college experience.For this study, an online survey will be conducted using Qualtrics to examine the relationship between athletic participation and academic success. Participants will be recruited using the SONA system. Athletes scores on the Subjective Academic Achievement Scale (Stadler et al., 2021) will be compared to scores from students who do not participate in athletics using t-tests.I previously explored this topic through a classroom project. The results indicated that athletes performed better academically than non-athletes. However, the sample size was insufficient to draw any definitive conclusions. I predict that with a larger sample size, I will be able to obtain results that are both statistically significant and meaningful.

Allyson Criswell

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Allyson Criswell
#2 Maranda Kramer
#3 Mary Kathryn Sewell-Loftin

Abstract Name: Chemotherapy Treatment Alters Ki67 and Ankyrin Expression in Response to Strain and Hyaluronic Acid in Ovarian Cancer

Nearly 20,000 individuals are expected to be diagnosed with ovarian cancer within the next year; many of these will suffer from recurrent or late-stage disease that will develop resistance to chemotherapies. First-line treatments include chemotherapy drugs, Cisplatin, and Paclitaxel, which have different mechanisms of action. However, even with the varied treatments, chemoresistance remains a significant problem in ovarian cancer. Patients have less than a 50% five-year survival rate, making it essential to uncover the mechanism through which chemoresistance develops. The tumor microenvironment (TME) may play a significant and yet poorly understood role in developing drug resistance. Key components of the TME include cancer-associated fibroblasts (CAFs), which exert micro strains on the matrix, and hyaluronic acid (HA), an overexpressed glycoprotein. We hypothesize that CAF-generated strains and the increased presence of HA enhance chemoresistance. Samples were exposed to either vehicle controls, Paclitaxel, low dose (LD) Cisplatin, or high dose (HD) Cisplatin after exposure to combinations or absence of strain and HA. The ovarian cancer cell line OVCAR-8 non-modified or wild type (WT), shSCR, and shCD44 were exposed to strains on a Flexcell system (10% elongation, 0.3Hz, 24hr). Through quantifying immunofluorescence images for the proliferation marker, Ki67, and a cytoskeletal protein, Ankyrin this study investigated the role of tensile strain and HA on the development of chemoresistance. Our results display a strong association between strain and HA to increase expression of both Ki67 and Ankyrin. In the WT samples, these levels are further increased and observed when cells are treated with Cisplatin. Taken together, this suggests that the tensions exerted on the TME and the increased exposure to HA influence the development of chemoresistance and are pivotal in encouraging malignant behaviors.

J.T. Crocenzi

PA - Messiah University

Discipline: Humanities

Authors:
#1 J.T. Crocenzi

Abstract Name: Reframing Virginia Woolf's Mrs. Dalloway

Virginia Woolf’s Mrs. Dalloway remains a novel that stubbornly refuses literary critics’ definitive interpretations. Since its publication in 1925, critics have struggled to identify its central purpose, resulting in sharp disagreement over the ways in which they interpret the novel. Because Woolf chose to tell Mrs. Dalloway’s story largely through the inner monologues of its characters rather than an omniscient, objective narrator, readers receive little guidance on how to respond to the novel’s events. Instead, they must rely on the characters’ incomplete, subjective—and thus biased—projections, often leading critical responses grounded in close readings to favor unfairly one character’s perspective over another’s. But these readings risk short-circuiting the novel’s tightly interlocking world of lived experience in which the past informs the present. To do so means to miss the macro point about the subjective nature of reality Woolf was establishing. This paper argues that critics must give equal consideration to the often contradictory points of view presented by Mrs. Dalloway’s characters in order to fully apprehend the novel. By examining the substantial critical disagreement around some of these characters, this paper emphasizes the notion that the novel’s meaning must attend to the irreconcilable differences between characters’ mental worlds rather than relying on close readings of particular characters. In weaving together a story with contradictory points of view, Woolf deliberately requires the reader to consider a multiplicity of perspectives, and thus establishes the subjectivity of human experience as the controlling theme of the novel.

Jenna Crocker

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Jenna Crocker
Umaimah Maryam

Abstract Name: Eddy Still Loves You

Investigate the impact of ambiguous loss on children in various challenging situations. Conducted a literature review and synthesized articles on ambiguous loss and its effects on children. Identified common themes and factors influencing the psychological impact of ambiguous loss on children. Understanding these impacts contributes to better support systems for children facing ambiguous loss. The findings can guide future research and interventions to enhance children's resilience.

Elyse Cronic

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Elyse Cronic
#2 Brittney Conn
#3 Toby Nelson
#4 Karen Wozniak

Abstract Name: Identification of the Antifungal Mechanism of EIPE-1 against Cryptococcus Neoformans

Cryptococcus neoformans is a fungal pathogen found worldwide in soil and bird droppings that causes disease in immunocompromised and immunocompetent hosts. Cryptococcal meningitis has received global attention and is credited with 152,000 annual cases of cryptococcal meningitis in the HIV/AIDS population, killing approximately 112,000 people yearly. Treatments for fungal infections are limited, many treatments are toxic, and fungal organisms are becoming resistant to current treatments. Therefore, the discovery of novel antifungal therapies is critical for fighting these deadly infections. Previous studies in our lab showed that a eumelanin-inspired compound, EIPE-1, has antifungal activity against C. neoformans. EIPE-1 treatment led to misshapen cells, and transcriptional data showed differential regulation of fungal genes involved in cell wall synthesis, membrane assembly, and cell stress. Therefore, we hypothesized that fungal strains with mutations in these signaling pathways will be resistant to EIPE-1 treatment. For this, we have screened mutants from the C. neoformans mutant library for those that are available for transcription factors, kinases, and phosphatases. Mutants were mixed in competition with an m-cherry fluorescent cryptococcal strain and were treated with EIPE-1 or were left untreated as a control. Following a 24h incubation, cells were analyzed on a flow cytometer to evaluate resistant mutants. Data show that the mutants tested so far are more susceptible to EIPE-1 treatment than wild-type cryptococcal cells. Additional studies will examine further mutants to uncover those more resistant to EIPE-1 treatment. These data will be verified by incubating mutant strains with increasing concentrations of EIPE-1, which will verify their importance in EIPE-1 resistance. Finally, we will examine the how EIPE-1 interacts with the signaling pathway(s) where these genes are located by Western blot by examining phosphorylation of proteins in the identified pathways. These studies will enable us to pinpoint the mechanism of action of EIPE-1 against C. neoformans.

Sophie Cronin

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Sophie Cronin

Abstract Name: History and Development of Italian Piazzas: Comparing Piazza della Signoria and Piazza del Popolo

Piazzas are an integral part of the Italian culture and history. They date back to Greek, Roman and Entrust scan civilizations. Piazzas can have various purposes. Through our travels in Italy, we got to see many different piazzas, that had different purposes, sizes, shapes and aesthetics. This essay analyzes Piazza della Signoria in Florence and Piazza del Popolo in Rome, to compare them and see how the idea of these piazzas changed through the history of Italy. Piazzas or squares are planned and used differently in the United States compared to how they are planned in Italy. This essay then aims to compare piazzas to ideas of squares and urban planning in the United States. We have a very different culture than Italy. We use a lot more vehicular transportation, lessening the need for these open spaces to take breaks on commutes, that the Italian piazzas provide. The question is also asked how technology has influenced the use of piazzas in our modern life. As the United States is a much younger country than that of Italy, we don't have the same rooted history to the use of piazzas. Some guiding questions for this essay were how do Piazza della Signoria and Piazza del Popolo compare in terms of planning and purpose? How does the planning of piazzas compare to the planning of squares in the United States? How do piazzas in Italy stand up to modern urban planning theories in relation to squares?

Sophie Cronin

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Sophie Cronin

Abstract Name: DECARBONIZED DESIGN; ANALYZING HOW MASS TIMBER CAN SUPPORT DECARBONIZATION AND GROWING COMMUNITIES

The rise of carbon in our atmosphere is a leading cause of climate change, and one of the biggest threats to our planet. Though not the most toxic greenhouse gas, it is the most durable, therefore lingers much longer in our atmosphere. This leads to higher atmospheric temperatures, causing natural disasters such as melting ice caps, hurricanes, wildfires, and rising sea levels which leads to displacement of people and loss of biodiversity. The global building industry emits almost half of the annual carbon emissions. My thesis aims to understand how mass timber can be a leading building material to lower carbon emissions and reduce existing carbon. My project will be in downtown East Point Georgia, as Georgia is the number one state for forestry in the US and is a leading timber and paper industry in the country. Atlanta has the highest percentage of canopy coverage of any major US city. Trees are a staple of our community. With existing forestry conditions Georgia could be a leader of mass timber for the Southeast region of the United States. Also, with the proximity to Atlanta, the rail lines, and Hartsfield-Jackson International Airport, East Point has a central location to be an example site for promoting mass timber. My project aims to develop a demonstration pavilion which educates on the issues of carbon emissions, and how the building industry and mass timber can work to lower carbon emissions in our atmosphere. It also aims to show how we can push the limits of mass timber construction for the building industry, and support decarbonization by lowering

embodied carbon. Some of my guiding questions are how does mass timber support decarbonization? How will the mass timber industry support East Point and Georgia? My goal is for prosperity in East Point and globally through decarbonization.

Hannah Croom

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Hannah Croom
#2 Matthew Southward
#3 Shannon Sauer-Zavala

Abstract Name: Testing Reciprocal Within-Person Changes in Aversive Reactions to Emotions and Skill Use in the Unified Protocol

Emotional disorders are thought to be maintained in large part by the experience of frequent and intense negative emotions and aversive reactions to these emotions. The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP) was designed to teach patients skills to manage aversive reactions and reduce the frequency and intensity of negative emotions. However, it is unclear how skill use and aversive reactions are related to each other in this treatment. Participants (N = 70; Mage = 33.75, 67% female, 74% White, 74% heterosexual) completed measures of aversive reactivity, skillfulness, anxiety and depression before each session. We used hierarchical linear modeling to explore if within-person changes in aversive reactivity predicted residualized session-to-session changes in skill use and if within-person changes in skill use predicted residualized session-to-session changes in aversive reactivity. We then used multilevel mediation analyses to test whether aversive reactivity or skill use mediated the effect of the other construct on changes in anxiety and depression. Within-person increases in skillfulness significantly predicted session-to-session improvements in cognitive skills and mindfulness but did not predict improvements in any aspect of aversive reactivity. Within-person changes in aversive reactivity did not significantly predict changes in skillfulness. Between-person changes in skillfulness were significantly related to changes in between-person aversive reactivity. Only the indirect effect of skillfulness through mindfulness on anxiety/depression was significant. These results suggest that aversive reactivity and skillfulness may be relatively independent constructs.

Kimberly Crosby

MN - St. Olaf College

Discipline: Interdisciplinary Studies

Authors:
#1 Kimberly Crosby

Abstract Name: Predictors of Language Learning Anxiety in the Japanese Classroom

This research investigates the intricate relationship between Japanese language learning anxiety and various key variables, building upon the framework established by Han Luo (2018) but tailored to the unique characteristics of the Japanese language. Unlike Latin-based languages, Japanese employs three distinct writing systems—Hiragana, Katakana, and Kanji—adding a layer of complexity to the language learning process. The central inquiries focus on understanding the correlation between Japanese language learning

anxiety and selected variables, assessing the relative contributions of these variables to anxiety prediction, and exploring potential interactions among them.Survey methods were employed, targeting participants from Japanese 111 (first semester) and Japanese 231 (third semester) classes. The study examined seven variables: age, motivation (read/write/comprehend/speak), perception of the Japanese language's difficulty, self-perceived achievement, self-perceived language learning ability, self-expectation in the Japanese classroom, and perception of the Japanese language's importance.Among the variables, self-perceived language learning ability and self-expectation in the Japanese class exhibited negative correlational relationships in predicting anxiety, while the perception of the difficulty of the Japanese language demonstrated a positive correlation. Additionally, the motivations for learning to speak, comprehend, and write exhibited a negative relationship with grade expectations. Notably, motivation and grade prediction yielded significant ANOVA results (0.036 and <0.001, respectively) among the multiple variables examined, suggesting their pivotal roles in influencing anxiety levels.This research extends Luo's framework to the Japanese context, providing valuable insights into the nuanced dynamics of language learning anxiety. By elucidating the interplay of these variables, the study contributes to a more comprehensive understanding of the challenges faced by Japanese language learners, paving the way for tailored educational interventions and support systems.

Thomas Cryer

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Thomas Cryer
#2 Brandon Ro

Abstract Name: Neurological Links to Home Design Preferences: A Comparative Study using Eye-Emulation Software

This study seeks to understand the visual elements of home design that attract the human eye. Specifically, it aims to compare the visual appeal of traditional homes to modern homes using eye-tracking software. However, this study focuses solely on visual analysis, leaving the exploration of emotional and cultural factors for future research. The purpose is to understand the neurological connections between architectural design and human preferences, shedding light on which elements make homes visually appealing. In the mid-20th century, the architectural landscape shifted towards modernism, characterized by functionalism and minimalism. However, recent research suggests neurological links to architectural preferences that challenge modern design's dominance. This study is relevant today as it explores why people are drawn to traditional homes, considering the current preferences of professional architects. This research contributes to the understanding of how architectural aesthetics impact individuals and communities and offering insights into the neurological aspects that influence architectural preferences. The methodology involves analyzing six homes, three traditional and three modern. The analysis will be conducted using 3M Visual Attention Software individually on each home by tracking participants' eye movements, and then given a numerical ranking of 1-6 based on their visual appeal. Subsequently, a comparative analysis will identify the most and least visually attractive homes. Anticipated results from the software suggest traditional homes will score higher due to the "character," or the details where the eye looks, which are missing in modern architecture. The discussion will explore the idea that contemporary homes, by incorporating traditional elements such as proportion, may achieve higher appeal and last for generations of homeowners. Contemporary designs can evolve into "traditional" homes by aligning with the preferences discovered. By understanding what elements people are naturally drawn to, architects can create more appealing and lasting designs, thereby bridging the gap between modern and traditional aesthetics.

Angela Cuccio

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Angela Cuccio
#2 Ambria Crusan

Abstract Name: Understanding the effects of accessible medically-tailored food boxes containing fruit and vegetables on cardiometabolic markers in immigrant Hispanic/Latine individuals with hypertension

Background/Objective: The Dietary Approaches to Stop Hypertension (DASH) diet recommending 8-10 servings of fruits and vegetables (F&V) daily is known to lower blood pressure. This project aims to measure the effect of improved access to culturally-appropriate F&V on cardiometabolic markers such as systolic and diastolic blood pressure (BP), skin carotenoid status, and markers of adiposity in immigrant Hispanic/Latine individuals with hypertension. We hypothesize that increased access to F&V will reduce cardiometabolic markers for hypertension and increase skin carotenoid levels after 28 days. Methods: Twenty Hispanic/Latine participants with hypertension were enrolled in a 28-day clinical trial. Participants received a weekly food box with 8-10 daily servings of F&V. Pre- and post- measurements of BP, weight, waist circumference, and skin carotenoid levels were collected. T-tests determined significant changes in measures at p<0.05. Results: Average age of the 11 women and 9 men completing the intervention was 49.5±9.3 and 65% of participants migrated to the U.S. from Mexico. Significant mean differences in systolic BP (3.4± 7.3 mmHg; p<0.05), diastolic BP (3.0±5.6 mmHg; p<0.01) and waist circumference (-0.8±1.0 inches; p<0.01) were found. While difference in weight (-1.5±4.6 lbs) and skin carotenoids (25.2±75.7) changed, results were not significant. Before the study, 81% of participants indicated they couldn't afford to eat balanced meals “often” or “sometimes”, whereas the intervention reduced this to 57%. Conclusion: Improved access to F&V supported significant changes in systolic BP, diastolic BP, and waist circumference, showing the DASH diet can help lower cardiometabolic markers. This provides formative contributions to research regarding access to culturally-appropriate F&V interventions for hypertension in the Hispanic/Latine community as little research displays work encompassing cultural food preferences.

Eamonn Culliton

CA - Medanos College

Discipline: Natural and Physical Sciences

Authors:
#1 Eamonn Culliton
#2 Jill Bouchard
#3 Cameryn Riggs

Abstract Name: Soil Salinity: Can Ionized or Deionized Water Mitigate the Negative Effects of Salt Stress on Root and Shoot Growth of Brachypodium distachyon?

Soil salinity is one of the most severe environmental factors impeding crop plant productivity and is an ever-increasing threat to worldwide agricultural production. Interestingly, some studies have shown that various forms of water may reduce salt accumulation in soil. We hypothesized that it may be possible to mitigate the effects of salt stress on plants with the addition of ionized or deionized water, and proposed the following research question: Can ionized or deionized water mitigate the negative effects of high soil salinity on root and shoot growth of Brachypodium distachyon, a small grass plant used to study biofuels? To test our hypothesis, B. distachyon seeds were germinated and transplanted into fabricated ecosystems (EcoFABs) in different growth environments, including a control group (normal growth media), and test groups with

normal growth media, high salt concentration, and either ionized, deionized, or tap water. The root and shoot growth of each plant was measured weekly over four weeks. The results of our experiment were consistent with our hypothesis. Specifically, we found that in high salinity with ionized water groups, the shoot length was ~76% greater, and root growth was ~240% greater compared to controls. Additionally, plants in high salinity and ionized water were visibly healthier when compared with test groups. Similar results were observed in the deionized-treated high salinity group, but they were not as robust as with ionized water. Based on these results, we concluded that it may be possible to mitigate the effects of high soil salinity on plants with the addition of ionized water. We recommend repeating our study and increasing the number of replicates per group to confirm these results. By scaling up the experiment we hope that future studies will affirm that ionized water is the best option for optimizing root and shoot growth in salinized soil conditions.

Brittany Culp

TX - Texas Woman's University

Discipline: Health and Human Services

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Abstract Name: Barriers and Motivators for Joining the Midwifery Profession in Black and African American Nursing Students

Purpose: The purpose of this study is to explore factors that influence African American nursing students' decisions to pursue midwifery careers.Research Context: Research suggests that greater diversity and integration within the maternal health field significantly reduces the risk of poor maternal outcomes for women of color. However, there is a shortage of midwifery students of color and midwives of color in clinical practice. According to the 2021 American Midwifery Certification Board Demographic Report, only 7% of certified nurse midwives identify as Black or African American, compared to 84.95% who identify as Caucasian. A recent study by Mehra et. al (2020) found that racism is a motivator and barrier for people of color aspiring to become midwives in the United States. However, more research is needed to understand other factors that contribute to nursing students' decisions to pursue a career in midwifery to address this gap.Methodology: This study extends the Mehra et. al (2020) findings by only surveying current undergraduate nursing students and expanding upon the potential motivators and barriers of joining the midwifery field. Using a descriptive cross-sectional design, participant responses to an anonymous survey asking questions regarding personal factors and barriers, family factors and barriers, community factors and barriers, and societal factors and barriers that may affect a student's decision to become a midwife will be analyzed. Data collection is in progress and will be completed in January 2024. Data analysis will be completed in February 2024, using SPSS software. Expected Results: This study provides insight into the barriers that students might face when considering midwifery as a career choice. These findings will provide nursing programs valuable insight that can be utilized for recruiting and educating a diversified workforce to help improve patient outcomes and address the maternal health crisis in the United States.

Zechariah Cummings

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

Authors:
#1 Zechariah Cummings
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Abstract Name: Focus on Power: A Qualitative Analysis for the Development of a Lifestyle Behavior Prehabilitation Program for Soft-Tissue Sarcoma Patients.

Common treatments of soft-tissue (ST) localized extremity and trunk sarcoma include radiation, surgery and chemotherapy. These treatments result in excellent local disease control, however, during the post-treatment period, ST sarcoma patients experience high rate of wound complications (about 35% of patients). Evidence indicates poor preoperative functional status and malnutrition are associated with longer hospital stays which leads to higher complication rates and worse functional outcomes following treatments for ST sarcoma. Preoperative exercise training and proper nutritional intakes have shown to reduce hospital stay and reduce postoperative complications. Additionally, interventions in preoperative exercise (prehabilitation) and nutrition interventions have demonstrated benefits for other cancer populations and non-cancer orthopedic surgery patients. However, to date, there is no data to support the development of a lifestyle prehabilitation program in ST sarcoma patients. Therefore, the purpose of this study is to obtain feedback from soft tissue sarcoma survivors on their experiences with lifestyle behaviors pre- and post-diagnosis and how their ST sarcoma treatment affected their lifestyle behaviors. The final goal of this project is to use a patient-centered approach to adapt current prehabilitation programs for a ST sarcoma population. Through this study we will be collecting feedback and preferences via one-on-one interviews on the participants experience with physical activity and nutrition programing pre- and post-diagnosis, as well as their feedback on preferences for a lifestyle prehabilitation program. The results from this study will be used to develop a lifestyle prehabilitation program for ST sarcoma patients to be tested in a future pilot study.

Chris Cummings

CA - California Polytechnic State University - San Luis Obispo

Discipline: Natural and Physical Sciences

Authors:
#1 Chris Cummings
#2 Jack Reynolds

Abstract Name: Comparative analysis of nonribosomal peptide synthetase protein expression under control of different inducible promoters

Epoxomicin is a natural proteasome inhibitor and the structural inspiration for the multiple myeloma drug Carfilzomib. While Carfilzomib is produced through chemical synthesis, epoxomicin is produced by Actinobacteria in nature via a biosynthetic pathway including a nonribosomal peptide synthetase (NRPS). NRPSs are massive modular enzymes used by bacteria to build anticancer, antibiotic, and other bioactive peptides in an assembly-line fashion. By modifying the gene sequence of the epoxomicin NRPS and expressing the engineered enzymes heterologously in E. coli, we propose that the pharmacophore of Carfilzomib can be created biosynthetically, hopefully lowering drug cost and increasing production efficiency. To effectively express the large (>150 KDa) engineered NRPS enzymes in E. coli, we tested protein overexpression under the control of three different inducible promoters (araBAD, lac, trc). Plasmids were cloned via Gibson Assembly containing NRPS-encoding genes in combination with each of the inducible promoters, and transformed into BAP1, a derivative of E. coli BL21. Small scale expression tests of induced and uninduced cultures were analyzed via SDS-PAGE and Western Blot to compare expression of NRPS enzymes in terms of inducer control, and amount of overexpression of full-length protein. We found loose inducer control of NRPS expression in multiple vectors, even those under control of the arabinose operon. Additionally, high titers of full-length protein were typically correlated with expression of other protein fragments. With optimized expression, we will next purify these enzymes and test for their ability to

biochemically produce the Carfilzomib pharmacophore. Continued optimization of modular protein expression and purification in E. coli can provide a template for the conditions by which large, engineered NRPS enzymes are effectively produced outside of their host organism.

Branden Cunard

DC - American University

Discipline: Social Sciences

Authors:
#1 Branden Cunard

Abstract Name: “The Gay Plague”- Analyzing the Effect That the Reagan Administration Had on the Hypersexualization-Stereotype in the LGBTQ+ Community

“The Homosexual Disease.” “The Gay Disease.” “The Gay Plague.” All of these terms have been used and are still actively utilized to describe the HIV/AIDS Epidemic. This epidemic has been a prime talking point in many conversations about LGBTQ+ equality, acceptance, and access to basic human rights. The first reported cases of domestic HIV appeared in 1981, which continues to affect and take the lives of not only the LGBTQ+ community, but all people across the world. According to hiv.org, the leading organization dedicated to HIV/AIDS awareness and research, “approximately 1.2 million people in the U.S have HIV, and about 13 percent of them don’t know it and need testing.” Notice how in the wording of the statistic they only say “people” and no other term relating to the LGBTQ+ community. It is important to recognize that HIV affects all people and also acknowledge that this affects LGBTQ+ and racial minorities, all of which are not mutually exclusive. LGBTQ+ hatred has always existed due to government and public figures using their harsh rhetoric to create horrendous stereotypes, terrible responses to LGBTQ+ societal acceptance, and ignorant attitudes toward Queer healthcare. The Reagan Administration is one of the biggest perpetrators for not only utilizing these said terms, but also exploiting them to portray harsh stereotypes and false information to the general public of America about the LGBTQ+ community during the rise of the HIV/AIDS epidemic.

Alexa Cunningham

OK - Oklahoma State University

Discipline: Interdisciplinary Studies

Authors:
#1 Alexa Cunningham

Abstract Name: The Rococo and Victorian Eras: Art, Architecture, and Graphic Design

The history of art is vast and expands across the entire globe. Some of the earliest works of art can be seen in cave drawings that date back to the Paleolithic Period between 30,000 and 10,000 BCE. Since then, art has evolved and transformed. Today the broad term art includes a variety of media ranging from painting to photography, installation to architecture, printmaking to graphic design. As the media of art evolves through history, styles and standards evolve as well. Analyzing and comparing different time periods of history allows for a better understanding of art and the purpose for them. This essay will compare paintings, architecture, and graphic design from the Rococo art movement (1720-1770) and Victorian era art (1850-1900) focusing on the characteristics, styles, and ideals of each movement. Although the Victorian style, primarily in graphic design, was influenced by the Rococo style, the two movements have many key differences between their painting and architectural styles. Comparing these two movements shows the progressive and retrospective

choices of artists and, in turn their societies, through the expression of their art. Looking and analyzing specific aspects of art movements gives context and a better perspective of what the world was like in different periods of time throughout human history. By analyzing the Rococo style and Victorian style, key differences are evidence of the progressive changes of a developing world.

Kristiana Curran

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Kristiana Curran

Abstract Name: Women on the Grid: Barriers Between Female Motorsport Athletes and a Seat in Formula One

While Formula One Grand Prix racing has been hosting competitions since 1950, only five women have ever qualified for a Grand Prix race and, of those five, only two actually competed. Motorsport is classified as a unisex sport in that the sex of an athlete has no impact on the athlete's ability to compete, meaning female athletes are theoretically just as capable as men. However, they lack the support needed to break into professional motorsport. The lack of female drivers may be attributed to four main barriers: the historical masculinity of car culture, gender stereotyping, over-sexualization of female athletes, and lack of parental support. In addition, female athletes are compared to physical beauty standards set by NASCAR driver Danica Patrick and Formula One hostesses the Grid Girls, which causes drivers to be oversexualized and tokenized. This paper analyzes a number of peer-reviewed sources regarding each of these specific barriers, as well as an interview of anonymous female drivers to get specific reports about their personal experiences. Supporting evidence also includes firsthand accounts from racers, analysis of advertisements and photoshoots, and self-reported stereotyping regarding female drivers. This paper cross-references sex differences in F1 with those in the similar unisex sport of esports and online gaming to see if the same discrimination exists in other male-dominated sports. This analysis demonstrates that that female racers are more sexualized, more underestimated, and less valued than their male counterparts. Finally, this paper examines F1's new gender inclusion program Formula One Academy, launched November 2022, to predict the impact that it may have in the future. With Formula One's international fan base and popularity, if they are able to successfully sex integrate, they have the potential to influence other unisex sports and set an example for how to create a gender-inclusive environment.

Jaz Curtis

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Jaz Curtis
#2 Rebecca Gilbertson

Abstract Name: Physiological Implications of Exclusion in Individuals with ADHD Symptomatology

Attention-deficit/hyperactivity disorder (ADHD) is an interference in the brain's internal communication system connecting the areas mediating attention, arousal, and emotion. An example of emotional interference is rejection sensitive dysphoria, the feeling of emotional pain due to a failure or rejection. There is limited

research addressing whether this interference presents as a physiological response. We investigated the physiological responses of individuals with ADHD symptomatology during an exclusion task. Participants were 18-38, N = 60; 26.7% male, 73.3% female. Self-reported measures of ADHD symptomatology were reported using the Adult ADHD Self-Report Screening Scale (ASRS). For an objective measure of behavior, participants completed the Go/No-Go task. The Cyberball task was used to manipulate exclusion. During this task, heart rate was measured as beats per minute (BPM), using electrocardiogram (ECG) technology. Self-reported measures of exclusion were reported using the Need-Threat Scale (NTS) after the task. We found that 21.7% of participants reported a current ADHD diagnosis; 61.7% of participants scored a four or more on the ASRS, expressing symptoms that are highly consistent with ADHD. Findings showed that counterintuitive to previous literature, there was a significant time effect across ECG measures where BPM decreased from baseline during the task and increased during the post measure, F (2, 214) =11.034, p <.001. Further, we found associations between NTS total scores and ADHD symptoms to be negatively correlated, r (57) = -.444, p < .001. Finally, participants with self-reported ADHD diagnoses had greater impulsivity errors (responding on no-go cue) as compared to participants without it. These findings suggest ADHD symptomatology and physiological responses during exclusion are not associated. Additionally, after the task we found higher rejection sensitivity in those with higher ADHD symptoms. Further physiological research in rejection sensitivity, specifically in individuals with a current ADHD diagnosis is needed.

Tyler Cutshaw

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Tyler Cutshaw

Abstract Name: Jeremy Soule: An Innovator in Video Game Music

Music has played an important role in the video game industry since its advent in the late twentieth century, helping to guide and shape it into what it is today. From the days of the arcade to present-day gaming systems, this new, relatively fledgling industry has taken off as an industry that is wholly worthy of artistic respect. This is thanks to the work of several different video game composers, whose efforts are quite difficult to go unnoticed. One such composer is Jeremy Soule, who, in his career spanning nearly three decades, has become one of the most important, prolific, and influential composers in the world of video game music. Soule's artistic efforts have helped to innovate an entire industry and bring it to new and greater heights. Alongside the advent of new computer technology, Soule has bridged the gap between early and modern video game music, and his prominent role in how video game music has developed cannot be understated. Soule was one of the earliest composers to utilize orchestral music in video games and, as such, became an important pioneer for it. Due to his efforts, what was previously impossible to do in video game soundtracks is now very possible, and Soule has served to pave the way for other composers to write grand orchestral scores for the games they work on. Transforming video game scores from very simplistic computerized sounds into rich orchestral works that rival film scores has served to elevate the status of video games as an artform, in a manner quite similar to film in the early twentieth century. With the grand, sweeping melodies and rich polyphony of an orchestral soundtrack, video games can be appreciated by the general public as a form of art rather than just entertainment.

Genevieve Czaplewski

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Genevieve Czaplewski

Abstract Name: Fringe Media Consumption and Perceived Intelligence of the Opposite Gender: Are They Related?

The cohabitation of gender stereotypes and political ideology in America has been observed within various spheres (Eagly et al., 2020; Eagly & Mladinic, 1994; Nathanson & Young, 2012). While these stereotypes can take different forms and influence different types of behaviors and opinions, the relationship between them and the mainstream media is consistent. Past studies, however, fail to consider the advances in social networking platforms over the past decade, including an influx of more unregulated content, such as YouTube and podcasts. In this project, I expand on this topic by exploring the relationship between ideologically extreme, or fringe, media consumption and perceived intelligence of the opposite gender among students at the University of Wisconsin - Stout. I surveyed 301 students and completed 12 in-depth interviews to study this relationship. Both modes asked a battery of questions about personal engagement with fringe media and relative intelligence of the opposite gender. Results indicate that overall engagement with these sources is low, although even minimal engagement does statistically correlate to a slightly higher belief in certain gender stereotypes about intelligence while interviewees mentioned more profound influences from these sources. Furthermore, women felt their intelligence to be higher than that of men, contradicting past literature on the topic. The significance of this study lies in its support for the idea that participating within these spheres does play a role in how each gender thinks of the other's intelligence. With this information, individuals can become more aware of how this engagement may influence personal biases and may actively work against them to break down these stereotypes.

Genevieve Czaplewski

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Genevieve Czaplewski

Abstract Name: The Influence of Trust in Science and Political Leaning on Perceptions of Drinking Water Quality

A combination of climate change and land usage practices has raised the issue of clean drinking water. What was a purely environmental issue has become one garnering widespread attention from both the public and governments alike. At the same time, partisanship has been increasing, with some researchers documenting that trust in science can sometimes fall along party lines. However, individual belief in science is influenced by a multitude of factors. While the influence of trust in science on concern with other environmental issues has been studied, it has yet to be applied to policy issues surrounding drinking water. This study aimed to understand the potential relationship between trust in science and perceptions of drinking water quality along political divides in rural Wisconsin. A mixed methods approach, including a mail survey and several interviews, revealed that while there is a partisan divide when it comes to trust of institutionally generated scientific information, Dunn and Barron County residents are not as partisan about drinking water concerns as they are on other environmental issues. Furthermore, residents were generally unconcerned with the quality of their own drinking water but were concerned with drinking water on a broader level. This can be used to improve communication between scientists, government officials, and the public regarding potential drinking water concerns. However, further research into how belief in science impacts other facets of environmental policy in rural areas should be conducted in order to create and mold effective communication to support strong environmental policy in a variety of areas.

Alexis Czvik

CA - MiraCosta College

Discipline: Natural and Physical Sciences

Authors:
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#2 Taylor West
#3 Aamina Usmani
#4 Lynnie Trzoss
#5 Dominique Ingato
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Aamina Usmani

Abstract Name: Ciprofloxacin- An antibiotic derivation and antimicrobial study

The purpose of this study is threefold: to prepare ciprofloxacin analogs via amide formation synthesis; to examine the analog's antimicrobial activity; and lastly, to design experiments with the aim of comparing their permeabilities. By changing the amide functional group on the molecule, the membrane permeability, polarity, and effectiveness of inhibiting bacterial growth in gram-negative bacteria (E Coli.) can be exhibited. Synthetic reactions are performed through amide formation with two varying acid chlorides. Through these reactions, acetyl chloride and cyclopropanecarbonyl chloride are used to derivate from the ciprofloxacin molecule. The antimicrobial effectiveness of the ciprofloxacin analogs is tested with a zone of inhibition on BL21 and DH5α E.coli sample strains. Experimental designs and results are to be presented in detail.

Claudia Da Silva Carvalho

KS - Fort Hays State University

Discipline: Natural and Physical Sciences

Authors:
#1 Audrey Rymer

Abstract Name: Comparing the Presence of Antibiotic Resistance Bacteria in Wastewater Systems to Assess the Population Health of Kansas Counties

The development and spread of antibiotic resistance, as well as the emergence of novel human pathogens, are progressively limiting the treatment and prevention of bacterial infections. This poses a threat to critical components of modern medicine. The emergence of antibiotic-resistant microorganisms that evade all water treatment technologies poses a growing threat to community health. Research has shown that water in sewer systems can serve as an early warning system for disease outbreaks (Hutinel et al., 2019). Surveillance and tracking of microorganisms in wastewater play a crucial role in this early warning system (EWS). Furthermore, analyzing sewage samples has the potential to complement clinical surveillance systems for antibiotic-resistant bacteria efficiently. Thus, it is important to establish the relationship between resistance rates in sewage in different part of United States. In this study, influent and effluent wastewater samples, along with municipal water samples, were collected from Hays and Colby, KS for a period of ten months. Each sample underwent a viable plate count technique, bacterial isolation and an antibiogram profile analysis. A total of 22 resistant microbe isolates were identified. Ten Gram-negative isolates appeared in treated water. An ANOVA analysis of the rate of antibiotic resistance between Hays, Colby and nationwide was performed.

Results showed there is no significant difference in the rate of antibiotic resistance when compared to nationwide (F2, 15 = .411, p>0.05).

Hirad Dabbagh Mohammadinasab

IA - Iowa State University

Discipline: Engineering and Architecture

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Tyler Whittaker

Abstract Name: The Town Square: A qualitative approach in understanding how public green spaces and main street design affect resident downtown utilization

This qualitative study investigated the impact of public green spaces and main street design on resident downtown utilization. Two different Iowa downtowns with similar demographics were chosen for a comparative analysis, one featuring a downtown with a strong public green space and one without. Polk City (IA) was chosen as the primary case study because its “town square” downtown features a prominent public green space at its core. Nevada (IA) was chosen as a town of comparison because its downtown contains a traditional main street with little to no public green space. Individual qualitative surveys were conducted to gather data in respective downtown areas on three separate Thursdays and Sundays from 11:00 am to 6:00 pm in September 2023. Participants were randomly chosen for a face-to-face interview, and responses were either filmed or recorded depending on participant consent. The survey questions aimed to ask how, why, and how often residents spent their time in downtown areas. Digital transcriptions were made of all interviews and analyzed post hoc to examine any differences in resident downtown utilization. Findings from this study show increased community engagement in the downtown with greater public green space, as, on average, Polk City residents spent more time downtown, utilized it for more purposes, and visited it more frequently compared to Nevada.

Tristram Dacayan

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
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#3 Daehan Kwak

Abstract Name: Automated Parking Space Vacancy Detection Utilizing Spatial Grid

In primarily populated areas, locating available parking can take time and effort, posing an environmental problem. Depending on the time of day, many drivers may face this issue due to the high volume of other drivers attempting to find parking. In most instances, urban drivers are forced to search for available street parking or vacant spaces in public parking lots. This behavior can often lead to traffic jams in local areas, often seen in populated cities such as Los Angeles and New York. Solutions to this public parking problem introduced the idea of smart parking systems. In this research, we propose a novel approach to video-based parking space detection by utilizing a spatial grid to introduce localization to the scene. Our approach

essentially utilizes a spatial grid that serves as a map of the scene, including only the road as cells within the grid. Once the grid is established, it encompasses the entirety of the parking lot, allowing our approach uses a network specialized in Monocular 3D Object Detection to map each vehicle's location more accurately within the scene with respect to the available parking spots identified during grid generation. To leverage the use of our system, we also built a demo application using a database to record the status of each parking space. By leveraging the duration of occupancy of each space, our system also has access to historical occupancy data, which can be used in tandem with other factors, like time of day and day of the week, to provide more valuable predictions and information that can assist drivers in finding parking more efficiently. We plan to continue thoroughly evaluating the accuracy and reliability of our system's predictions through comprehensive testing and comparisons with existing state-of-the-art systems to ensure its practicality in real-world scenarios.

Nicholas Dalaviras

NY - Fordham University

Discipline: Business and Entrepreneurship

Authors:
#1 Nicholas Dalaviras
#2 Anthony DeFrancesco

Abstract Name: From Barbie to Battleship: Analyzing Brand Marketing for Films Based on Existing Toy Properties

With the cultural zeitgeist captured by the movie Barbie in 2023, the floodgates for films based on existing toy properties have been unleashed. Barbie was touted for its aggressive marketing campaign and its subsequent success at the box office, but why did this sensation come to be? Can it be replicated? And how did its marketing play a role in its success?In my research, I will conduct case studies of six theatrical wide-releases where the subject matters of the films are based on existing legacy toy properties. I will seek to examine the marketing strategies employed by each film and analyze how these marketing strategies connected to the toy's well-known brand identity. Qualitatively, I will analyze the impact of these marketing strategies through established brand marketing frameworks. I will also conduct thematic analysis on social media posts around the film's theatrical window to determine general audience reception, noting indications of brand connection and nostalgia as factors. As a quantitative framework for brand impact, I will analyze weekly box office returns in comparison with weekly toy sales to establish the impact of the film's theatrical release on the toy brand's continuing business. Final box office figures and toy sales post-film release will provide conclusions on the impact of each film on their toy brand. Through this research, I expect to uncover the importance of authentic brand marketing for films based on beloved brands. As toy brands look to profit off the success of Barbie, I want to establish a marketing framework for companies to use in order to honor the brands they seek to adapt on screen. I expect to find a connection between brand authenticity and successful film performance, which would substantiate the importance of brand authenticity in the making and marketing of films based on existing toy properties.

Mahi Dalia

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Mahi Dalia
#2 Lisa Thompson Lee

Abstract Name: Understanding the Link between Moral Foundations and Cyberdeviance

Recent studies have found evidence for a correlational link between moral values and the decision to engage in deviant behavior. While this work has primarily focused on deviance in offline spaces, this study expands on these findings by focusing specifically on deviance that occurs in online spaces, especially in the way people interact with others and present themselves online. Through the lens of psychological and criminological theory, this research aims to investigate the impact that one's morals have on their willingness to engage in deviant activity online. Preliminary findings suggest that there are some similar patterns in the way our moral systems impact deviant behavior in both online and offline spaces.

Alina Dam

TX - The University of Texas at Dallas

Discipline: Health and Human Services

Authors:
#1 Alina Dam
#2 Devika Rao

Abstract Name: Readmission Patterns of Adolescents with Severe Lung Injury from Vaping (EVALI)

Electronic cigarettes were initially introduced as a smoking cessation tool in 2007, but their widespread availability and appeal have led to a surge in use among adolescents and young adults. This led the Surgeon General of the United States Public Health Service to declare youth e-cigarette use an "epidemic" in 2018. E-cigarette, or Vaping Product, Use Associated Lung Injury (EVALI) was termed by the Center for Disease Control in 2019 after many young patients began presenting with acute lung injury and organizing pneumonia. There have been continued admissions among adolescents for EVALI (unpublished data), which raises significant public health concerns about the medical harms of vaping. Although clinical characteristics of adolescents with EVALI have been well described, there remains a knowledge gap as to whether adolescents with EVALI have been readmitted to the hospital after the initial insult for medical reasons related to e-cigarette use. The aims of this study include determining whether adolescents with a history of hospitalization for EVALI required readmission to the hospital for vaping-related medical illness or for any other reason related to e-cigarette use and characterizing factors that contribute to readmission within this population. To investigate how these factors influence readmissions, I will conduct a retrospective chart review of medical records of adolescents aged 13-21 with a history of admission to the hospital for EVALI at Children's Medical Center Dallas from 2019-2023 and closely examine demographic (i.e. age, gender, ethnicity), clinical (i.e. severity of lung injury; hospital course including admission diagnosis, treatment, and laboratory analysis; vaping history), and social (i.e. family environment, level of education, and access to health and support services) factors. By the end of this research project, I hope to identify common characteristics associated with adolescents with a history of EVALI compared to those who did not have readmissions in the medical record.

Keerthana Dandamudi

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Keerthana Dandamudi

Rachana Dandamudi

Abstract Name: Investigating Hospital Floor Tiles to Mitigate Bacteria by using a DBD Plasma Hoover

Surface sanitation is important in medical settings to avoid contamination. This work investigates plasma techniques to mitigate bacteria on the floor tiles that are traditionally used in the hospital environment. For this purpose, a Dielectric Barrier Discharge (DBD) plasma torch was designed along with a robotic hoover that held the plasma torch to scan the floor tiles in an automated fashion. The plasma hoover can travel at a speed of 2-3 mph and can hold a load of 80 pounds including the gas cylinder, power supplies, and motors. Calculations were performed for the wheels to make sure that it could carry 80 pounds net weight of the robot, while operating at a speed of 440 feet per minute and a stopping accuracy of 0.5. A PS4 controller was used to operate the robot in a remote fashion and operating software was developed. Rubber and vinyl tiles were used to simulate hospital flooring as these materials are commonly found in hospitals. The trial runs were conducted at various operating speeds with a plasma torch to eject the plasma sheet to scan the bacteria over the floor tiles. Before plasma scanning, the bacteria (E. coli) was cultivated on the floor tiles that were dried for 24 hours before swabbing for the trials. The trial runs were conducted at various speeds at various plasma operating conditions (10-15 slpm Helium/Argon, 8-13 kV, 20-40 kHz). The plasma torch generated a plasma sheet with a dimension of 25mm length, 50 mm width, and 2mm thickness. Preliminary results indicate a significant reduction in bacterial colonies that is strictly a function of plasma exposure time to the targeted area on the floor. Our presentation will include the details of our experimental setup and results on bacterial mitigation.

Srujana Dandem

IA - Wartburg College

Discipline:

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#1 Srujana Dandem
#2 Alena Miller
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Alena Miller

Abstract Name: The effect of arena size on outcomes of mixed martial arts competitions in the UFC

Mixed martial arts (MMA) is a combat sport in which two competitors fight in what is often an octagonal cage. The Ultimate Fighting Championship (UFC) is one of the more popular organizations that organize MMA events, using an octagonal cage as the setting of each contest. UFC has been organizing events since 1993, and recently, in an effort to save costs, created the UFC Apex in 2019, a smaller, company-owned arena in Nevada. The UFC Apex uses a smaller diameter octagon that has been the subject of a folklore claim often said by commentators, competitors, and fans; precisely that the results of events that take place in the UFC Apex are often more exciting and favor certain types of fighters. In this paper we investigate this commonly heard but unverified claim. For some perspective, the diameter/area of the two octagons are 25 feet/518 ft^2 and 30 feet/746 ft^2 (respectively). The CEO of the company has denied claims (vehemently) that the smaller octagon changes the nature of the contest.In our investigation, we employ statistics to test whether the claim is true. We use web scraping to extract the past contest results from publicly available sources and afterwards, we define the different styles of fighting (e.g. wrestling, striking, etc.) using metrics that incorporate fight statistics such as ground control time, total strikes, etc. We finalize by using statistical hypothesis testing.The number of contests in the UFC Apex and other venues is large, often one event per week consisting of upwards of ten matches. We believe that the data set is large enough that a definitive conclusion can be made about the claim and that it would be a novel start to an investigation into the underlying statistics of this relatively new sport.

Azalea Danes

PA - Lafayette College

Discipline: Social Sciences

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Abstract Name: The 'Sustainable Development' of Capitalist Extractivism: The Continuity of Post-War Development in Oro Legal and Tierra Dorada

In this paper, I explore the question “How are sustainable development projects Tierra Dorada and Oro Legal continuations of post-war international development constructions?” “Development” as a concept is elusive, and has transmogrified to fit market demand and U.S. interests. The international development industry, composed of a network of U.S. government institutions, NGOs, practitioners, and implementers, evolved from the construction of post-WWII hemispheric divides and Global North capitalist interests. A rich post-development literature has argued that the promises of the development industry and its endless failures can be attributed to an industry designed to promote United States foreign policy interests and the propagation of capitalism. This stands in stark contrast to the global altruism promoted by the international development industry. International development implementers have tweaked their messaging to respond to the growing critique of development. Now, the international development industry centers the pursuit of “sustainable development,” responding to global calls for environmental justice. Decolonial scholars decry development projects as inherently neocolonial, while implementers promote sustainable development projects as a new era of development policy that centers on indigenous justice, biodiversity conservation, and locally-led development. I argue that sustainable development projects promote Western capitalist ideology and extractivism, in a continuity of post-war development under the guise of sustainability and global altruism. To make my case, I examine the sustainable development projects Tierra Dorada and Oro Legal, which aim to formalize artisanal gold mining in Colombia, mitigate environmental risk from cyanide and mercury use, and promote alternative livelihoods through market-based solutions. Relying on qualitative methods and interviews with development practitioners, I craft my argument by first examining the lineage of extractivism in Latin American development. I conclude with an examination of non-extractive alternatives to development, centering Latin American scholarship on Buen Vivir.

Khoa Dang

CA - Cuesta College

Discipline: Mathematics and Computer Science

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Grisha Dekhtyar

Abstract Name: Understanding COVID-19 Vaccination Behavior: Analyzing Equity and Factors Impacting Uptake

The MAVEN (Multidisciplinary Analysis of Vaccination Games for Equity) project addresses the global health threat of vaccine inequity in the fight against emerging infectious diseases. The work presented here aims to provide a comprehensive understanding of vaccination coverage and identify key drivers of vaccine uptake. The COVID-19 pandemic has shed light on differences in vaccine behavior across the country and the state of California, and past research studies have identified various individual, social, and structural factors associated with vaccination rates in different communities and geographic regions. In the study presented here, we used data from public sources, including Google Health, the Center for Disease and Control Prevention (CDC), California Department of Public Health, California Healthy Places Index, and Carnegie Mellon University. Different statistical tools were used to analyze the data with software such as Python, SQL, JMP and R. Throughout the United States, associations between ethnicity and vaccination hesitancy were observed. With a focus on zip codes throughout the state of California, the analyses found strong associations between economic, social, education, and housing indicators and COVID-19 vaccination measures like percentage of fully and partially vaccinated individuals. Following these analyses is the construction of an ARIMAX (Autoregressive Integrated Moving Average with Exogenous Variables) forecasting model that aims to track future trends ahead of time so that institutions, and society as a whole, can be better prepared during a pandemic. Exploring different factors associated with vaccination behavior can reduce the risk of future pandemics by enabling targeted interventions in communities that display certain characteristics and have shown a previous history of struggling with vaccine distribution and implementation.

Georgia Daniel

NC - Elon University

Discipline: Social Sciences

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#2 Mat Gendle

Abstract Name: Relationships Between Orthorexia, Exercise Dependency, Body Dysmorphia, and Decision-Making

Chronic concerns over accessing and consuming healthy food can produce problematic eating behaviors—these behaviors are being increasingly categorized under the term orthorexia nervosa (ON; REF). Individuals exhibiting ON symptomatology express a disruptive obsession with eating healthy foods. Although not part of the formal DSM-V or ICD-10 classification schemes, considerable research exists that suggests that ON is a unique and maladaptive set of eating behaviors that may be linked to formally recognized eating disorders and/or obsessive-compulsive disorder (Dunn & Bratman, 2016; Novara et al., 2021). Similarly, unhealthy and maladaptive behavioral patterns related to excessive exercise (exercise dependency) are also widely documented in the sport and health science literature (Oberle et al., 2017; Landolfi, 2012). Although there is considerable debate around the concept of exercise “addiction,” excessive exercising appears to share at least some behavioral and cognitive patterns with substance use disorders (Oberle et al., 2017). Past research has also demonstrated that ON and exercise dependency frequently co-occur and may share common neurobehavioral substrates (Freimuth, Moniz, & Kim, 2011). This research confirms previously documented relationships between ON and exercise dependency and investigates how these phenomena might be related to negative components of body image associated with body dysmorphia. It was hypothesized that individuals scoring high on traits or behaviors linked to ON and/or exercise dependency would also express decision-making strategies that are similar to those documented in the literature as being common to substance use disorders. Additionally, factors linked to ON and exercise dependency are related to decision-making patterns that are commonly expressed in individuals with substance use disorders.

Joshua Daniel

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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#4 Devon Hulse

Abstract Name: Classifying Road Debris Using Deep Learning Technique In Artificial Intelligence

According to a study done by AAA Foundation for Traffic Safety in 2016, road debris was a factor in an average number of 50,658 police-reported crashes between the years 2011-2014. This work addresses the critical problem of road debris detection and classification, a major threat to road safety, especially on highways. Road debris, such as barrels, car parts, puddles, salts, and trees, can cause accidents. Leveraging deep learning, we explored three pre-trained convolutional neural network (CNN) models - VGG16, MobileNetV2, and InceptionResNetV2 - to classify five types of road debris. We divided our dataset into training, validation, and testing sets, initially with 146, 73, and 49 images. After augmenting the dataset, we increased it to 875 training thermal images, 375 validation thermal images, and 114 testing thermal images. We evaluated the models' performance over various epochs with a learning rate of 0.0001, an Adam optimizer, and a batch size of 10. The VGG16 model emerged as the top performer, boasting a 100% training accuracy and a 96.65% validation accuracy. In testing, it correctly classified 90.35% of the images. Visualized confusion matrices showed consistent superiority for the VGG16 model across all debris types. This work underscores the efficacy of deep learning models in detecting and classifying road debris, with VGG16 as the most accurate and efficient model. It also emphasizes the importance of image augmentation, significantly improving model performance by expanding the training dataset's size and diversity. These findings have substantial implications for road safety. Implementing deep learning models for road debris detection can substantially reduce accidents, making roads safer for all users. Road authorities and safety organizations can leverage this research to develop automated systems for timely debris detection and removal, enhancing road safety.

Madeline Dannewitz

CO - University of Northern Colorado

Discipline: Interdisciplinary Studies

Authors:
#1 Madeline Dannewitz

Abstract Name: The Deaf Experience in National Parks with an Emphasis on Rocky Mountain National Park

The purpose of this research is to investigate the experiences of Deaf visitors to the Rocky Mountain National Park (RMNP).The lack of research and desire from the Deaf community to conduct this research shows its significance. The little research that exists in this field focuses on how National Park workers interact with Deaf people, rather than how Deaf people interact with the Park and its members. A study regarding Deaf visitors in Yosemite National Park found that many of these visitors were invisible to its employees. This analysis is crucial to the human experience as quality of life is improved with access to outdoor recreation. Whether people identify as a cultural and linguistic minority or as living with a disability, everyone should have equitable access to the National Parks. The approach of a narrative analysis from a first-person perspective of those who are Deaf and have spent time recreating in RMNP is the best way to secure this qualitative data. We are using a purposive sampling technique to identify participants who fit the necessary criteria, as we are strategically selecting informed participants. Participants will be interviewed with open-

ended and semi-structured interview questions on Zoom, using an interpreter. All meetings will be recorded and transcribed. After individual interviews, a focus group with all interviewees will be created to be collectively interviewed, using an interpreter. This interview will also use the same question structure and will be developed based on the initial responses of the participants. Thus, the research will be triangulated, creating greater validity of this research. Data will be collected and analyzed through a thematic analysis with a minimum of three interviewees. We are eager to uncover the significance of the Deaf perspective in National Parks to gain knowledge and understanding of this human experience.

Uyen Dao

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Tracy Covey

Abstract Name: Analysis of APEH Enzyme Activity in Saliva Samples of Patients Exposed to Photobiomodulation.

Photobiomodulation (PBM) therapy, or low-laser/light therapy, is a non-invasive therapy thatuses red or near-infrared light to stimulate changes in the body. Although PBM has been usedfor decades, its physiological effects on the body are still being elucidated. In this work, wehypothesized that PBM therapy would cause measurable physiological changes in patient'ssaliva. Saliva was selected because it's easy, safe, cheap, non-invasive, and has beendemonstrated to be a promising bodily fluid for biomarker detection. Patients donated salivasamples following PBM therapy over six sessions. Each saliva sample was tested in triplicate fortotal protein, uric acid concentration, and Acyl Peptide Enzyme Hydrolysis (APEH) activity.These markers were selected as they are related to oxidative stress and present in saliva. In thiswork, we show how three different biochemical markers change with PBM therapy. This isimportant because it adds to the body of work showing physiological changes relating to lowlight treatments.

Chad Darnell

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Chad Darnell

Abstract Name: Anti-tumor Mechanisms of Mitochondria-Targeted Compounds

In the United States pancreatic ductal adenocarcinoma (PDAC) is the fourth leading cause of cancer death with a five-year survival rate of ~10%. PDAC is highly resistant to radiation and chemical therapies, including immune therapies. New therapeutic approaches focus on targeting PDACs energy metabolism system to disrupt tumor progression with the use mitochondria-targeted inhibitors mito-metformin (MMe) and Fluorinated mito-metformin (FlMMe). These analogues possess the capability to preferentially accumulate within cancer cells and disrupt mitochondrial respiration. Published data from the laboratory indicate that MMe and FlMMe decrease mitochondrial respiration, inhibit complex I, and thereby decrease overall ATP levels. MMe has shown promise at inhibiting growth both in vitro and in vivo. Although 1000x more selective than its parent compound Metformin, MMe is not easily trackable. Our novel analogue FlMMe has proven to be more cancer selective, and safer, maintaining the same functional capacity while increasing detectability in vitro and in vivo. We asked if MMe and FlMMe anti-tumor effects were mediated through comparable molecular mechanisms. We hypothesized that inhibition of OXPHOS energy metabolism with mitochondria-targeted inhibitors inhibits cell proliferation and stimulates apoptosis in PDAC cell lines. We measured the antiproliferative and apoptotic effect initiated by MMe and FlMMe in a dose dependent manner via the Incucyte Live-Cell Analysis system. Using the Incucyte system we simultaneously measured changes in confluency as a surrogate for cellular proliferation and activity of the apoptosis effector caspases 3/7 intreated PDAC cells. We measured a statistically significant increase in apoptosis followed temporally by decreased cell proliferation. Moreover, we determined that FlMMe has a greater apoptotic effect on PDAC compared to MMe in both mouse and human PDAC cells. Therefore, the progressive development of triphenyl-phosphonium cation (TPP+) conjugated mitochondria targeted inhibitors may lead to new immunotherapeutic treatment options in PDAC.

Danielle DaSilva

NC - Elon University

Discipline: Mathematics and Computer Science

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Abstract Name: Mathematical Approaches of Modeling Obesity Trends

The prevalence of obesity has drastically increased over the past several decades. The rise in obesity has caused strain within the healthcare system, as obesity puts individuals at an increased risk for a variety of diseases and conditions. This project aims to compare various mathematical approaches of modeling obesity trends within the United States. The ideal model would mimic the overall obesity trends in the United States, be modifiable to fit the obesity trends in different regions of the United States, and take into account how obesity varies due to societal factors. Factors such as socioeconomic status, income, race, ethnicity, geographic location, and personal connections have all been shown to contribute to one's likelihood of experiencing obesity. This project first looked at the overall trends of obesity and how they have changed over time utilizing linear regression models. Additionally, since the rise in obesity levels has been theorized

to mimic the spread of infectious diseases, an SIR-type model was created. Finally, agent-based modeling strategies were employed to create a probabilistic model of obesity trends. It was discovered that each of these models have their own strengths and weaknesses in their ability to capture obesity trends. Developing these and similar models could enable the investigation of various intervention strategies to reduce obesity levels within the United States.

Roshni Datta

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: Circadian Contributions to Nighttime Blood Pressure Variation in Black Adults

Blood pressure (BP) follows a diurnal rhythm, meaning that it varies over a 24-hour period. BP that dips 10%-20% each night in healthy adults is a dipping BP pattern. The absence of a decrease in nighttime BP is characteristic of a non-dipping BP pattern, which is prevalent in the Black American population and is correlated with higher risk of cardiovascular disease. While previous studies have examined circadian rhythm contribution to nighttime BP variation, this study focuses on circadian contribution to nighttime BP variation in Black adults by analyzing biomarkers of the circadian clock, including salivary melatonin. Each study participant completed a constant routine (CR) protocol–a gold standard method in human circadian rhythm research–over a 30-hour period in which entrainment cues (i.e. lighting, meal timing, and physical activity) were held constant to analyze participants' natural circadian rhythms. Saliva samples were taken hourly, and melatonin levels in samples were measured using radioimmunoassays and analyzed with cosinor analysis. The study included a total of 22 participants, 11 (50%) females. The mean age of participants was 37.1 years, and the average BMI was 32.0 kg/m2. There were 16 (72.7%) non-dippers as determined by 24-hour ambulatory BP monitoring prior to the CR protocol. There were no statistically significant differences in sex, age, or BMI between dippers and non-dippers, but there were significant differences in nighttime systolic BP (p=.018) and diastolic BP (p=.041). Cosinor analysis revealed significant circadian rhythms in salivary melatonin in both groups (p<.001) and a significant difference in the mesor of melatonin concentration of dippers and non-dippers, t(465)=3.34, p<.001. However, there was no difference in circadian amplitude or phase of salivary melatonin between groups. Thus, environmental and behavioral factors may contribute more to nighttime BP variation than circadian rhythms and can be targeted in future research.

Isabella Dattilio

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

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Abstract Name: The Synthesis of Mesalamine and Curcumin Capped Metal Nanoparticles for the Treatment of Inflammatory Bowel Disease (IBD)

Silver nanoparticles are innovative materials which have been found to have applications in antiseptics and drug delivery systems. IBD (Inflammatory Bowel Disease) is a term used to describe the series of chronic illnesses that are characterized by inflammation of the intestinal track lining. The two main diseases are Ulcerative Colitis (UC) and Crohn's' disease (CD). UC affects mainly the entirety of the colon while Crohn's affects the entirety of the digestive system (from mouth to anus). To aid in the remission, 5-ASAs (Mesalamine, balzalaside etc.) and curcumin are beneficial, alongside corticosteroids (prednisone) and biologics (Adalimumab and Infliximab). 5-ASAs (Mesalamine) are used to halt and avert flare-ups within the digestive tract while steroids and natural supplements such as curcumin assist in the management of inflammatory and oxidative conditions. An effective synthesis of silver nanoparticles involves the use of silver nitrate, a capping agent (such as mercaptosuccinic acid) and a strong reducer (such as sodium borohydride). UV-Vis was utilized to verify the presence of mesalamine and curcumin capped metal nanoparticles. Signals around the 350-400 nm area confirmed the presence of silver nanoparticles in the two experiments. This research explores conditions that are used to synthesize these nanoparticles, that could be beneficial someday, in the delivery of therapeutic agents straight to intestinal lesions in the colon or digestive track. Pre-liminary results on the synthesis of a mesalamine stabilized copper nanoparticle are also introduced.

Kaitlyn Daugherty

FL - Embry - Riddle Aeronautical University

Discipline: Natural and Physical Sciences

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Abstract Name: Precision Medicine: Electrospray/Spin Techniques for Fine-Tuned Anti-Inflammatory Release

Nanofibers, an innovative technique for drug delivery, hold immense potential for addressing current medical challenges across health-care domains. These materials boast a versatile range of applications due to their tunable physical properties, dictated by the choice of polymers used during fabrication, allowing for a tailored approach to design, whether for enhanced filtration, biomedical scaffolds, or targeted drug delivery systems. Current research efforts aim to develop drug-delivery systems which serve to provide efficient, targeted treatments through cost-effective means. In the aerospace field, researchers seek to revolutionize modern medicine for the treatment of immune and physiological disruptions experienced by astronauts under the effects of micro-gravitational conditions. Noting both the applications for conventional healthcare settings and the aerospace industry, this research focuses on developing pH-sensitive nanofibers for oral drug delivery, with interferon-β (INF-β) as a targeted treatment for multiple sclerosis. By tailoring the nanofiber-based drug delivery system to be pH-sensitive, the study aims to optimize drug release in specific

physiological conditions, ensuring precise and controlled administration. The engineered nanofibers are designed to exhibit pH resistance in the gastric environment, maintaining their integrity/stability, while demonstrating solubility at intestinal pH levels. This strategic formulation aims to enhance the absorption of anti-inflammatory agents, optimizing their bioavailability for therapeutic effectiveness. The study aligns with broader applications in inflammation treatment through the advancement of astronaut health and supports efforts to establish optimal strategies for the treatment and prevention of the progression of multiple sclerosis.

Hannah Daugherty

KY - Eastern Kentucky University

Discipline: Social Sciences

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Abstract Name: Darkness and Light: The Connection between Personality and Conspiracy Beliefs

Conspiracy theories have become a large part of the modern cultural zeitgeist. Past research has shown connections between conspiracy belief systems and several types of personality traits, from the Big 5 Personality Traits to HEXACO. Connections have also been found between event-specific conspiracy beliefs and the Dark Triad of Personality—Narcissism, Machiavellianism, and Psychopathy. However, no published studies have examined conspiracy beliefs in connection to the Light Triad of Personality—Humanism, Kantianism, and Faith in Humanity. The present study examined both Light and Dark Triad traits as potential predictors of generic conspiracy beliefs. Eastern Kentucky University students (n=144) completed surveys on these beliefs and traits. Results indicated that Dark Triad traits were significant positive predictors of generic conspiracy beliefs. Interestingly, Light Triad traits showed no significant connection with generic conspiracy beliefs but were negatively correlated with Dark Triad traits. This suggests that while Light Triad traits negatively predict Dark Triad traits, they are not predictive of generic conspiracy beliefs. Further research examining the connection between generic conspiracy beliefs and event-specific conspiracy beliefs, as well as how personality factors relate to each, should be done to understand the complexities of this topic.Keywords: Conspiracy Beliefs, Dark Triad, Light Triad, Personality, Conspiracy Theories

Krisha Dave

GA - Emory University

Discipline: Natural and Physical Sciences

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Abstract Name: The Impact of YAP-Mediated Hippo Signaling in Obesity and Triple Negative Breast Cancer

Obesity is one of the most prevalent and modifiable risk factors for chronic diseases such as cancer. Recent meta-analyses suggests that breast cancer-specific death among obese women is elevated 1.3-fold in comparison to normal weight woman. There is also an increased risk (OR of 2.3, CI 1.4-3.6) of developing triple negative breast cancer (TNBC) in women with a higher waist/hip ratio (WHR). However, the

underlying pathophysiology linking obesity, adiposity, and TNBC needs further investigation.This study establishes a mechanistic link between obesity-altered metabolism and dysregulated proteasomal pathways, specifically the YAP-mediated Hippo cascade. This pathway is used to regulate cellular events during tumor progression and metastasis, and its proteolytic malfunction can cause a variety of diseases, including cancer. Previous results suggest that use of an adipocyte conditioned medium (ACM) promotes colony formation of human breast cancer cell line HCC1806 and BT549 in comparison to stromal conditioned medium (SCM), as well as mouse breast cancer cell 4T1, through YAP-mediated Hippo pathway hyperactivation.Results show that EIF3H is an upstream regulator of YAP and is highly expressed in obese mice (LMNA LCS) in comparison to normal controls (WT), as supported by RNA-sequencing. Over 150 of these genes are present in oncogenic metabolic pathways, which has been indicated by KEGG data. Furthermore, there is an association between the use of ACM and breast carcinogenesis. Data from clonogenic assays on three TNBC cell lines treated with ACM show increased cancer cell colony number and size, suggesting that adipocyte secretome has the ability to increase tumor growth. Western blot results also show that ACM increases both YAP and EIF3H expression as compared to SCM. Thus, this study uncovers the clinical relevance of the EIF3H-YAP axis in regulating obesity-related breast cancer.

William Davidson

VA - Virginia Military Institute

Discipline: Social Sciences

Authors:
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Abstract Name: The Effects of Bans on Communist Parties and Their Successor in Post Communist States

Since the Eurasian collapse of communism from 1989 to 1991, each state that has been affected by a revolution, coup, or party collapse that ended the communist monopoly of power, has seen some kind of communist successor party. Often times, these parties find some success, but not typically in democracy. Successful successor parties are typically either a rebranding of the old party, having never lost power, a puppet party used by authoritarians to claim either opposition or bipartisan support, or a center-left social democratic party. It is this paper’s purpose to find out why bans on communist parties have led to both healthy democratic systems and instable authoritarian regimes, while also to determine if the bans on communism were simply used to protect the state’s sovereignty from threatening neighbor. This will be done by analyzing data from Variants of Democracy (VDEM), along with examining election results since the communist collapse in the Baltic States, Mongolia, Montenegro, Czechia, Slovakia, Poland, Turkmenistan, Tajikistan, Russia, and Belarus.

Brenda Davila

FL - Miami Dade College

Discipline: Natural and Physical Sciences

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Abstract Name: Development of Kappa Opioid Receptor Antagonist Through the Use of In-silico

Technology

The opioid crisis presents a concerning public health challenge in the United States, characterized by the devastating consequences of opioid addiction. It is crucial to address this crisis by the development of selective antagonists targeting the kappa-opioid receptor (KOR). These antagonists, characterized by their capacity to bind to KOR and inhibit its activity, hold the potential to reduce the addictive properties of opioids and reduce the associated risk of overdose. By utilizing molecular modeling simulations via AutoDock, this study has undertaken rigorous investigations into potential ligands that exhibit the requisite binding affinity to the KOR binding pocket, with a specific focus on achieving a binding energy exceeding -9 kcal/mol. Promising compounds, most notably the JDTic ligand, have been identified as displaying a high affinity for the KOR binding site. To gain deeper insights into the real-world behavior of these ligands, molecular dynamics (MD) simulations are planned, which will afford a comprehensive understanding of the stability and dynamic interactions characterizing the ligand-receptor complex over extended periods. In employing computational chemistry tools to specifically target KOR, this research contributes significantly to the broader campaign against opioid addiction. The potential discovery of non-addictive opioid alternatives holds promise for combatting the escalating opioid crisis, thereby offering relief to afflicted individuals and society as a whole, while concurrently paving the way for safer and more efficacious pain management strategies.

Taylor Davis

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Taylor Davis
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Abstract Name: The Incorporation of Therapy Dogs in Physical Rehabilitation and the Improvement of the Emotional Well-Being of the Patients

Physical rehabilitation continues to incorporate new approaches to ensure the best outcome for the patient. It’s known how mentally deteriorating the experience of physical rehabilitation is after an injury, so it’s important to constantly seek new designs for the patient's wellness. In this literature review, I will report themes from research that examine the relationship between incorporating therapy dogs in physical rehabilitation and an improvement in patients' emotional well-being. I conducted an article search and selected six peer-reviewed articles that were published within the last 10 years, obtained from peer-reviewed journals, and empirically derived. Studies had to include the following criteria: addressed mental health post-injury, inclusion of therapy in physical rehabilitation, and discussion of canine companionship. After reviewing and synthesizing the articles, the following themes emerged. Physical rehabilitation was found to impact the participants by resulting in a downward shift in their mental health during the recovery process. It was also found that dog interaction can alter the emotional well-being of individuals through building relationships that provide a sense of purpose which can lead to positive or negative feedback. Gaps were found in the literature discussing the benefit of a relationship with a dog, as well as most of the participants being women. In conclusion, the literature explains that having a therapy dog during physical rehabilitation can improve emotional well-being while in the recovery process. Gaps in the literature can be further researched to gain a better understanding of the negative experiences of participants with dogs. This topic is important because it can be used by different professionals in physical rehabilitation to help their patient stabilize their emotional well-being. It can also motivate therapists to expand their thinking when it comes to the inclusion of uncommon practices in rehabilitation.

Dominique Davis

CA - California State University - Channel Islands

Discipline: Social Sciences

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Abstract Name: The Investigation of Extraversion's Impact on the Job Satisfaction of People-Oriented Professions

Kapur (2022) described job satisfaction as a compilation of multiple factors: attitudes toward a job, work environment, type of work done, compensation, and social relationships. The current research aims to investigate job satisfaction. Understanding job satisfaction is important as it is a basis of wellbeing in adult life. In the workplace, extraversion may influence job satisfaction based on the individual's social needs and on the requirements of tasks to be completed. Extraversion may also influence an individual's ability to speak up during task confusion, or speak out in the face of challenges. Although the literature indicated that extraverted individuals within clerical settings reported a preference for cognitive tasks and both extrinsic and intrinsic rewards, lower satisfaction levels were reported when such tasks were completed in cubicle or office space with limited social interactions (Sterns et al., 1983). The literature's focus on clerical workers of an older age created a gap that the current study will cover by recruiting individuals from a variety of jobs. The current study will implement two scales to survey individuals of varying ages with differing levels of extraversion, and are current employees in different workplace settings. For the measurement of extraversion, the current study will be using the BFI-2-XS scale (Soto & John, 2017) and will measure job satisfaction using the Basic Psychological Need Satisfaction at Work Scale (Eriksson & Boman 2018) which has three subscales: autonomy, competence, and relatedness. The current study will investigate how well extraversion predicts facets of job satisfaction through multiple regression analyses and path analyses. We hypothesize that extraversion will significantly predict the social aspect of job satisfaction and that individuals from the health care industry will interact with extraversion to increase job satisfaction. Limitations and practical implications will be discussed during the presentation.

Chanel Davis

AZ - Embry-Riddle Aeronautical University

Discipline: Engineering and Architecture

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Abstract Name: Bridges to Belonging: Utilizing Small Scale Classroom Intervention to Improve Classroom Inclusivity

Students in introductory engineering courses face challenges communicating and integrating their ideas fairly and equally during work in team projects. Often, these challenges with team communication fall along gendered lines, where women students experience marginalization in team settings that decreases their sense

of belonging in the engineering program. While these issues could, and have been, attributed to implicit gendered communication practices (Robertson, Adams, and Rea, et al. 2022) explicit ideological bias (Potvin, 2018), our current research looked to test concrete ways educators might create small-scale interventions to incentivize more inclusive learning environments. Our prior research (Robertson, Adams, and Rea et al. 2022) not only demonstrated this communicative gender bias within introductory engineering classrooms, but also provided feedback from the students and faculty that we could then use to guide our research in this study. With this guidance, we strove to alleviate gender discrimination in engineering classrooms. Using this prior research, we created an intervention for the following year's students involving a short group competition followed by a survey. This intervention would allow us to group students together intentionally, which our previous research implied would have the greatest impact on a student sense of belonging. In the months following the intervention, these groups worked on a large-scale engineering project together and reported their experiences within the group using a classroom survey.By analyzing the survey responses and interviewing the professors for the course, we uncovered insights into how we may increase belonging for women in engineering. Our results demonstrated how small-scale classroom intervention benefited women in engineering harmful classroom interactions, and made for a more accessible learning environment for all students.

Jakayla Davis

GA - Spelman College

Discipline: Natural and Physical Sciences

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Abstract Name: The Phytoestrogen, SDG, and its Potential to Reduce HIV-Induced Neuroinflammation and Oxidative Stress

Human Immunodeficiency Virus or HIV, is an aggressive virus that attacks the immune system. When HIV compromises the blood-brain barrier, it can cause neuroinflammation and develop into neurocognitive disorders known as HIV-Associated Neurocognitive Disorders or HAND. The ongoing absence of a cure increases the need for therapeutics for individuals living with HIV cognitive impairment, as current antiretroviral treatments are unable to cross the blood-brain barrier. A potential therapeutic we are interested in is Secoisolariciresinol diglucoside or SDG. SDG is a plant lignan and phytoestrogen. SDG can cross the blood-brain barrier, and activate antioxidant pathways. It has been shown to have anti-inflammatory and antioxidant properties potentially through the non-classical estrogen receptor. Estrogen signaling is known to be neuroprotective and the loss of its signaling may exacerbate neurological impairment during HIV. Therefore, we hypothesized that SDG would reduce HIV-mediated neuroinflammation and oxidative stress. To test this hypothesis, human macrophages were stimulated with SDG and HIV for one hour or one day. Protein Lysates were collected for western blotting to explore changes in antioxidant proteins. We also collected media from the stimulated macrophages to access macrophage-induced neurotoxin production. The media was placed onto neurons for one day, followed by map 2 staining to quantify the loss of neurons in culture. We found that antioxidant proteins were decreased with HIV after one hour and one day stimulation. Pretreatment of SDG before HIV infection increased the proteins after day one compared to untreated and HIV alone. Also, HIV-conditioned media reduced the number of neurons present after being imaged with immunofluorescence microscopy. Given this data, our results showed that the pretreatment of macrophages and neurons with SDG, reduced HIV-induced neuroinflammation. SDG increased antioxidant protein expression during the HIV infection, and from this it can be concluded that SDG may be a therapeutic for neuroinflammation.

Niko Dawson

UT - Weber State University

Discipline: Social Sciences

Authors:
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Abstract Name: When Every Vote Counts: The Erosion of Conformity's Impact on Voting Behavior

This project examines the relationship between social conformity, information about aggregate turnout, and how pivotal an individual's vote is. Building on previous research by Blais and Hortala-Vallve (2020), which argues that the degree of social conformity of individual voters plays a pivotal role in how they respond to turnout information, this study proposes that increasing how much voting matters may negate the observed differences in voting behavior between conformists and nonconformists. An economic experiment in the form of a simulated election is conducted to test this hypothesis. The results of this research have the potential to offer new insights for increasing voter turnout without resulting to mandatory voting, especially in the United States where how much individual votes matter changes from state to state.

Lydia Dawson

AZ - Barrett, The Honors College at Arizona State University

Discipline: Social Sciences

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Abstract Name: “You need to resign”: The Effects of Social Media Commentary and Gender on Incumbent Candidate Evaluations during Political Campaigns

As social media becomes a dominant tool in political campaigns, it is important to analyze how candidates and voters interact over social media and how this impacts elections. This study aims to uncover whether Instagram comments - a key tool voters use to interact with candidates - have an impact on voters’ perceptions and whether or not there are differences in these impacts based on the gender of the candidate. Due to bias against women in politics, I hypothesize that respondents will evaluate female candidates more harshly than male candidates after viewing negative Instagram comments associated with them. To test this hypothesis, I randomly separated a sample of 435 undergraduate students into four groups. Each group was assigned a hypothetical incumbent Senate candidate (male or female) and shown a candidate biography. The biographies were identical, save for the names/genders of the candidates. Additionally, the two experimental groups were shown negative Instagram comments associated with their candidate. Each group was asked to evaluate their candidate's viability, favorability, competency, leadership ability, and qualifications, in addition to scoring the likelihood that they would vote for them. I found that the male candidate had lower scores than his female counterpart for all six traits evaluated, meaning he was evaluated more harshly. This persisted in both the control and experimental groups, as well as both before and after the stimulus was presented to the experimental groups. However, the respondents’ evaluation scores for the female candidate dropped by a larger margin after viewing the negative comments than the scores for the male candidate did. This persisted for five of the six traits evaluated. Voters’ perceptions, then, are impacted by negative Instagram comments for male and female candidates, although there is some evidence to indicate that they have a larger negative effect on the perceptions of female candidates.

Jorden Dawson

ND - University of North Dakota

Discipline: Engineering and Architecture

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Abstract Name: Quick Fit Prosthetic Leg Socket

Introduction: Prosthetics, tailored to individual needs, enhance the lives of amputees globally. Traditional fabrication takes weeks to months, posing challenges. Our innovative approach involves patients directly in the process, using a specially designed socket attachment. This involvement accelerates production, empowers individuals in their rehabilitation, and yields superior outcomes.Methods and Materials: The molding method takes time and the stump can change size over time. We used 3D printing to start making a prototype. Inflatable knee sockets will have an outer carbon fiber layer to hold the socket structure in place and withstand high pressure. The inner layer will be a silicone material to hold the residual skin in place, prevent slipping, and provide cushioning and comfort for users. As silicone does not absorb sweat, the socket will have proper ventilation to protect the skin and regulate the inner temperature.Testing:. We are testing different ideas to see which will inflate better, the first is a blood pressure cuff design and the other involves using silicon. We found the cuff is more firm but has a risk of pain on the skin. The silicon design will help to alleviate pain on the skin however it might not hold as firm. Our idea is to combine the two.Results: Additional components are slated for incorporation into the socket, thereby finalizing the comprehensive design. Subsequently, upon achieving a finalized and steadfast product iteration, our focus will shift towards initiating the procedural steps for commencing clinical trials. This strategic progression will encompass the inception of the FDA application process alongside navigating the complexities associated with securing insurance coverage.Conclusion: Our inflatable knee socket serves as the right solution for amputees. It displays features that allow users to adjust the socket to their desired fit. It allows muscle activities and prevents pain and pressure injuries.

Jac Day

OK - University of Central Oklahoma

Discipline: Humanities

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Abstract Name: Let's Work Out the Kinks: Processing Arousal for Neurodivergent Individuals

Sex is a social activity that the majority of humans will take part in over the course of life, but for some, it may be difficult to navigate due to the fluid social cues. Recent literature suggests that neurodivergent individuals, like those with attention deficit hyperactivity disorder or autism spectrum disorder, tend to have problems with navigating social situations, and may even experience increased anxiety or stress in these situations. To offer increased accessibility to a pleasurable sexual experience, it’s theorized that the introduction of kink practices to a neurodivergent individual could allow them to personalize a framework for

navigating sexual situations. Kink practices are structured by negotiation, communication and consent of all participants, which allows these participants to know what is expected of them at the time of the sexual situation. These clearly dictated expectations can make pleasure accessible for neurodivergent individuals as they navigate sexual experiences. Through a digitally delivered survey to the students, faculty and staff of the University of Central Oklahoma and interviewing participants who were selected through purposive sampling, we hope to find a correlation between kink practices and increased pleasure for neurodivergent individuals during sexual situations. In finding these correlations, we hope to increase accessibility for neurodivergent individuals.

Myra Dayrit

CA - Chapman University

Discipline: Education

Authors:
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Abstract Name: Filipino/a/x Americans Navigating Predominantly Campus Climates

This study shows that in the culture of a predominantly white campus culture, these Filipino/a/x Americans (n = 9) feel a sense of “otherness” visually, within their intersecting identities, and/or within the Filipino community on campus. This study is framed by the seven tenets of Asian American Critical Race Theory to contextualize the impact of the White Supremacist narrative of Asian Americans in American history. To further our understanding of how Filipino/a/x American students navigate predominantly campus climates, this study examines the stories and experiences of 9 Filipino/a/x Americans' perspectives in a predominantly white campus climate. The study finds that the participants lacked a sense of belonging due to a lack of diversity and culturally specific resources. Their university’s failure to meet the needs of the Filipino/a/x Americans forced the students to assimilate, join a community by membership, or isolate to cope with the realities of a predominantly white campus culture. These findings are similar to the research on students of color's experiences on predominantly white campuses.

Leslie De Haro

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Single-Family Housing Design for Corneal Scarring Visual Impairment

The purpose of the design of “Grove Nest” was to design a single-family home that promotes independent living for the young daughter of a couple who suffers from corneal scarring. The young daughter of the couple contracted measles as an infant which ultimately led to her corneal scarring. The measles virus in the cornea causes irritation in the eyes and a dislike of bright lights. Some of corneal scarring’s symptoms include cloudy vision, blurred or decreased vision, seeing “halos” around lights, and eye pain. The site of the home has a view of the ocean, and the design aims to create a meaningful connection to the landscape and encapsulate all the rich sensory experiences it has to offer. The findings of this design were gathered from various sources including meeting with a specialist of the vision impairment organization, review of articles, and analysis of case studies. The final design strategies incorporated research findings such as logical space

layout, tactile cues, smart home, lighting flexibility, color contrast, and accessibility features. The logical layout of the home was organized so occupants can navigate through the spaces in a logical and functional manner according to their day-to-day routines. Smart home technology such as smart lighting systems and appliances serve to enhance daily tasks and allow for a more comfortable and independent lifestyle. The color contrast found in the finish and material selections serve to enhance visibility and contribute to the overall safety of navigating the home. The final design aimed to integrate inclusive design solutions researched, while remaining aesthetically pleasing for the family.

Jossely De La Cruz

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
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Abstract Name: Beyond Borders: Unveiling the Diversity of Latin American Design

Latinx and Hispanic designers have played a significant role in shaping the design landscape throughout history. With their powerful and influential graphics, rich cultural history, and compelling visual storytelling they continue to have a lasting impact. Despite these contributions, design within Latin American and Hispanic communities is persistently marginalized. Unjustly labeled as "exotic and loud," it is unfortunately perceived through a narrow lens, neglecting to appreciate the bold beauty and historical depth inherent in the style. This disparity can be attributed to a complex interplay of environmental, religious, and political factors, which contribute to the persistent marginalization of Latinx designers. I aim to raise awareness of the challenges Latinx designers face. A central hurdle is the lack of representation, unequal opportunities in the community, and political/religious bias. By discussing these issues and advocating for a more inclusive and appreciative recognition of their artistic endeavors, we can initiate a transformative shift into an interconnected design landscape. This involves dismantling barriers to success, fostering equal opportunities, and challenging ingrained biases that have perpetuated the marginalization of Latinx designers. In doing so, we not only amplify the voices of these designers but also enrich and educate the design discourse with the vibrant and diverse perspectives they bring to the table.

Damaris De La Torre

MN - Minnesota State University - Mankato

Discipline: Education

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Abstract Name: Cultural Learning Strategies in Elementary Education: A Comparative Study of Practices in the United States and Ecuador

The intersection of culture and education in elementary classrooms is a pressing concern for teachers, parents, and policymakers. The need is driven by evolving demographics and the need for culturally responsive teaching practices. This study, "Cultural Learning Strategies in Elementary Education: A Comparative Study of Practices in the United States and Ecuador," investigated how schoolteachers in these two diverse countries incorporate cultural learning strategies to respond to unique student populations. The problem statement underscored the necessity of addressing cultural diversity in educational settings to

provide equitable and effective learning experiences for all students. As demographics shift, understanding pedagogical responses to cultural diversity is imperative. The significance of this research extends beyond the classroom. In today's multicultural world, educating students from diverse backgrounds is crucial for our society. Incorporating cultural learning strategies carries profound implications for social inclusivity, peace, heritage preservation, and more. The study's potential to inform policies, curriculum, and teacher training programs emphasizes its broader societal impact. Methodologically, this research reviewed literature on culturally responsive teaching and cultural learning strategies in both countries, ensuring provocative findings. The predicted result was that educators in Ecuador will exhibit teaching strategies focusing on the nation's internal cultural diversity, while US educators will adopt strategies influenced by the international and multicultural nature of their student body. These insights will foster more inclusive and culturally aware teaching practices, benefiting students and society. This project's implication is clear: it has the potential to transform how we approach multicultural education. By comparing practices in these two diverse nations, we can adapt and refine strategies to better suit today's students and the future of our society. This research is a step towards a more inclusive, harmonious, and culturally enriched world.

Isabella De Leon

CO - Regis University

Discipline: Natural and Physical Sciences

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Abstract Name: Sex differences in the effect of exercise on the cognitive consequences of methamphetamine abuse

Methamphetamine (METH) is a widely used psychostimulant drug, and its use in the United States has reached a near-epidemic in the past 15 years. METH use costs billions per year through crime, foster care, lost workplace productivity, and other social problems, in addition to causing destructive effects in the lives of users. In humans, METH abuse has been shown to result in long-lasting brain injury as well as significant cognitive impairments. METH interacts with catecholamine nerve terminals which results in the initial euphoria after taking the drug but then leads to long-lasting brain injury for the user. The neurotoxic effects of the drug are responsible for inducing the cognitive consequences associated with abuse, which include impairments in memory, attention, executive functioning, and decision making. The memory impairments caused by METH are the most prominent and persistent cognitive problems, because they interfere with the user’s ability to adhere to and benefit from addiction treatment. Therefore, it is of utmost importance to find ways to attenuate these cognitive deficits and thereby improve treatment outcomes for METH users. The impacts of exercise on the rodent brain, such as induction of synaptic plasticity, increased production of neurotrophins, and enhanced neurogenesis, have been extensively characterized, and the beneficial effects of exercise on cognition are well-documented. Here we investigated whether exercise can improve performance on two memory tasks known to exhibit METH-induced deficits in rodents: object recognition and odor recognition. Notably, work on this question has historically left out a critical portion of the population – females. Women are just as likely as men to develop substance use disorder, but women often use and respond to drugs differently. Here we demonstrate critical sex differences in the ability for exercise to attenuate METH-induced cognitive deficits, as evidenced by variability in scores on object-in-place and odor recognition tasks.

Leah Angelica De Leon

TX - The University of Texas at Arlington

Discipline: Health and Human Services

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Abstract Name: The Effect of Field-Related Hyperbaric Oxygen Therapy on Skeletal Muscle Regeneration

Background. Skeletal muscle trauma necessitates timely and efficient recovery mechanisms to prevent long-term complications. Additionally, muscle trauma can occur in geographic locations lacking specialized medical facilities. Yet the initiation of intervention in these locations would promote timely and efficient muscle recovery. Clinically, hyperbaric oxygen (HBO2) therapy has positive effects on crush muscle injuries. The underlying mechanism is that 100% oxygen delivered under pressure leads to the delivery of more (dissolved) oxygen to hypoxic tissue. In preclinical studies, HBO2 therapy at 2.5 atmospheres absolute (ATA) positively affects muscle mitochondria and physiological performance and regenerating fiber properties. However, clinically, this pressure level must be delivered in a specialized medical facility, which is one reason that HBO2 therapy is not widely used. A lower pressure, such as 1.5 ATA, could be delivered in a general medical facility. Purpose. To test the effect of HBO2 therapy at 1.5 ATA on muscle regeneration. Methods. The regenerating fiber properties of crush-injured muscle treated with HBO2 therapy at 1.5 ATA or 100% oxygen from male and female C57BL/6 mice will be examined. Specifically, fiber cross-sectional area and the number of regenerating fibers positive for developmental myosin heavy chain and galectin-3 at 4 and 8 days postinjury will be quantified. Immunohistochemistry will be used to detect these properties. Expected Results. If HBO2 therapy at 1.5 ATA has a positive effect, then we expect the fiber cross-sectional area to be greater at 4 or 8 days postinjury compared to treatment with 100% oxygen. Additionally, a higher number of regenerating fibers positive for developmental myosin heavy chain and galectin-3 will be detected at 4 days postinjury in HBO2-treated mice. Overall, anticipated results could unveil the effectiveness of field-related HBO2 therapy in accelerating muscle regeneration, possibly offering a viable option for non-hospital or non-specialized settings.

Leanne De Leon

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

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Abstract Name: DO NATURAL HABITATS SUPPORT BETTER BIVALVE HEALTH RELATIVE TO HUMAN-INTRODUCED HABITATS?

Estuarine habitats worldwide have been extensively modified by human-introduced structures such as seawalls. Human-introduced structures may favor non-indigenous species (NIS), but few studies have directly compared species health (i.e. condition index) on various habitat types. NIS Mytilus galloprovincialis is a dominant space-occupier bivalve, a mussel, which occurs on seawalls throughout Southern CA estuaries including Newport Bay. In a preliminary study, it had better condition on natural cobble vs. human-introduced seawall (2-way ANOVA, site*habitat, p=0.0001) but tidal elevation was not controlled,

confounding our ability to discern a habitat effect. Lower tidal elevation should improve species condition due to longer immersion time, so for this follow-up study, we hypothesized that condition index (CI) would vary both across habitats and among tidal elevations. M. galloprovincialis were collected from a seawall and cobbles at a site in upper Newport Bay, CA, and on the north and south-facing surfaces of an outfall pipe in San Diego Bay, CA, while recording tidal elevation for each individual. M. galloprovincialis experienced a nominally significant habitat*elevation interaction (2-way ANOVA, elevation*substrate, p=0.0595) with higher CI at lower elevations on seawalls only, and higher CI on cobble versus seawall but only at higher tidal elevations. Data from the outfall pipe have been processed and the poster has been updated. Understanding habitat and tidal elevation effects on the health of a broader selection of both native and non-native bivalves will inform future management decisions about the use of natural and anthropogenic habitats.

Asa de Ocio

CA - Reedley College

Discipline: Interdisciplinary Studies

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#1 Asa de Ocio

Abstract Name: CHRIST'S IDENTITY AND PORTRAYAL BY CARAVAGGIO

How is Christ Jesus portrayed and identified in Caravaggio's paintings? Caravaggio's portrayal and identity of Jesus is prevalent throughout his religious works with a heightened sense and perception of reality. He uses tenebrism or Chiaroscuro, notions of good and evil, and many other dimensions to interpret imagery that brings forth a calling of the divine in the everyday. The realistic approach and life-like paintings of Christ done by Caravaggio have since impacted the way we perceive the religious and spiritual aspects of Jesus. Caravaggio was revolutionary in his approach to painting since he understood and was able to capture the human side of the divine. In particular Caravaggio was able to have a keen focus on human emotions and physicality in his paintings. It's almost as if Caravaggio knew that we the viewer are able to know the emotional state of mind that Jesus might have been in with the depicted biblical stories that unfold with immense palpability before our eyes in his paintings.

Kareesha de Visser

CA - California State University - Fullerton

Discipline: Health and Human Services

Authors:
#1 Lisa Erwin-Davidson

Abstract Name: It Would Be Great If They Could Read: Educator Values and Students With Complex Communication Needs

Understanding reading and writing as the most foundational life skills is a critical shift to make in understanding intervention for people with communication and language disorders. Not infrequently, professionals may differentiate life and job skills from literacy skills in a way that deprioritizes literacy skills. For example, a teacher may be advised or permitted to focus more on teaching a student common phrases or job skills in favor of foundational literacy skills. Understanding the discrepancies and conflicts between what educators state are their personal values, the goals they create and work towards with their students, the environments they teach in and the techniques they choose to implement are all key to understanding the

ultimate outcomes for the students they work with and the context within which students are or are not gaining the critical literacy skills they need to support their independence. The central aim was to elicit information about educators' views and mindset around the connections between language and literacy, and the barriers they face in effectively implementing the project's curricular components. The project required classroom educators (defined as teachers, aides, and speech language pathologists) to implement: (a) Readtopia (Building Wings, Inc.) as the comprehensive literacy curriculum, (b) at least the 36 Universal Core vocabulary as the Tier 1/Class wide aided language solution (on paper-based to high-tech platforms) so students could access curricular lesson materials, and (c) Aided Language Input as the communication partner language-learning strategy.

Neysa Dechachutinan

AL - University of Alabama at Birmingham

Discipline: Social Sciences

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Abstract Name: Estrous Cycle Regulation of Neuronal Ensembles Encoding Threat Memory within the Central and Lateral Amygdala Following Cued Threat Acquisition and Recall

Women are more vulnerable to stress- and fear-based disorders, including anxiety and post-traumatic stress disorder (PTSD), than men. Dysregulation of emotional memory is a core feature of these anxiety disorders, and these emotional memory processes are regulated across the menstrual cycle. Although auditory threat conditioning is the most well-established preclinical model of emotional memory, most studies using this model have ignored the role of the rodent estrous cycle. We hypothesized that threat memory processes are modulated across the estrous cycle through regulation of neuronal ensembles during acquisition and recall of cued threat memory. We first established behavioral differences in threat memory processes across the estrous cycle, with any exposure to low ovarian hormone phases during either threat conditioning or recall resulting in enhanced recall in females as compared to males. To investigate the mechanisms behind this behavior, we measured c-fos protein expression as a postmortem neural activity marker in the central (CEA) and lateral amygdala (LA), two regions required for threat memory processing, following the acquisition or recall of a cued threat memory across high (proestrus) and low (diestrus) hormone states. We found effects of both sex and estrous cycle on CEA activation. Mice in proestrus had higher c-fos levels than those in diestrus, but both were higher than those in male mice. LA activation was sensitive to estrous cycle with increased c-fos in diestrus compared to proestrus females. We next questioned whether these differences at memory acquisition would persist at memory recall, providing evidence of estrous cycle regulation of memory ensembles. Ongoing work is quantifying regional c-fos expression in the CEA and LA after memory recall. Overall, our data demonstrates that cycling reproductive hormones modulate threat memory within the CEA and LA and suggest the importance of considering estrous cycle as a variable when studying threat memory dynamics.

Emir Arda Deger

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Discipline: Engineering and Architecture

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Abstract Name: Optical Data Transfer Around Opaque Occlusions Using Electronic Encoding and Diffractive Decoding

We introduce a free-space optical communication scheme for transferring spatial information, e.g., an image, around arbitrarily shaped, fully opaque occlusions that partially or entirely block the line-of-sight between the transmitter and receiver apertures. In our scheme, an electronic neural network encoder and an all-optical diffractive network-based decoder are jointly trained using deep-learning methods. Diffractive network is an all-optical computing framework that comprises parallel diffractive surfaces separated by free space to perform a learned transformation on the input optical field dictated by the desired task. The electronic neural network produces an encoded phase representation of the optical information to be transmitted. The phase-encoded wave, after being obstructed by fully opaque occlusions, is decoded by the diffractive network at the receiver. This jointly trained encoder-decoder pair can communicate any arbitrary optical information around opaque occlusions, and the information decoding occurs at the speed of light propagation through passive light-matter interactions. We experimentally validated our framework in the terahertz spectrum by communicating images around arbitrarily shaped opaque occlusions using a 3D-printed diffractive decoder. This framework is scalable for operation at any wavelength and can be adopted for numerous applications, e.g., in emerging free-space communication systems.

Jillian DeGrie

TN - Middle Tennessee State University

Discipline: Visual and Performing Arts

Authors:
#1 Jillian DeGrie

Abstract Name: Sensory Overload

At the age of 20, I was diagnosed with both ADHD and Autism. I became fascinated with how and why late diagnoses of neurodivergence are so common. My years of research led me to one main conclusion: misinformation about neurodivergence is accepted as standard, and the stigma surrounding disability keeps it from being discussed and accepted by society. I use my art as an accessible medium for sharing my research. This led to Breaking the Stigma around Autism: an Interactive Art Exhibition. This body of work is about simulating aspects of the neurodivergent experience within my viewers to promote education and understanding. I am submitting one of these works: Sensory Overload. For neurodivergent people, sensory overload, or complete overstimulation caused by sensory input, can lead to meltdowns, anxiety, and even physical pain. Though neurotypical people cannot fully experience it, I wanted to simulate the feeling at a minor level. Sensory Overload is very pleasant and unpleasant textures dispersed across a panel. Via the gallery plaque, the viewer is asked to become a participant and touch the piece. The participant has to reach behind a piece of frosted plexiglass that obscures the textures to touch the work. The lack of visual information creates an element of surprise, disorientation, and discomfort within the participant that mimics the experience of sensory overload.Many who attended my show said this piece helped them experience an aspect of autistic life they otherwise could not understand. Ableism, stereotype, and misinformation are still extremely present in society. These things need to be combatted by starting healthy and honest discussions about neurodiversity. Within my own community, I saw how people’s perceptions of autism shifted upon

viewing my work. NCUR would help my message reach a large, prestigious audience, an opportunity often out of reach for neurodivergent people.

Andrea Del Castillo

MN - University of Minnesota - Rochester

Discipline: Health and Human Services

Authors:
#1 Andrea Del Castillo
#2 Donald Simone

Abstract Name: Use of Place Preference Testing to Determine Rewarding Properties of N_2O

Opioid analgesics are used to treat pain, but approximately 3 million people in the U.S. have suffered from opioid use disorder. Nitrous oxide (N2O), also known as laughing gas, is an inhaled anesthetic with analgesic properties commonly used in dentistry and other minor surgery procedures. We are currently investigating analgesic efficacy of a liquid formulation of N2O that can be used as an alternative to opioids to treat pain. We found that the liquid N2O administered by oral gavage decreased sensitivity to mechanical and heat stimuli in mice. We then used a Place Preference test to assess the risk of dependency with N2O. Mice were placed in a dual-sided chamber with different visual cues and were restricted to one side of the chamber after receiving the drug daily for 5 days. After this 5-day conditioning with N2O, mice were given access to both sides of the chamber. Mice treated with N2O failed to show preference towards either side of the chamber. These results suggest that the liquid N2O given by oral gavage is not rewarding and may therefore not produce dependence. If true, N2O may be an effective alternative to opioids.

Chloe Dela Santa

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Chloe Dela Santa

Abstract Name: Examining How Family Honor and Loyalty Affect Perceptions of Risk in Individual Decision-Making

Families play crucial parts in the overall preparation of individuals to become independent adults. Yet the effects of what an individual feels to be “owed” back to their families, in response to family honor and loyalty, varies immensely. The perception of what should be done may influence how appealing different choices appear and the decisions made might differ from the individual’s true preferences if placed under different circumstances. Whether those choices arose from being instilled in familial values or holding family honor in such high regard, the decisions took into consideration different pressures (personal, family preferences, external pressures: peers and society) in their lives. A gap exists in the current studies when analyzing family loyalty, risk-taking, and decision-making-- treating each of these dimensions in its own respective realm of psychology rather than as a whole. We can see these ideas being played in palliative care decisions or blended family situations. Most existing literature focuses on cross-cultural approaches (de Valk & Schans, 2008, Sovet & Metz, 2014), but my project also examines within-culture variability in the role of family honor and individual decision-making. The project aims to bridge that gap and explore family relationships and obligations by investigating the extent to which people weigh perceptions of family

honor in making those personal decisions. This study looks deeper into how family honor affects how people think about how to make– and perceive-- choices. A detailed survey will allow me to discern an individual's perceptions of what family honor is; participants recounting decisions made would give insight into how risky the choices seemed. We expect to see family honor as some sort of default in individuals given the closely intertwined nature of families and individuals.

Martha Delarosa

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Martha Delarosa

Abstract Name: Brick by Brick: Building Academic Success for Student Parents - Guardians Hall

This project delves into how architectural interior design influences the academic success and well-being of student parents at the University of Central Oklahoma, with a particular focus on optimizing Guardian’s Hall to meet the needs of these students and their children.Student parents in higher education face distinct challenges, often achieving higher grades but experiencing lower graduation rates compared to their non-parenting peers. This discrepancy is linked to a lack of supportive infrastructure and resources tailored to their unique situation. As higher education evolves, there's an increasing need to reassess campus facilities to better support these students. Guardian’s Hall aims to fill this gap by integrating historical architectural styles with modern amenities, fostering an environment that nurtures academic achievement and personal well-being.The study conducted interviews and surveys with student parents to gain an in-depth understanding of their needs and experiences. The research findings were crucial for evaluating how different design elements can positively impact their academic outcomes. Case studies of similar facilities enriched the overall understanding of the building design considerations for these students. Guardian's Hall design aims to fill this gap by integrating the historical architectural styles of a university located in the southeast region along with modern amenities. This facility fosters a living and learning environment that nurtures academic achievement and personal well-being by providing spaces such as on-campus daycares, interactive study rooms, and family-friendly on-campus living. A well-designed space like Guardian’s Hall will significantly enhance the academic and personal lives of student parents. The project aims to demonstrate that a synergy of historical aesthetics with modern functionality can create a supportive environment, likely leading to improved retention and graduation rates. These results will offer valuable insights into how architectural design can address specific educational needs, potentially shaping the direction of future campus developments.

Elia Delphi

CA - San Diego State University

Discipline: Humanities

Authors:
#1 Elia Delphi

Abstract Name: Reconstructing the Experiences of Foster Children in Mid-20th Century New York City: Narratives of Agency, Empowerment, and Intersectionality

Children’s stories are as absent from written histories as their voices. In part, this marginalization is due to the lack of records that shine a light on children’s realities. However, even records that center adults can offer

glimpses into children's lives. Relying on the adult-centric sources I have available to me, I set out to reconstruct the experiences of foster children during the mid-20th century in New York City. This period was the inflection point when the percentage of foster children placed within home settings, as opposed to institutions, reached a majority. The results of this turning point profoundly affected the most vulnerable and resilient children, yet, the few historians who have addressed this topic have largely made arguments that concern systems, structures, and institutions. That is to say, while they write about children, children are still just outside the focus.Shifting the focus away from the systems themselves, my research aims to answer how foster children asserted their agency and subjecthood in situations where they were made to feel powerless. Relying on graduate theses from the New York School of Social Work (1948) and Fordham University (1953) as my primary sources, I write narratives of foster children to demonstrate how they were agents of their own lives. In doing so, I illustrate the principal themes of their experiences, analyzing their narratives through the application of interdisciplinary social theory. I expand on issues of liminality, labeling, and intersectionality while connecting the children's lives to their broader historical context. Each story shines a light on what it was like to be a foster child in the mid-century, uncovering details about a child's personality, struggle, and victories. Through these narratives, it is clear how children are active in creating their reality, rather than passively accepting the reality dictated to them by adults.

Georgia Deml

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Georgia Deml

Abstract Name: STAB2 and PLD4 Expression in Anolis Carolinesis

The green anole (Anolis carolinesis) is a reptile that goes through morphological changes during certain periods of the year. During the breeding season the brain and gonads of the green anole go through morphological changes. The purpose of this study is to determine whether certain genes become more active during the breeding season of the green anole lizard compared to the non-breeding season. The two genes being studied are STAB 2 and PLD4. The STAB 2 gene has been observed in humans to create a protein that aids in multiple functions of the body. One of these functions is angiogenesis, otherwise known as the synthesis of blood vessels. With the gonads increasing in size during the breeding season, it is thought that the STAB 2 gene might become more active to aid in the increased need for blood flow by synthesizing new blood vessels. The second gene we have been studying is the PLD4 gene. The PLD4 gene is a protein coding gene involved in the cytokine production that occurs during inflammatory responses. It is thought that PLD4 might become more active in breeding males as the bright red dewlap of the males is an important part of mating displays for green anoles. The activity of each gene was determined by running multiple PCR tests as well as PCR cleanups and qPCR tests. With this knowledge we would be able to tell if our hypothesis are supported by our results.

Yihong Deng

WI - University of Wisconsin-River Falls

Discipline: Engineering and Architecture

Authors:
#1 Yihong Deng
#2 Sierra Kolodjski

#3 Grace Lewis
#4 Youngmi Kim

Abstract Name: Development of Whey Protein-Lignin Based Film Materials for Dairy Food Packaging Applications

Whey protein (WP) and lignin are by-products of cheese production and the pulp and paper industry, respectively. This project aims to combine WP, glycerol, and lignin to develop biodegradable films for food packaging applications. WP solutions underwent denaturation at temperatures between 60-90°C with glycerol and lignin. SDS-PAGE showed that the film-forming solution prepared at 90°C resulted in 88.7% WP denaturation, 51.1% for WP made by mixing 20°C and 90°C in a 1:1 ratio, and 12.3% for WP prepared at 60°C. Results revealed that WP denaturation increased available thiol groups, which were likely responsible for forming the polymeric structure of WP films. With altered polymeric structures, different levels of WP denaturation altered film properties such as water vapor permeability, water solubility, glass transition temperature, and mechanical strength. Water solubility, glass transition temperature, puncture force, and tensile strength were inversely correlated with the percent denaturation of WP. The 90°C WP film had the highest tensile strength (5.77 ± 0. 31 N.mm-2), and puncture force (67.57 ± 6.88 N.mm-1). The addition of lignosulfonate and alkaline lignin (at 5% w/w of WP) provided antioxidant functionality equivalent to 6.25 ± 1.00 mg ascorbic acid/g film and 6.71 ± 1.12 mg ascorbic acid/g film, respectively. The thermal stability of WP films was improved with the addition of lignin as indicated by the increased glass transition temperature (Tg with alkaline lignin = 77°C, Tg with lignosulfonate= 80°C vs. Tg of 90°C WP film = 62°C) Adding lignosulfonate improved water barrier properties by 10%. WP films with alkaline lignin demonstrated improved light barrier properties than those with WP only. Overall, the results highlight the importance of WP denaturation in film properties and the potential benefits of different types of lignin for improving film properties.

Karisa Denig

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Karisa Denig
#2 Derek Gingerich

Abstract Name: Analysis of PHYB Mutations Identified in a Genetic Enhancer Screen in Arabidopsis thaliana

The plant Arabidopsis thaliana contains the genes LRB1 and LRB2 (Light-Response BTB 1 and 2) that encode proteins functioning as target adaptors in complexes that initiate degradation of the phytochrome red/far-red-light receptors. Plants containing mutations of both the LRB1 and 2 genes are hypersensitive to red-light. In several of the lines there is a putative enhancer point mutation in regions of the PHYB gene, which encodes the phytochrome acting as the major red-light receptor in Arabidopsis. Screens were conducted to identify mutations that increase red-light hypersensitivity of LRB1 and LRB2 double mutant plants, which was successfully done. Recent work has focused specifically on the E2-1-2 and E11-6-5 mutant lines to characterize the effects of these mutations on light responses and phytochrome action. Backcrosses were done to focus on these mutations, backcrossing of the E2-1-2 line has been completed, and the E11-6-5 line is undergoing the backcrossing process. Genotype/phenotype analysis has been done to see how the TDNA insertion mutations in the LRB1 and LRB2 genes, along with the PHYB point mutation works together to affects red-light hypersensetivity. We have also looked at enhancer E2-1-2 lines which are blue-light hypersensitive and conducted genotype/phenotype co-segregation experiments which determined that the PHYB point mutation in that line may also be responsible for the blue-light phenotype and for the mutant lines themselves.

Logan Denney

FL - Jacksonville University

Discipline: Social Sciences

Authors:
#1 Logan Denney
#2 Amanda McGraw

Abstract Name: Positive Self-Talk versus Brooding and their Relationship with Creativity

PosterTITLEPositive Self-Talk versus Brooding and their Relationship with CreativityData collection is in progress. Many studies have established a relationship between depressive symptoms and creative thought. However, the relationship is not robust and can be found in both directions. Here, researchers wish to further investigate why this occurs. It is likely because studies have examined multiple symptoms of depression, some being related to creativity and others unrelated. We hypothesize that different types of self-talk will be correlated with creativity. Specifically, we predict a positive relationship between positive self-talk and creative thinking, and a negative relation between brooding and creative thinking. Participants from a college sample will be instructed to respond to a self-report measures of self-talk and brooding. Additionally, the ability of the participants to produce creative thinking will be measured using an alternative use task. To assess research question 1: Does positive self-talk predict creativity, we will run a regressional analysis where positive self-talk is the predictor and creativity is the outcome. Covariates include gender and age. To assess research question 2: Does brooding predict creativity, we will run a regressional analysis where brooding is the predictor and creativity is the outcome. Covariates include gender and age. This study is important due to the connection between creativity and depression potentially providing an individual an outlet for understanding one’s emotions. This outlet can lead to increased ability to problem solve and make decisions.

Emma Dennin

OK - University of Central Oklahoma

Discipline: Social Sciences

Authors:
#1 Emma Dennin
#2 Jaclyn Maass

Abstract Name: How Meditation and Preconceived Notions Could Effect Test Anxiety

This study will analyze how meditation can decrease test anxiety, and whether a person’s pre-existing beliefs can affect this relationship. It is suggested by research that test anxiety comes from two different components: Worry and Emotionality. The Worry aspect is described as cognitive concerns regarding the exam and exam performance, while Emotionality is described as the physiological and autonomic arousal during a testing situation. It is hypothesized that meditation could target both these aspects through lowering the sympathetic nervous system and reducing ruminating thoughts. The goal of this project is to expand on the previous research in two main ways. First, the current work would target test anxiety specifically, as opposed to more generalized or clinical anxiety. Second, this research will also investigate whether a person’s biases toward or against mindful meditation may impact how helpful it can be. Findings from this study can provide an understanding of how meditation can affect test anxiety depending on a person’s established assumptions. This has implications for students at all levels who struggle with test anxiety.In order to test this, a simple

experimental design will be conducted at the University of Central Oklahoma, in which particpants will be randomly assigned to two groups. Participants recruited will be told they are taking an exam. They will then complete 10 minutes of meditation (meditation group) or sit quietly for 10 minutes (control group). After the exam, both groups will answer questions that assess their test anxiety levels. Finally, they will be given a quick survey to determine their general views on meditation. It is predicted that the meditation group will report less test anxiety than the control group, but that benefit will be diminished for those who hold negative views on meditation.

Karen Denova-Mondragon

TX - St. Edward's University

Discipline: Social Sciences

Authors:
#1 Karen Denova-Mondragon

Abstract Name: Substance Use and Avoidance Attachment in Hispanics and Non-Hispanics

Mary Ainsworth, an American-Canadian Psychologist formed the Strange Situation Procedure in 1969 to measure mother-child attachment and created a foundation for attachment styles that is still used by attachment theorists. The information collected has helped gain understanding of attachment throughout different points in life (Berlin et al., 2022). This research focuses on substance use between Hispanics and Non-Hispanics who have an avoidant attachment. The purpose of this study was to acquire substantial knowledge about the association between attachment and substance use, in Hispanics and Non-Hispanics. Due to the insufficient research done with Hispanic participants and avoidant attachment, it was key to have this population included. The use of attachment helps individuals learn about themselves including knowing how to navigate ways to form relationships with others. Attachment impacts all relationships throughout an individual's life (Fitton, 2012). Participants in this study were adults who took an anonymous online survey and were asked about their attachment tendencies such as their ability to get close to others and fear of abandonment. Attachment style was determined using the Adult Attachment Questionnaire (AAQ) created in 1996. Additional questions regarding relationships with biological parents and substance use were also asked. The results of this study indicate Hispanic participants had relatively the same frequency levels of substance use regardless of their attachment style. Non-Hispanic participants reported lower levels of substance use frequency with high levels of avoidance attachment, and higher levels of substance use frequency with lower avoidant attachment.

Lauren Depa

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Lauren Depa
#2 Yuan Wen
#3 John McCarthy

Abstract Name: Mitochondrial Dysfunction in Striated Muscle Is Related to Muscular Dystrophy

Background: Duchenne muscular dystrophy (DMD) is a genetic disorder lacking the dystrophin protein, causing muscle deterioration and weakness. The standard of care is glucocorticoid therapy, focusing on

delaying complete muscle function loss. Although the cause is genetic, recent studies using a novel and more relevant mouse model of DMD, the D2-mdx mouse, suggest mitochondrial dysfunction is an early event in the disease process. However, the mechanism through which the cytoplasmic protein's loss disrupts the electron transport chain is poorly understood. Rpl3l is a paralog of the ribosomal protein, Rpl3. Rpl3l is only expressed in skeletal and cardiac muscle tissue. Current literature hypothesizes that Rpl3l may serve as a negative control of muscle growth. The aim of this study was to investigate how mitochondrial dysfunction is related to weakness in the D2-mdx mouse, and the potential relationship between expression of Rpl3 and physiological characteristics of the D2-mdx mouse model.Methods: Muscle function was assessed by measuring plantarflexion in vivo. Mitochondrial function was assessed using high resolution respirometry. Protein expression levels were measured using Western blots. Results: Consistent with the literature, we found that D2-mdx mice were significantly weaker, and muscle mitochondrial function was decreased, compared to the control, DBA/2 mice. Further, we found that in D2-mdx dystrophic mice, peak torque was significantly reduced by 44%, which was associated with muscle-specific changes in Complex I and II activity and maximum electron transport chain capacity. Preliminary data showed an increase in protein expression levels of Rpl3 in D2-mdx dystrophic mice, compared to the control, as expected. Conclusions: Cardiac and skeletal muscle in the D2-mdx murine model of Duchenne muscular dystrophy exhibit lower mitochondrial oxygen consumption capacity and higher reactive oxygen species production. These changes may worsen muscle weakness already present due to loss of the dystrophin gene in Duchenne muscular dystrophy.

Dhairya Desai

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
#1 Dhairya Desai

Abstract Name: Aqueous Synthesis of Polyelectrolytes (Ionomers) using Non-metal Based Reducing Agents

Sustainable and green water purification methods are increasing in demand worldwide today. Some current water purification techniques deal with filtration, ion exchange, and osmosis processes. There is an increase in demand to create safer purification methods as many new harmful contaminants are still present at extremely low levels. Current literature about ion-exchange purification methods focuses on ways to grow polymers on scaffoldings, which bind to toxic compounds and purify the water. Yet, these efforts must be revised when looking at residual contaminants due to the synthesis process of the polymer. Current synthesis techniques focus on creating these polymer chains through activators regenerated by electron transfer (ARGET) atom transfer radical polymerization (ATRP). This research focuses on finding procedures using inexpensive and safe reducing agents that do not contain heavy metals. Ascorbic acid and similar reducing agents are of interest as they allow for the same type of polymerization needed to create polymers of interest but are also safer. The reaction is maintained at a pH of 9-10 to ensure that the reducing agent and amine are deprotonated. The polymer is synthesized as a pseudo-first-order reaction, the basis for calculating the rate constant and percent conversion. Our most successful non-metal-based polymer synthesis reaction, with ascorbic acid, had a rate of 0.050 ± 0.007 h-1 and a 97.7% conversion. This reaction still falls short compared to the Sn(Oct)2 reducing agent polymer synthesis, as it has a rate of 0.067 ± 0.008 h-1. Unlike the metal-based synthesis, our non-metal-based reactions change to a dark red color once exposed to oxygen. Preliminary results show that non-metal reducing agents work to synthesize the polymers, but further research and kinetics must be done to determine the reaction's efficiency.

Dhairya Desai

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
#1 Dhairya Desai

Abstract Name: Characterization of poly(vbTMAC) through Extinction Coefficient and Radius at Various Lengths and Solutions

Creating sustainable sources for water purification and clean drinking water has become a global priority. Of the current water purification techniques, ion exchange resins are of interest as they purify the water by removing contaminant ions and exchanging them with safe ions. Our group focuses on synthesizing anion-exchange polymers used to functionalize our nanomaterials. However, analytical characteristics are needed to evaluate the synthesis and performance of these nano resins. The study focuses on UV-Vis analysis to characterize the absorptivity of our polymer in various conditions. The polymer matrix gives the resin stability and ion exchange capabilities; quantifying the polymer concentration is crucial to understanding our materials' performance. Through the Beer-Lambert Law, the extinction coefficient directly correlates polymer concentration to light absorption, allowing rapid characterization of our resin synthesis. Recent studies have determined the extinction coefficient on other common ion-exchange polymers. The extinction coefficient of the monomer and polymer, where n=292, in ddH2O, were determined to be 79.3 ± 2.8 mL mg-1 cm-1 and 1.59 ± 0.05 mL mg-1 cm-1, respectively. Shorter polymers with a length of 225 and 30 had an extinction coefficient of 2.149 ± 0.006 mL mg-1 cm-1 and 2.3 mL mg-1 cm-1, respectively, in ddH2O, indicating that extinction coefficients are negatively correlated with polymer lengths. Our polymers must also be tested in different solution conditions as certain resin synthesis reactions are carried out at varying pH levels. Accurately determining polymer concentration by extinction coefficient is crucial for optimizing resin synthesis and the durability of materials. Current work is being done to determine the size of the polymer as a function of time through DLS. Future work should expand on the scope of the polymer studied and test the extinction coefficient in practical applications.

Dhairya Desai

NC - University of North Carolina at Charlotte

Discipline: Health and Human Services

Authors:
#1 Dhairya Desai

Abstract Name: Comparison of Asthma Healthcare Outcomes by Patient Demographics Before COACH McLungsSM Implementation

This study aims to summarize the demographic characteristics of asthma-related patient visits over the past five years before the implementation of COACH McLungsSM. COACH McLungsSM is an iPad-based program that uses shared decision-making between the patient and the provider to generate a treatment plan. 21 family medicine and pediatric practices in the Charlotte, NC, area were recruited in 2022. Baseline utilization data, such as emergency department visits, inpatient hospitalization, and oral steroid prescriptions, along with demographic data, such as race, sex, ethnicity, and race for patients aged 5 to 17 who were patients at these practices, were collected. The analysis of race showed that White/Caucasian patients and Black/African American patients had a similar proportion of patients in the baseline database, with 44.3% vs. 44.5%, respectively. White/Caucasian patients had an average of 5.0 outpatient visits, while Black/African American patients had an average of 5.7 visits (p = 0.100). White/Caucasian patients had an average of 1.883 visits to the ED and 0.1623 Hospitalization visits, while Black/African American patients had an average of 3.057 visits to the ED and 0.2679 Hospitalization visits. A further analysis of this observation shows a significant difference by race between ED (p < 0.001) and hospitalization visits (p = 0.023). Additional

disparities present themselves when comparing oral steroid prescriptions between the two cohorts. Black/African American patients had an average of 3.44 prescriptions, while White/Caucasian patients had an average of 2.60 prescriptions. The differences observed in the prescription and usage of steroids to treat asthma are significant (p < 0.001). In conclusion, a series of disparities with patients living with asthma by race are present when observed by patient visit type.

Shreya Deshmukh

CA - University of California - Riverside

Discipline: Social Sciences

Authors:
#1 Shreya Deshmukh
#2 Ye Li

Abstract Name: Nudging Gym Use

We are interested in researching the effect of interventions to increase exercise behaviors. This project aims to encourage gym use by utilizing the economic theory of sunk cost fallacy. The sunk cost fallacy describes a phenomenon where an action is motivated because of a cost that has already been incurred. At the University of California, Riverside, fees for using the Student Recreation Center (SRC) are integrated into tuition costs and make up approximately 3% of the quarterly tuition. Our research hopes to understand whether reminding students of the inclusion of gym fees in their paid tuition will create a perception of sunk cost and encourage them to attend the gym more frequently.The American Medical Association outlines recent trends in growing healthcare prices and disease morbidity, emphasizing the importance of preventative health in managing health outcomes. Studying whether providing university students with information regarding “sunk” gym fees within their tuition costs increases their gym attendance can help researchers better understand how to encourage preventative health behaviors. This information can be valuable for applications within the medical and public health sectors to target improved community health and health autonomy. We hope to identify mechanisms to increase the frequency of exercise behaviors to understand methods of promoting preventative health through behavioral economic principles. Our research may be extended beyond exercise behaviors to encompass a variety of preventative health measures, including improved diet and reduced alcohol consumption to understand effective interventions to increase preventative health behaviors in society. As the healthcare industry grows, preventative health is increasingly important for patient autonomy and to reduce costs and burdens on the healthcare system.

abhijeet deshpande

FL - The University of Tampa

Discipline: Natural and Physical Sciences

Authors:
#1 Abhijeet Deshpande
#2 Robert Masserini

Abstract Name: Exploring the link between hurricane-induced rainfall and nutrient pulses on Florida's West Coast

Blooms of the dinoflagellate Karenia brevis are recurrent along the west coast of Florida and lead to ecological damage and risks to public health through the release of brevotoxins. The availability of nutrients

is a significant factor in stimulating algal growth. This study examines the role of rainfall-induced nutrient pulses, particularly ammonium, nitrate, and phosphate, and their association with algal blooms. Water samples collected monthly along Florida's west coast were analyzed using absorption-based spectrophotometry techniques and employing an Autoanalyzer 3. Our findings establish a direct correlation between hurricane-induced rainfall and nutrient flux, exemplified by notable nutrient spikes during events like Tropical Storm Elsa and Hurricane Ian. These results emphasize the importance of addressing land-based nutrient pollution for long-term red tide impact reduction.

Rebekah DeYoung

TX - Lubbock Christian University

Discipline: Health and Human Services

Authors:
#1 Rebekah DeYoung

Abstract Name: An Analysis of the Controversy Surrounding ABA to Promote More Ethical Practice Among Occupational Therapists Treating Children with Autism

In recent years advocates within the autistic community have challenged applied behavioral analysis (ABA) due to alleged harmful practices, such as extinction and punishment, which some claim have led to long-term trauma in children with autism spectrum disorder (ASD). ABA and occupational therapy (OT) are two of the most popular therapies that work with children who have been diagnosed with ASD. While they are two very distinct therapies, they overlap in many ways. Due to this overlap, it is important to see if any of the complaints surrounding ABA can also be applied to OT as this can indicate that OT is also potentially harming children with ASD. However, there has been very little research investigating whether there are any areas of concern in how OT approaches treating children with ASD. The purpose of this research is as follows. First, the controversy surrounding ABA is explored. Next, the practices of occupational therapists and behavioral therapists are analyzed and compared through a survey of practitioners in Lubbock and Fort Worth, Texas with the purpose of determining if any of the complaints raised against ABA could also be applied to OT. This analysis and identification of concerning areas of overlap can provide a framework to then propose more ethical practice among occupational therapists working with children with ASD. These results can be used as a way to reconstruct certain practices in OT to better align the field with the modern values of inclusion and diversity, while also reengaging occupational therapists with the foundational values the practice was built upon.

Gurveen Dhallu

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Gurveen Dhallu
#2 Jennifer Drake

Abstract Name: The Paradox of Tragic Art

Tragic art involves the complex interplay of negative and positive emotions, leading to physical and psychological changes within the viewer--such as chills, tears, and feelings of being moved (Hanich et al., 2014; Wassiliwizky et al., 2015). Negative emotions expressed within art are even considered to be an

essential resource, allowing artists to create pieces that engage viewers emotionally and are highly memorable (Menninghaus et al., 2017). But, if we often seek to limit negative emotions within real-life situations, why do we seek them out when viewing art, and why do we enjoy it? My study aims to investigate the paradox behind tragic art, addressing why we may leave an experience viewing tragic art feeling emotionally positive. Furthermore, this study explores whether tragic art has the ability to change our perspectives, specifically from an unsympathetic to a sympathetic view towards a marginalized group: refugees. Participants will be 150 adults who identify as politically conservative, suggesting an initial unsympathetic view towards granting entry to refugees fleeing to the United States. Participants will watch two videos illustrating sculptures depicting the tragedies faced by refugees when fleeing their countries, and will then be asked to rate their negative and positive affect, how moved they felt after watching the video, and how meaningful they found the art. Finally, participants will be asked to identify whether their opinions regarding refugees entering the United States have changed--and if so, how. I expect participants to demonstrate a mix of positive and negative affect following the tragic art video, and that these emotions will be mediated by the feeling of being moved, an overall positive emotion (Hanich et al., 2014). Additionally, it is expected to see that participants, who were originally unsympathetic to refugees migrating, will be more sympathetic to the cause.

Saidharshana Dhantu

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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#2 Teayoun Kim
#3 Shelly Nason
#4 Kirk Habegger

Abstract Name: Regulation of Glucose Homeostasis by GFA-015

Glucagon (GCG) is a 29-amino acid peptide released from alpha-cells of the pancreatic islets. Glucagon is best known for its counterregulatory actions against insulin-stimulated hypoglycemia via hepatic glycogenolysis and gluconeogenesis. However, glucagon also regulates a range of actions like amino acid catabolism, lipolysis, ketogenesis, fatty acid oxidation, satiety, thermogenesis, energy expenditure, and bile acid metabolism, which are seemingly desirable improvements in patients with metabolic syndromes. Consequently, glucagon-receptor (GCGR) agonism has been added to classic incretin hormones in single-molecule, multi-receptor co-agonists that elicit superior therapeutic efficacy in metabolically compromised rodent models and emerging clinical trials, without impairing glucose metabolism. Thus, studies herein interrogate GCGR agonists of various pharmacodynamic length to test for maximum metabolic benefits while minimizing adverse effects on glucose homeostasis.Comparison of native glucagon to the long-acting GCGR-agonist with enhanced solubility, IUB288, revealed a distinct glucose response. GCGR agonists stimulate a similar glucose excursion within 60 minutes of administration in lean C57Bl6 mice. However, unlike the native peptide, IUB288 treatment induced a subsequent period of reduced glycemia. To confirm the effect of IUB288, we used GFA-015, a novel long-acting GCGR-agonist with enhanced engagement and extended pharmacodynamics allowing for once-every-72h dosing. After a 5-hour fast, GFA-015 was administered to C57Bl6 mice and observed over a 4-hour period. GFA-015 stimulated a smaller glucose excursion than IUB288 as well as a prolonged period of reduced glycemia, resulting in significantly lower blood glucose levels compared to the vehicle. GFA-015 treated mice exhibit increased insulin levels after the initial dose, further rising by day 4 and aligning with timepoints displaying reduced glycemic levels in the mice. A mixed-meal challenge on day 7 highlighted improved glucose tolerance in GFA-015 treated mice as compared to vehicle-treated controls. These data support that long-acting GCGR agonists increase circulating insulin and stimulate periods of enhanced glucose homeostasis.

Saidharshana Dhantu

AL - University of Alabama at Birmingham

Discipline: Visual and Performing Arts

Authors:
#1 Saidharshana Dhantu

Abstract Name: Dancing Our Way Through Stress: A Pilot Study Illuminating Bharatanatyam's Potential as a Therapeutic Outlet

Bharatanatyam, an ancient classical dance form originating in India, transcends cultural boundaries to offer a holistic approach to well-being. This study delves into the fascinating intersection of Bharatanatyam and mental health, with a focus on stress, exploring its profound impact beyond its established physical benefits, i.e., increased physical fitness and improved flexibility, circulation, and muscle toning. Stress relief is not only attained from the endorphins produced by the cardiovascular exercise of Bharatanatyam. Relief additionally includes different pressure points of hand gestures, known as Mudras, the expression of different moods, known as Rasa, and different body postures, known as the Karnas. The practice of Bharatanatyam, thus, initiates the healthy unification of the body and mind, helping practitioners to tune into the body to find expression of thoughts and emotions. This study explored Bharatanatyam's impact on stress reduction and overall well-being through a preliminary analysis involving Bharatanatyam dancers from UAB's dance team, Natyam. Utilizing the Perceived Stress Questionnaire developed by the Perelman School of Medicine at UPenn, stress levels before and after Bharatanatyam practice sessions were measured, which integrated rhythmic movements, expressive gestures, and storytelling. Our hypothesis posited a decrease in perceived stress with the practice of Bharatanatyam. By examining the correlation between Bharatanatyam and perceived stress, this study provides a gateway to understanding the profound connection between the ancient art form and the growing field of mental health, thus revealing its potential as a holistic therapeutic outlet. Thus, the purpose of this piece is to elucidate an example of the method in which Bharatanatyam improves one's self-efficacy in a manner that mirrors a progression from external movements to an inward channeling of energy and consciousness. This piece depicts the transformative impact of self-awareness and understanding on healing anxiety and depression.

Suhani Dheer

PA - Drexel University

Discipline: Social Sciences

Authors:
#1 Suhani Dheer
#2 Jocelyn Ang
#3 Kathryn Devlin
#4 Maria Schultheis

Abstract Name: Beyond Diagnosis: The Cognitive Demands of Stopping and Turning Behaviors Among Drivers With and Without Multiple Sclerosis and Implications for Driving Safety

Background: Multiple sclerosis (MS) commonly affects cognitive/motor abilities important for safe driving. However, limited research has examined the impact of MS-related cognitive compromise on cognitively-demanding driving behavior. Namely, turning and stopping at intersections are challenging driving situations that constitute a significant portion of road collisions. This study used virtual reality driving simulation (VRDS) to 1) investigate differences in stopping/turning behavior between adults with and without MS, 2) identify cognitive correlates of stopping/turning behavior, and 3) examine whether cognitive correlates differ

by MS status. Methods: 85 adult drivers (48 PwMS, 37 controls) completed cognitive assessments and a VRDS drive featuring right/left turns and stop sign intersections with varying cognitive demands. Linear/logistic regressions assessed driving behavior in relation to MS status, cognitive measures, and their interactions. Results: Group differences were minimal, except for controls executing sharper left turns than PwMS ($p=0.035$, $\eta 2=.08$). Additionally, PwMS tended to stop after the line at high-complexity stops ($p=0.07$, $phi=0.31$). In terms of cognitive correlates, weaker abilities in visuospatial ability/memory, cognitive/motor speed, and rapid working memory are related to less-safe turning behavior. Abnormal complex attention was associated with less-safe stopping. Associations between cognitive/motor variables and stopping/turning did not significantly differ by MS status. Conclusions: PwMS exhibited similar driving behaviors to controls at challenging intersections, with occasional exceptions such as increased caution in left turns and a trend towards less safe stopping at high-complexity stops. Cognitive/motor correlates included selective visual attention, visuospatial ability, working memory, and psychomotor speed, regardless of MS status. The results emphasize the importance of evaluating cognitive and motor capabilities for driving, rather than relying solely on diagnostic status when making driving safety recommendations. Findings may differ in other neurologic populations, which will be explored in future research.

Hasan Dheyaa

NC - University of North Carolina at Chapel Hill

Discipline: Engineering and Architecture

Authors:
#1 Hasan Dheyaa
#2 Austin Mituniewicz
#3 Michael Lewek

Abstract Name: Development of an Economical Motion Sensing System Using IMUs for Real-Time Gait Cycle Estimation

The gait cycle, for human walking, is defined as the normalization of time between consecutive foot contacts from the same foot. The applications of the gait cycle have been well established, especially for clinical assessments and powered assistive devices. For real-time gait cycle analysis, implementing predictive models to do so can be challenging due to the high variability in human motion. Existing approaches yield accurate estimates, but often require expensive hardware, limiting the proliferation of this technology. As such, our goal aims to develop an economical motion sensing system for real-time gait cycle estimation and benchmark its performance against a higher-end system. Both the high-end (HE) and off-the-shelf (OTS) systems use two inertial measurement units (IMU), mounted on the thigh and the lower leg. Separate microcontrollers for each system process IMU output and use an algorithm developed by our group for real-time gait cycle estimation. Ten participants without neuromuscular impairments will be recruited to walk on a treadmill for 20 minutes at speeds ranging from 0.5-1.5 m/s at randomly assigned increments of 0.1 m/s, simultaneously wearing both systems. The root means square error (RMSE) of each system's gait cycle estimates will be compared to offline calculations. Regression analysis will be used to quantify system drift through the RMSE and a two-way ANOVA will assess differences in the effects of system performance and gait speed. We expect that drift will be observed in both systems, but occur earlier in our OTS system and with only marginally greater error compared to the HE system. Additionally, we do not expect differences with respect to gait speed. Overall, developing an affordable, yet adequate system can hold the potential to improve access to reliable biomechanical data, advancing both assistive device technology and real-world gait analysis outside of a lab environment.

Bulcha Dhiyesa Mardassa

UAE - Zayed University

Discipline: Mathematics and Computer Science

Authors:
#1 Bulcha Dhiyesa Mardassa

Abstract Name: Assessing Website Accessibility Awareness Among University Students in the United Arab Emirates

The World Health Organization estimates that more than one billion people around the world live with a disability and face various challenges in digital environments. Since the invention of the World Wide Web, governments and businesses everywhere have moved their services to websites. In particular, the United Arab Emirates (UAE) aims to digitalize all services by 2023. Consequently, it is critical that these websites be accessible to all members of society regardless of their abilities. Several efforts have been made to promote accessible website design including the creation of the Web Content Accessibility Guidelines (WCAG). However, previous studies that numerically evaluated accessibility of different websites in the country have

demonstrated a widespread non-conformance with accessibility standards. This cross-sectional study aims to assess the level of knowledge, attitudes, and perceptions of website accessibility among Information Technology (IT) students in the UAE. A select sample of 70 Zayed University IT students completed an online questionnaire. Results revealed a high level of familiarity with the challenges faced by people with disabilities but a low awareness of web accessibility. Notably, while 58% of students had enrolled in web development courses, 92% reported that none of their courses covered website accessibility, and 78% were unaware of the WCAG. The findings suggest a need for further data to be collected from different universities in the country to reach a general conclusion and understand the implications of web accessibility awareness in a larger context.

Gabrielle Di Bernardo

CA - Chapman University

Discipline: Humanities

Authors:
#1 Gabrielle Di Bernardo

Abstract Name: Explicitly Queer, Political, and Radical

This paper poses a queer intervention to the scholarship of Jacques Rancière; whose oeuvre has been centered around how art and politics are intertwined and how they shape the “distribution of the sensible,” what produces the system that determines what is permitted to be said, thought, and done within a society. Rancière posits that the distribution of the sensible establishes an aesthetic regime, but that art has the potential to challenge and disrupt this regime. Regarding this, Rancière writes extensively on cinema, analyzing high culture films such as La Haine (Mathieu Kassovitz 1995) and La Strada (Federico Fellini 1954); however, he has neglected a large body of films that practice the criteria he establishes.I focus on Gregg Araki’s Teen Apocalypse Trilogy of the New Queer Cinema movement as films that are radically political according to Ranciere’s theoretical framework. I express that the main political nature of the trilogy lies in their “explicit queerness.” In order to define what I consider art that is “explicitly queer,” I establish criteria as well as a timeline of radical queer art starting with Marcel Duchamp’s La Fountain, Andy Warhol’s Sex Parts, and Pier Paolo Pasolini’s filmography. Then, alongside my analyses of the films, I take a phenomenological approach based on Tarja Laine’s Feeling Cinema: Emotional Dynamics in Film Studies (2011), positing my personal experiences with each film in order to understand their political nature according to Rancière’s The Emancipated Spectator (2009). Through this paper, I assert that because of Araki’s unconventional style, his engagement and challenging of the spectator, as well as his subversion of traditional aesthetics and storytelling techniques, Araki’s Teen Apocalypse Trilogy reveals the epoch of America’s queer youth in the 1990s, giving voice those refused one within the dominant order and therefore being the political films as Rancière articulates.

Pearl Diabene

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
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#2 Olivia El Naggar
#3 Gabriele Romano

Abstract Name: Dissecting the EGFR/MAPK/Ras pathway in NF1-mutant Ovarian Cancer Through Western Blot Analysis

Ovarian cancer ranks as the 8th most common cause of cancer-related deaths in women. High Grade (type II) Serous Ovarian Cancer (HGSOC) is among the most lethal forms of human cancer. In 14% of HGSOC cases Neurofibromin 1 (NF1), is mutated or deleted, and no specific targeted approach is currently available for this group of patients, who are generally treated with surgery and/or radio-/chemo-therapy.NF1 negatively regulates the MAPK pathway by functioning as a Ras-GTPase. The Ras/Raf/MAPK pathway is a signal transduction pathway that regulates cell growth, division, and differentiation. This pathway contributes to mitogenic and pro-survival signaling and is often implicated in many forms of cancer. EGFR is a receptor tyrosine kinase upstream of NF1 and the MAPK signaling pathway. Our lab hypothesizes that cells lacking NF1 are dependent on EFGR signaling. Therefore, by inhibiting the EGFR signaling pathway, we may be able to induce cell death in NF1-mutant ovarian cancer cell lines.We are currently utilizing 5 model cell lines: OVCAR4, OVCAR5, and HEYA8 are NF1- wild-type, whereas PEO1 and DOV13 are NF1-mutant. Western Blot Analysis will detail the impact of drug treatments (e.g., EGFR inhibitors) on downstream signaling targets in the NF1 pathway (e.g., AKT, mTOR), with the final aim to identify differential regulation and novel targetable nodes to treat this subgroup of ovarian cancer.

Wendy Diaz

OK - Southern Nazarene University

Discipline: Social Sciences

Authors:
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#2 Scott Drabenstot

Abstract Name: Are Pell Grants Enough?

This study aims to examine how gender differences and socioeconomic status influences how each individual experiences a sense of belonging and hope. Using the lens of attachment theory, this study focuses on the sense of belonging and hope among Pell Grant recipients. It is hoped that this will assist the search for ways to increase belonging and hope on campus. This research will add to the discipline of psychology a better understanding of the factors that can potentially impact a sense of belonging and hope in an individual. Data was collected through an online survey that measured undergraduates' levels of belonging and hope and collected demographic information. The results showed that, for this sample, receiving Pell Grants has no correlation with belonging and hope. However, the results did show that gender has a significant impact. It can be concluded that women attending this institution tend to have a lower sense of belonging and hope in comparison to men. The results also showed how students living on campus were more likely to experience belonging and hope in comparison with those who don't live on campus. Implications for this are discussed.

Keyla Diaz

OK - Southern Nazarene University

Discipline: Social Sciences

Authors:
#1 Keyla Diaz
#2 Ron Wright

Abstract Name: For God and Country: Death Anxiety, political violence, political alienation, and Christian nationalism.

According to the literature on Terror Management Theory, clashes in differing beliefs and worldviews can be seen as a threat and may motivate individuals to engage in aggressive or violent behavior. This study aimed to understand some of the contributing psychological and demographic dynamics of Christian Nationalism in regard to political violence and political alienation through the lens of Terror Management Theory. It was hypothesized that low death anxiety scores, high political violence scores, high political alienation scores, conservative political ideology, and high religiosity would predict Christian Nationalism. A correlational study was performed to understand the relationships between death anxiety, political violence, political alienation, political ideology, religiosity, and Christian nationalism. Through an online survey shared throughout the South Central region of the United States, 201 participants, primarily undergraduate students at an evangelical Christian university, completed surveys which measured all six variables. A linear regression analysis was used to predict Christian nationalism. Statistically significant results displayed that high levels of political violence, low levels of political alienation, high levels of religiosity, and a conservative political ideology predict Christian nationalism, while death anxiety was not statistically significant. The influence of the study's setting and context are discussed in light of the unexpected relationship between political alienation and Christian Nationalism. Additionally, the data revealed that religiosity interacted with progressive political ideology differently than with conservative political ideology. This study offers insight into the psychological dynamics of Christian Nationalism and its complex relationship with religion and politics.

Brooke Diaz

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Brooke Diaz
#2 Jeremy Burrola-Woodard
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#4 Nicholas Alvarez

Abstract Name: Associations between Threatening and Non-Threatening Adverse Childhood Experiences and Psychological Wellbeing: A Gender-Based Analysis.

There is evidence for an association between adverse childhood experiences (ACE) and mental health difficulties in adults. This study adds to this literature by identifying threat- and non-threat-related ACEs and investigating their effect on wellbeing. Additionally, we will examine the moderating effect of gender in these relationships. Participants (22.4 ± 4.5 years; 70% women, 28% men, 2% LGBTQI; 42% Latinx|e, 15% white, 37% Asian, 2% black, 4% Indigenous, PI, and mixed race) were N=412 students from a public, urban university who completed an online survey between the spring of 2022 - 2023.We ran multivariate linear regression models to investigate the effects of threat and non-threat-related ACEs on students' well-being. Next, we used multiplicative terms (thread-Ace * gender and non-thread-ACE * gender) to assess their interactive effects on well-being. In the final linear multivariate regression model, we adjusted for potential confounders and covariates, including demographics (age and race/ethnicity) and other potential stressors (first-generation student and perceived financial situation). We found significant differences in well-being by gender (Women=10.34; Men=13.40; t=5.51, p<0.0001) and perceived financial situation (Worse = 9.81, Same as others = 11.70, Better = 11.58; F=4.89; p=0.008). In the final regression model, male students in the higher category of non-threatening ACEs have significantly lower scores in well-being (β= -2.89 p=0.010) compared to men in the lower category and all women. No statistically significant effects of threatening ACEs on students' well-being were found. Distinguishing threat-related and non-threatening ACEs enables a comprehensive examination of the effects of ACEs on students' well-being. Our findings suggest that males with histories of non-threatening ACES may be at higher risk for lower well-being levels. Further research is

needed to identify gender differences that may reveal unique vulnerabilities or resilience factors to inform tailored interventions and support strategies to aid students with ACE histories to succeed in college.

Aylin Diaz

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Aylin Diaz

Abstract Name: Understanding the Needs of Georgia's Hispanic/Latinx Population Regarding Adolescent Health

Georgia's Department of Public Health's Adolescent Health and Youth Development (AHYD) Program is based on the Positive Youth Development Approach as recommended by the Centers for Disease Control and Prevention. This approach engages youth within their communities, schools and organizations, peer groups, and families in a productive and constructive manner. Overall, the AHYD program aims at preventing HIV, STIs, and pregnancy among all youth. In Georgia, the Hispanic/Latino population has grown to over 10% of our total population. However, adolescent health programs within Georgia have not specifically focused on the cultural differences among the large Hispanic/Latino community. This study takes the existing AHYD programs and seeks to investigate how these program resonate with the Hispanic/Latino communities, including variability in countries of origin. First, a thorough literature review was conducted regarding Hispanic/Latino youth, at risk behaviors, and the cultural competency of current programs. More specifically, the AHYD programs were further analyzed for how they address the unique needs of the Hispanic/Latino communities, especially beyond just translations to Spanish. Finally, recommendations were provided in terms of best practices that are needed to be incorporated into the programming as well as any evaluation measures. As the Hispanic/Latino population continues to increase in Georgia, it becomes more evident that improving the health and well-being of Hispanic/Latino children in critical to the state's future. While existing state-funded programs have focused on largely oral health, obesity and nutrition, mental health, unintentional injuries, reproductive and sexual health have been ignored, often due to stigma and cultural expectations. More steps must be taking to ensure their safe passage to adulthood across all areas.

Paola Nekane Diaz Lopez

TX - San Jacinto College

Discipline: Natural and Physical Sciences

Authors:
#1 Paola Nekane Diaz Lopez

Abstract Name: Life expectancy by neighborhood: do lower-income households have worse health impacts?

It has been forty years since the landmark paper by Robert Bullard, known widely as the father of Environmental Justice, concluded that solid waste sites in the city of Houston were not randomly distributed but targeted communities of people of color. Over the past forty years, both Houston and the field of environmental justice have grown. My research revisits some of this work to identify to what extent there has been change and where we stand in our current condition when it comes to the relationships and connections between environment and health outcomes. I gathered data on six super-neighborhoods in the greater Houston area including Afton Oaks/River Oaks, Midtown, Kingwood, Greater Fifth Ward, Kashmere

Gardens and Independence Heights. I began with data from the US Census Bureau to measure factors such as life expectancy, income inequality and racial makeup of the census tracks these neighborhoods reside in. I then used the EPA's EJ Screen to measure data on hazardous waste proximity, toxic releases into the air, and lead paint exposure in the census tracks that include these communities. I then compared the information from these sources to test whether there was a correlation between the race/socioeconomic statuses of these communities and the health/environmental factors.

Maia Dibble

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 Maia Dibble
#2 Claudia Nischwitz

Abstract Name: Correlation of Dahlia Mosaic Virus Strains with Symptoms of Infected Dahlia Plants

Dahlia species, known for its vibrant and varied blooms, is popular in Utah's growing cut flower industry. However, some cut flower farmers encounter challenges with its cultivation due to its susceptibility to viruses. This study aimed to identify symptoms of Dahlia mosaic virus strains (DMV) in symptomatic dahlia plants, specifically focusing on the Holland, Portland, and D10 strains. Molecular biology techniques including polymerase chain reaction (PCR) and gel electrophoresis were employed to accurately identify and differentiate the viral strains. Samples were collected from dahlia plants exhibiting mosaic-like patterns, leaf distortion, petal discoloration, stunting, reduced flower production, and yellowing of leaves. DNA was extracted from these samples followed by PCR amplification using strain-specific primers. The resulting PCR products were visualized using gel electrophoresis. Preliminary results indicated a predominance of the D10 strain. The Holland strain was also frequently detected but was not universally present in all samples. In samples with necrotic flower buds or leaves, all three strains of the virus were identified. In certain varieties, the presence of all three strains prevented the production of flowers altogether. Leaves of plants only infected with D10 sometimes, depending on variety, will show a faint mosaic pattern whereas leaves from plants infected with the Holland strain display a brighter, yellow mosaic. This research advances our understanding of the symptoms associated with DMV strains for easier field identification in the future as well as sheds light on the prevalence and distribution of these strains. The findings will improve management strategies and inform cut flower farmers of what symptoms to look for in plants.

Tarise Dickens

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
#1 Michael Cull
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Abstract Name: Quality Assurance and Quality Improvement within the Child Welfare System

Organizations, such as public child welfare systems, often dedicate a large body of resources towards improving their systems, often with specific goals for their target audience: improving outcomes for children and families. However, within systems improvement efforts, there are two different approaches: quality

assurance and quality improvement. Quality assurance efforts often refers to compliance-based metrics within systems activities, and quality improvement focuses more on the improving the activities of broad systems to be more in line with the organizational mission. The National Partnership for Child Safety (NPCS) is a peer-to-peer learning and data sharing collaborative of over 35 child welfare jurisdictions in the United States, and members are focused on systems improvements. The main objective of this study is to learn more about the nature of quality improvement efforts in child welfare systems, using employees working within NPCS jurisdictions as a sample. The methods of this study include surveys and follow-up interviews with quality improvement professionals within these child welfare jurisdictions. Ultimately, the goal of quality improvement is to improve outcomes for youth and their families, to ensure that the most vulnerable children/youth are safe within their permanent homes. This research is currently in active data collection, thus results are still pending. However, a full description of the project development process, study goals, and preliminary data will be presented at the conference.

Cassidy Dickerson

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Cassidy Dickerson

Abstract Name: Jack Kirby: The Unsung Revolutionary of the Comic

The goal of this presentation is to highlight the achievements of Jack Kirby and give credit where it is due. Jack Kirby's accomplishments as a graphic designer stem not just from his iconic illustrations themselves, but also the messages and emotions he was able to convey through them. He had a successful career with big name comic companies, namely Marvel and DC. During the time he worked at these companies, his job was as an illustrator, and he did it well. Many people admired and tried to emulate his work, from fellow colleagues to average comic fans. This happened to the point where other artists were highly encouraged to copy his style as much as possible. Jack Kirby was known for having a one-of-a-kind dynamic art style. Not only did Kirby's works look visually pleasing, with his bold and strong line art, but they also resonated with viewers on a deeper, symbolic and emotional level. His work helped convey powerful feelings and ideas, further inspiring people and instilling these beliefs within them. Whether they projected the notion of patriotism during a time it was more essential or challenged the audience to contemplate a character's hidden depths, Kirby's work more than achieved this effect, and did not stop there. In a time where Kirby himself struggled with his own internal conflict, he poured everything he had into his work, creating masterpieces full of reflected raw emotion. Yet despite all of this, Kirby never felt fully appreciated, neither when working with Marvel nor with DC, feeling as though his work was being profited off of by others.

Morgan Dickey

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
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Abstract Name: DOES BEING AEROBICALLY FIT RESULT IN APPROPRIATE VO2 MAX CLASSIFICATIONS?

The American College of Sports Medicine suggests that people should exercise three times a week, at a moderate to vigorous intensity for a minimum of thirty minutes. These proposed guidelines suggest that if one completes said recommendations, it is possible for one's overall VO2 max to result in an appropriate classification (≥ fair). PURPOSE: The purpose of the present study is to see if females who are aerobically trained per the ACSM guidelines will result in appropriate VO2max classifications. METHODS: The present study only included individuals who were in the following subcategory (20-29 years of age). Participants were young (age= 21.80 ± 1.30 years, height 162.77cm ± 7.40cm, mass 58.56kg ± 9.31kg females. The specific submaximal aerobic test to predict one's VO2max was the cooper 12- minute walk-run test, which was performed on a treadmill. An Independent sample T-Tests were used to assess VO2max values between each participants output and ACSM norms. An alpha of 0.05 was used for level of significance. RESULTS: Of the 6 participants in the study, five had VO2max values that were categorized as fair (34.6-38.9 mL.kg-1.min-1), and one had a classification of excellent (46.5-51.3 mL.kg-1.min-1). The present study suggests there are no significant differences between the current participants VO2max classifications and normative values (P = 0.916). CONCLUSION: The aim of the present study was to see if general exercise recommendations per the ACSM have a positive or negative impact on one's overall VO2max classification. The present findings do suggest that exercising aerobically a minimum of three times a week, for a minimum of 30 minutes at moderate to vigorous intensity can be beneficial to keeping a fair to excellent VO2max classifications.

Celine Diep

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Celine Diep
#2 Andrew Petit

Abstract Name: Computationally Probing the Light-Driven Chemistry of Two Model Brown Carbon Chromophores

This research investigates brown carbon chromophores (BrCCs) that are found in aerosols produced by biomass burning. These molecules have the ability to absorb visible and ultraviolet light. The impact of BrCCs on climate change is poorly understood. Moreover, the light-driven chemistry of BrCCs can affect the composition of atmospheric aerosols. In this study, we are focusing on two model BrCCs which have very similar chemical structures but behave very differently in experiments. Specifically, the BrCC, 2-phenyl pyrrole (2PhPy) produced a clear spectrum that abruptly terminated. In contrast, the other model BrCC, 2-phenyl imidazole (2PhIm) did not produce an experimental spectrum at all. Our goal is to use computational chemistry to rationalize why the two molecules behave very differently. We speculated that the cause of these differences involves the light-driven breakage of an N-H bond. Using computational chemistry, we mapped out how the energy changes as the N-H bond breaks when the electrons are excited. Our results show that as the bond is stretching to larger distances, the energy initially increases. However, at a large enough N-H bond length, the electronic character of the excited state changes and further stretching of the N-H bond lowers the energy. Overall, we are beginning to build an understanding of the light-driven chemistry of two model BrCCs and aid in the interpretation of existing experimental data.

Cassandra Dietrich

PA - Slippery Rock University of Pennsylvania

Discipline: Interdisciplinary Studies

Authors:
#1 Cassandra Dietrich

Abstract Name: Bill T. Jones' Curriculum II: Transcending Movement through Visual Technology

In the era of ever persistent, always developing technology, how are artmakers to proceed? What technology is the contemporary choreographer to use in their practices and how does that aid or inhibit their work? In researching Curriculum II, by the Bill T. Jones/Arnie Zane Company, the discovery made was that there are many ways in which visual stage technology intertwines with the physical form of dance. Just as movement lexicon and conceptual ideas contribute to the story arc of a piece, visual technology can create meaning and narrative as well. Exploring the technological role in the piece, three company members were interviewed including Janet Wong (Associate Artistic Director, Choreographic Collaborator, and Video Designer), Megan Dechaine (Stage Manager), and Serena Wong (Lighting Supervisor). Direct correlation between themes and technology usage proved an integral part of the piece as it uses a high amount of technology. The technological aspects hold conversation with the physical bodies rather than a corroborative approach which is commonplace in Western contemporary dance. Notably, the video design and lighting design contribute to the atmosphere and narrative in a substantial way; each moment of the piece transports the audience to a specific feeling or idea. The incorporation of these elements is done in an informative and conversational way that supersedes conventional aesthetics. Janet Wong implores, “what is the technologies’ intervention into your work and what is your intervention into technology?” In considering this, contemporary choreographers should make informed decisions with intentionality to enhance the artistic voice of their piece. In establishing understanding of technology’s evolving presence, a work can transcend movement and imagine worlds beyond the status quo.

Isabella Dietrich

IN - Valparaiso University

Discipline: Health and Human Services

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Hannah LaFary

Abstract Name: Elevated Blood Pressure in College Students and an Assessment of Their Risk Factors

While hypertension is common in older adults, the disease process is related to unhealthy diet, insufficient exercise, and/or alcohol use, which are modifiable risk factors that are common among young adults (Whelton et al., 2022). Younger adults with elevated blood pressure (BP) are at higher risk of cardiovascular disease (Zhang et al., 2019). However, college students may be unaware of their risk factors for hypertension and disease-related complications. The purposes of this study were to assess for high BP in college students and support students in identifying their risk factors for hypertension.The Neuman Systems Model and the Fogg Behavioral Model (TFBM) framed our work. Neuman’s model addresses that both internal and external factors affect health (Neuman & Fawcett, 2011). Education regarding internal and external risk factors should prevent hypertension in college students. TFBM states that for behavior change to occur, motivation, ability, and prompts must be concurrent (Behavior Model, 2022). Providing education and encouraging lifestyle changes should support all elements of TFBM. Convenience sampling was used. Four assessments

of blood pressure were performed on a private midwestern college campus. BP and heart rate were assessed at initial screenings. Participants completed a Google Form that assessed overall health, knowledge of and risk factors for hypertension. Participants disclosed recent caffeine, food, and alcohol intake. Education was provided on how these impact BP. At later screenings, education on stress reducing methods was provided and body water, body fat, and BMI were assessed.Our results indicated that 52% had an elevated systolic BP and 30.4% had an elevated diastolic BP. Recent caffeine and alcohol intake had no significant impact on BP readings. Top stressful events, self-reported on the Google Form, were linked to college life. Our results illustrated that high BP is prevalent among college students, increasing their risk for future complications.

Elizabeth DiGrande

NC - Elon University

Discipline: Social Sciences

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#2 Katrina Jongman-Sereno

Abstract Name: It’s Not You, it’s My Attachment Style: How Attachment Styles Relate to Perceptions of Authenticity in Romantic Partners

This study investigates a correlational relationship between one’s own attachment style and perceptions of authenticity in one’s romantic partner. Perceiving a romantic partner as authentic is associated with better relationship outcomes, more trust, and decreased anxiety (Wickham, 2013). In addition, past research has shown that within one person, authenticity is related to more secure attachment (Gillath et al., 2010). We predicted that individuals with insecure attachment styles (anxious and avoidant) will perceive their partner as less authentic than people with a secure attachment style. In addition, we predicted that people with a secure attachment style will report having better quality relationships and greater life satisfaction compared to people with insecure attachment styles. Gathered through an online survey platform, participants (N = 120) in a romantic relationship completed a survey measuring demographics, personality, attachment style, perceptions of partners’ authenticity, self-ratings of authenticity, relationship quality, and satisfaction with life. A multiple linear regression analysis showed that, controlling for self-perceptions of authenticity, anxious and avoidant attachment were related to a lower perception of a romantic partner’s authenticity, supporting our first hypothesis, $F(3, 114) = 25.184$, $p < .001$, $R2 = .399$, $\Delta R2 = .177$, anxious: $sr2 = -.183$, $p = .050$ and avoidant: $sr2 = -.446$, $p < .001$. In addition, greater attachment security was related to better relationship quality ($r = 0.62$, $p < .001$) and greater satisfaction with life ($r = 0.52$, $p < .001$), supporting our second hypothesis. These results demonstrate that one’s own attachment style is related to perceptions of a romantic partner’s authenticity as well as self-perceptions of relationship quality and satisfaction with life. Understanding these relationships can contribute to well-being in relationships while laying the groundwork for further research to establish a causal relationship between attachment style, perceptions of romantic partners’ authenticity, relationship quality, and well-being.

Ryan DiLello

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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#9 Heidi Donovan

Abstract Name: Associations between home environment, severity of distress, and unmet needs among family caregivers of women with gynecologic cancer

Approximately 49 million adults in the United States provide unpaid care to a loved one and commonly experience high levels of distress. The home environment is known to influence caregiver (CG) distress but has rarely been evaluated in gynecologic cancer. This analysis aims to examine the association between home environment, distress, and unmet needs in these understudied CGs. Gynecologic cancer CGs (n=782) who were offered support in an outpatient Family CARE Center completed a 20-item survey of demographic information, distress, and unmet needs. T-tests and chi-square analyses were used to compare distress level and frequency of unmet needs between 1) family caregivers who did or did not live with the care recipient and 2) caregivers with or without children living in the home. Mean CG distress was 4.41(SD = 3.08) on a 0 to 10 scale. CGs with children in the home reported higher distress (mean=4.8; SD=3.05) compared to those without children in the home (mean=4.17; SD=3.06; t(691)=-2.51; p=0.006). There was no difference in distress between CGs who lived or didn't live with the patient (p=0.47). The most common unmet needs were “managing patient symptoms” (n=216; 27.6%), “need for information about cancer treatment” (n=213; 27.2%), “maintaining your own emotional health” (n=187; 23.9%). Comparing unmet needs among different living situations, CGs with children in the home (compared to those without) were more likely to need information about cancer treatment and to report financial concerns, while CGs living with the patient, compared to those who didn't, were more likely to report difficulty finding time for themselves (all p<0.05). Having children in the home was associated with higher CG distress. Different CG living situations expressed different sources of distress. Identifying high risk caregivers based on living situation can lead to earlier interventions to address unmet needs and reduce distress.

Onyedikachi Dimobi

TN - Trevecca Nazarene University

Discipline: Social Sciences

Authors:
#1 Onyedikachi Dimobi
#2 Elizabeth Sanford
#3 Carden Randy

Abstract Name: The Relationship Between the Way We Perceive Stress, Cognitive Flexibility, and Mood

Our study aimed to explore how perceived stress, mood, and cognitive flexibility come together in the lives of college students, using findings that helped us understand these interactions within the context of higher education. Recent research has underscored the growing psychological challenges college students face as they navigate academic pressures and life's demands. Our research contributes by delving into the connections between perceived stress, mood, and cognitive flexibility. The insights gained can guide strategies and support systems to benefit students in this complex environment. We collected data from 126 undergraduates at a small Southeastern private university (52.8% female, 46.3% male, and 0.8% other; 43 freshmen, 44 sophomores, 28 juniors, and 8 seniors), ranging in age from 17 to 34 (mean = 19.74; S.D. = 1.78). To gauge stress, we employed the Revised Perceived Stress Scale (PSS), while mood was assessed using the Positive and Negative Affect Schedule (PANAS). In addition, cognitive flexibility was measured through the Cognitive Control and Flexibility Questionnaire (CCFQ). Our results confirmed our initial

hypotheses. They revealed a positive correlation between cognitive flexibility and positive mood scores and a negative correlation with negative mood scores. Perceived stress showed the expected patterns, with negative correlations with positive mood and positive correlations with negative mood. We also found the anticipated negative correlation between perceived stress and cognitive flexibility. These findings underline the pivotal role played by cognitive flexibility in managing stress and promoting emotional well-being among college students. The discussions on how these results can shape practical interventions and support programs to enhance students' mental resilience within the challenging landscape of higher education are highly anticipated. While we acknowledge the limitations of our sample, primarily consisting of first-year and second-year students, we are eager for future research in more diverse academic settings to deepen our understanding.

Sarah Ding

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Sarah Ding
#2 Anisha Banerjee
#3 Abigail Hernandez

Abstract Name: The Impact of Peripherally-targeting Interventions on Multiorgan Gene Expression in Aged Rats

The proportion of adults aged 65 and older is increasing in the United States. Due to this, there is a growing need for therapies to alleviate the deleterious effects of aging, especially decreased cognition. Peripheral interventions that exert system-wide effects are a promising field of therapy for ameliorating cognitive decline. One prior study examined the effects of a ketogenic diet and time-restricted feeding in aged male rats. The effects of these interventions on cognition and microbiome composition were investigated, and the results demonstrated the efficacy of these interventions in ameliorating aspects of age-related declines in function. This study provided valuable information about the impacts of these interventions on the targets described. Mechanistic insight as to how these interventions influence cognitive status, or how the resulting changes to the gut microbiome result in improved cognition, is still lacking. Further information about factors contributing to cognitive decline could be obtained by examining changes in gene expression in tissues from these studies, both within and outside of the central nervous system. Thus, this project evaluated several genes associated with possible contributing factors for decreased cognition with a focus on insulin signaling and glucose uptake. Brain, liver, and muscle tissues from the rats in the study were utilized in quantitative real-time PCR against 14 target genes. Tissue-specific effects were demonstrated for several genes in certain genes involved in insulin signaling pathways, such as significant differences in certain gene expression in CA1 and CA3 brain regions. These data are aligned with previous results from this study, indicating that these interventions result in brain-region dependent changes in gene and protein expression and further expands this work to include regionally specific effects beyond the brain.

Aaron Dino

GA - University of Georgia

Discipline: Health and Human Services

Authors:
#1 Aaron Dino
#2 Amy Winter

Abstract Name: A Theoretical Evaluation of Measles-Unvaccinated Children Thresholds for Targeted Interventions

Despite being a vaccine-preventable disease, measles directly results in over 200,000 annual deaths. Identifying and vaccinating measles zero-dose children, children who have not received any routine measles-containing immunization, is a leading priority to control measles transmission. The focus of this research is to determine the threshold of measles zero-dose children that requires vaccine-targeted intervention to prevent an outbreak for 52 Gavi, the Vaccine Alliance-eligible countries. Prior work has examined the influence of age contact mixing patterns on the probability of measles elimination and potential outbreak risk. This project leverages age contact mixing matrices to investigate country-specific thresholds of measles zero-dose children. To estimate these thresholds, we simulate all possible age immunity profiles that would result in contact- and age-adjusted population-level immunity of at least 93%. Empirical analyses estimate that 93% population immunity is sufficient to prevent measles outbreaks. The simulation framework combines matrices of monotonically increasing immunity profiles for children aged 1-14 years, transformed country-specific age-contact matrices, and age-specific measles vaccine effectiveness rates to calculate the range of vaccine coverage profiles for children aged 1-14 years that will prevent an outbreak. We conduct data analysis to examine global and regional trends among these vaccine coverage profiles. Across all countries, median required vaccination coverage drops between age groups 1 and 2 years but increases from age groups 2 to 14 years to prevent measles outbreaks. However, uncertainty in required vaccination coverage decreases from age groups 2 to 14 years. Countries in sub-Saharan Africa require the highest age-specific median vaccination coverage to prevent outbreaks. Countries in the Middle East and North Africa demand the lowest age-specific median vaccination coverage. Overall, countries with higher age contact rates need higher vaccination coverage to prevent outbreaks. This study's findings may be used by international organizations to inform targeted immunization strategies and resource allocation.

Cassandra Disharoon

FL - The University of Tampa

Discipline: Social Sciences

Authors:
#1 Cassandra Disharoon
#2 Meredith Clements
#3 Colter Ray

Abstract Name: I'll Play It in the Background: The Impact of Media Multitasking on Academic Self-Efficacy and Self-Concept in Generation Z Undergraduate Students

Academic media multitasking (completing homework while simultaneously watching television, movies, or YouTube videos) is a prevalent tendency among Generation Z college students, despite the negative effects multitasking can have on focus and comprehension. This study examines college students' academic media multitasking habits and whether those habits detrimentally affect their academic self-concept and self-efficacy. 141 undergraduate students aged 18-24 completed a survey that presented three sets of questions: one that gauged their media multitasking habits, including frequency of multitasking with reading, writing, mathematics, and exam preparation tasks, respectively; one that measured their academic self-efficacy in a variety of scenarios; and one that measured their academic self-concept in a variety of scenarios. Students responded to each question on a five-point Likert-type scale, and their responses in each set were averaged to calculate a score of 1 to 5 points. 75% of participants (n=106) scored 3 out of 5 points or higher in self-concept, and 84% (n=119) scored 3 out of 5 points or higher in self-efficacy. These scores did not have a positive or negative correlation with the participants' frequency of academic media multitasking; students who had a high multitasking score had similar self-concept and self-efficacy scores as those who had a low multitasking score. Additionally, survey participants reported their grade point average (GPA), with 86% of

participants (n=121) stating a 3.0 GPA or above. There was no correlation between participants' frequency of academic media multitasking and their GPAs. Thus, despite existing literature that illustrates the negative effects of multitasking on comprehension and focus, this study suggests that media multitasking does not strongly impact Generation Z's academic performance, self-efficacy, or self-concept.

Ann Disoliyan

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 James Smith

Abstract Name: History of Malayalee Catholics in Texas

When moving to Texas at a young age, I never imagined celebrating my culture here. I believed I would be leaving my favorite foods and traditions in Kerala. After living in Texas for over a decade, I learned how my thoughts were wrong. Here in Texas, I can celebrate my religion and culture freely with those who share them with me and those who do not. I have learned how our Malayalee Catholic traditions are still kept even in a different land. Through my traditions and religion, I have made many good relationships. Malayalee Catholics are unique in many ways. We have a special culture and traditions which have been well-kept throughout centuries. There are many other traditions that I didn't get a chance to explain in depth or at all. In terms of marriages, food, and musical traditions, I can go on and on. They are almost endless. Another unique fact about us is our lineage or where we actually come from. Due to the lack of historical evidence, there is a lot of debate on this. However, oral traditions and the little historical evidence we have help us learn about our own roots. Even among us there are many different ways on how we became Catholic. Our food is also amazing. The tradition of our food goes back. These flavorful Pesaha Appam, Kozhakatta, and Appam and Stew all make me more excited to celebrate my religious holidays. As I mentioned before, we are a minority in India. Recently, we have been getting more hate from North Indians. There is lots of Christian persecution in North India. Coming to Texas, I have seen the good sides of even North Indians. I have experienced many great things here.

Stephanie Dixon

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Stephanie Dixon

Abstract Name: Impacts of US Interventionism on the Art and Artists of Iraq Post 9-11

Post 9/11 conflict between the US and many middle eastern nations, mainly Iraq and Afghanistan, was spurred by the 'War on Terror' as it was dubbed by George W. Bush and the American military. The main goal was to seek out and eradicate al Qaeda, which was the terror group that took responsibility for the 2001 attacks. This started in Afghanistan with the targeting of the Taliban governing structure, but eventually expanded throughout the region specifically targeting the government led by Saddam Hussein. Bush and the government cited human rights abuses as well as hoarding of WMDs or Weapons of Mass Destruction, and while this claim was later disproved, it was the basis for the 2003 invasion of Iraq. The impacts of this intervention on the art of the nation of Iraq is what this paper is seeking to explore. The invasion of Iraq had

immediate effects as well as longer-term ones, specifically being the destruction of major cultural sites and the exportation of stolen art from these sites to outside Western nations. There were also prisoners taken awaiting trial kept and tortured in the highly criticized Abu Ghraib prison that held mainly Iraqi nationals. These abuses among others committed to the Iraqi public impacted greatly the mindset and outlook of the nation and its people. This has and continues to have a surmountable impact on how Iraqi people express themselves artistically.

Tatum Dixon

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Tatum Dixon

Abstract Name: Frenchy's Fried Chicken: A Houston Icon

Houston’s food culture is comprised of hundreds of restaurants with a variety of food that represents cultures from around the world. Frenchy’s Chicken is a Creole restaurant vital to the culture of the primarily African American Third Ward community. Percy “ Frenchy” Creuzot, Jr., began with one po-boy stand but grew the company to one of the top restaurants in Houston, recently being named the best fried chicken by the Houston Chronicle. The company now encompasses an eleven-restaurant franchise and a Sausage Company that sells products at local grocery stores.This paper is based on primary sources, in particular many articles in newspapers in the Houston area since its founding in 1969. In addition, the paper utilizes interviews with the business owners, describing the founding and growth of the company. Other sources included news reports and videos from the era. Each generation of the Creuzot family has fought to keep the business alive through economic ups and downs. As their business grew, the Creuzot family philanthropically used their wealth to give back to the Third Ward community. For over five decades, Frenchy’s Chicken has adapted and continued to prosper throughout the Houston area. The hard work of the Creuzot family has resulted in a successful Sausage Corporation, restaurant franchise, and valuable addition to the community.

Chelsea Dixon

TN - University of Memphis

Discipline: Social Sciences

Authors:
#1 Chelsea Dixon
#2 Laura Billings
#3 Monica Carbajal
#4 Helen Sable
Laura Billings

Abstract Name: The Effects of Oral THC Exposure in Pregnant Rats on Maternal Behavior and Pup Neurodevelopmental Outcomes

In 2021, 7.2% of pregnant women reported past-month cannabis use - an increase of 3.8% since 2015 (SAMHSA, 2021). Data on the effects of cannabis use on maternal and fetal/neonatal outcomes is extremely limited. In preclinical research, most studies focus on exposure to the psychoactive constituent of cannabis, delta-9-tetrahydrocannabinol (THC). THC crosses the placental barrier and is secreted in maternal milk

thereby exposing the fetus/neonate. This study measured maternal behavior and neurotoxicity after Wistar rat dams were exposed to 5.0 mg/kg/day THC or an equal volume of sesame oil vehicle starting 14 days prior to breeding and continuing until offspring were 14 days old. Measures in the dams included maternal weight gain, gestational length, gestational weight gain, implantation sites (at necropsy), and brain and liver weight at weaning. Maternal behavior was assessed by collecting measures of nest quality and pup retrieval on PND 0, 2, 4, and 6. Neurodevelopmental outcomes in the offspring included birth weights, litter size, percent live births, percent male, postnatal day (PND) of eye opening, postnatal weight gain from PND 0-21, and brain and liver weights in one male and female at weaning. THC significantly decreased lactational weight gain in the dams and decreased postnatal weight gain in the pups. The brain:body weight ratio was higher among THC-exposed rats, especially in the dams. Pup retrieval and nest quality did not differ between the THC and control dams. These results demonstrate perinatal THC exposure does produce neurotoxicity and indicate that additional research examining the effects of perinatal THC on the brain and behavior are necessary. The results also suggest that any future negative effects observed in the brain or on behavior in THC-exposed offspring are likely not due to poor maternal behavior.[Supported by NSF #2051105]

Alvalyn Dixon-Gardner

MA - Tufts University

Discipline: Interdisciplinary Studies

Authors:
#1 Alvalyn Dixon-Gardner

Abstract Name: Through the Screen: Exploration of How College Students Perceive Mental Health Issues Based on Their Media Consumption

Mass media (i.e. television, social media, film, etc..) influences our expectations of others, establishing guidelines for conducting ourselves, and leading our lives. Media has the power to spread awareness of mental health issues, and simultaneously misinform, normalize, and glamorize them potentially resulting in unsound self-diagnoses (Jaramillo, 2023). Rather than exploring the impact of the media on college students' mental health state, this study assesses students' knowledge of mental health issues based on their media consumption. Between social media, film, and television, several studies have explored the implications of mental health portrayals for adults and adolescents (Diefenbach, 1998; Wahl, 2003; Stuart, 2006; Srivastava et al., 2018; Haddard et al., 2021). Many studies have analyzed the media contents of mental health portrayals, its stigma, and its effects. However, few have explored college students' perceptions of mental health issues, based on their media consumption. This study fills gaps in the literature by assessing how college students' knowledge of mental health issues is influenced by their media consumption. Surveys with college students were used to understand students' media use, where they gained mental-health-related information, and how mental health issues were depicted in media. Since the voices of mental health professionals have been lacking from these media conversations in scholarly work, mental health professionals were interviewed in this research to gauge their attitudes and beliefs on the intersecting field between media and mental health. This exploratory study will assist with comprehending the best practices to incorporate when students use media to learn about mental health issues with recommendations from practicing mental health professionals. Overall, this work hopes to strengthen the incorporation of media and mental health literacy universally.

Marwa Djedouani

CAN - Carleton University

Discipline: Natural and Physical Sciences

Authors:
#1 Marwa Djedouani
#2 Alex Viner
#3 Elizabeth Fletcher
#4 Rowan Thomson

Abstract Name: Monte Carlo models for eye plaque brachytherapy treatment of iris melanoma

Eye plaque brachytherapy is an effective treatment for eye cancer that uses radioactive seeds in an applicator. The purpose of this work is to model eye plaques used to treat iris melanoma and evaluate radiation dose (energy deposited per unit mass) using Monte Carlo simulations. The simulations are performed using the egs_brachy code using 125I (OncoSeed 6711) and 103Pd (TheraSeed 200) brachytherapy seeds. The plaques span 360°, 270°, and 180° arcs and are modelled at the center of a (30 cm)^3 water volume. Dose was scored in a (2.55 cm)^3 sub volume made up of (0.5mm)^3 voxels for simulations with 10^10 histories. Voxelized three-dimensional (3D) dose distributions for each plaque are calculated and compared to published BrachyDose data (Thomson et al., 2010). egs_brachy calculated doses are compared to BrachyDose considering absolute dose in gray, dose as a percentage of prescription dose, and dose relative to the TG43 approach currently used in hospitals (Rivard et al., 2004). Statistical analyses show agreement within a 95% confidence interval with published data at 6 points of interest in the eye (cornea, sclera, lens, eye center, macula, and optic disk). Along the plaque central axis, results agree within statistical uncertainties. In conclusion, eye plaques used for treatment of iris melanoma were successfully modelled and benchmarked. These models will be distributed (open source) with the egs_brachy code on GitHub enabling state-of-the-art dose calculations in hospitals that will improve patient treatments. References:R.Thomson et al., Modified COMS plaques for 125I and 103Pd iris melanoma brachytherapy, Int. J. Rad. Oncol. Biol. Phys. 78, 1261-1269 (2010). https://doi.org/10.1016/j.ijrobp.2009.12.002 M.J.Rivard et al., Update of AAPM Task Group No. 43 Report: A revised AAPM protocol for brachytherapy dose calculations. Med. Phys., 31: 633-674 (2004). https://doi.org/10.1118/1.1646040

Han Do

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Han Do
#2 Mark Kohler
#3 Ashley Fricks-Gleason

Abstract Name: Adjunctive LAT-Activating CAR T-cell (ALA-CART) Targeting the B7H3 Antigen on Ewing Sarcoma Solid Tumor Cancer Cells

T-cells are an essential part of our immune system, protecting against infections, but they also hold promise for treating cancer. T-cell activity is based on attacking infections (“non-self”) while ignoring normal cells (“self”). Tumor cells originate from our bodies; hence T-cells naturally see them as “self” and ignore them. To overcome this, T-cells can be engineered with Chimeric Antigen Receptors (CAR) which target surface proteins on tumor cells, driving T-cells to attack them. CAR T-cells have been successful against leukemia, however, have not worked against solid tumors, such as Ewing Sarcoma (EWS), a difficult to treat cancer that has not responded to CAR T-cell therapy. The Kohler Lab found defects in CAR T-cell signaling through LAT, a vital protein for T-cell activation, leading them to create the Adjunctive LAT-Activating CAR T-cell (ALA-CART) to strengthen LAT signaling. This improved the metabolism and efficacy of ALA-CART cells against leukemia compared to standard CAR T-cells. As the metabolism of T-cells is important for surviving the harsh tumor microenvironment, we generated ALA-CART cells targeting the B7H3 protein on EWS and

compared them to standard B7H3-CAR T-cells. We stained B7H3-ALA-CART cells and standard B7H3-CAR T-cells with Mito Tracker to determine the mitochondrial mass, with TMRE to test for mitochondrial membrane potential and Rhod-2 to test for mitochondrial Ca2+ concentration. We tested B7H3-ALA-CART and standard B7H3-CAR T-cells for their ability to kill EWS cells in vitro and found B7H3-ALA-CART was functional but less cytotoxic than standard B7H3-CAR T-cells. However, we found that B7H3-ALA-CART cells eliminated established EWS tumors in mice, whereas the B7H3-CAR T-cells could not control the growth of the tumors. Collectively, our data demonstrate ALA-CART cells have improved metabolism and are more effective against EWS tumors in vivo and making this a promising strategy for treating patients with solid tumors in the future.

Amelia Dobbratz

WI - University of Wisconsin-Stout

Discipline: Visual and Performing Arts

Authors:
#1 Amelia Dobbratz

Abstract Name: Designing a Wearable Technological Ear Device for Individuals with Noise Sensitivity

How could a wearable ear device be designed to aid individuals with noise sensitivity and improve their quality of life? Noise sensitivity effects a wide range of individuals that can stem from a variety of psychological and physiological sources including PTSD, anxiety disorders, ADHD, autism, misophonia, auditory processing disorders, hyperacusis, etc. Noise sensitivity causes individuals to have a hypersensitivity to noise that greatly impacts quality of life. Each individual has specific needs and can be triggered in nuanced ways. Children are more susceptible to APD which can be difficult for guardians to manage. There's a rise of wearable ear technology, with headphones and earphones making up a large percent of the U.S. purchasing market. The device designed is aimed to rest within the ear canal similar to an ear bud with a sleek and ergonomic design. The design is discrete resting in the natural anatomy of the ear, aiming to prevent the stigmatization of individuals with hearing sensitivity. The ear device is paired with Bluetooth connectivity to a cellular device like a phone or tablet. From here the device is connected and managed through an app that allows for the user or parental figure to control noise input levels, noise cancelation, track triggers, and the ability to hear the outside environment. This allows for a customizable hearing experience for individuals at large. Visual language was inspired by the company Headspace. Through the design process of this device secondary research was conducted, ideation phases of sketching designs, CAD modeling and 3-D printing models to be user tested for ease of use and comfort. The design aims to create a culture centered around the user's well being and awareness to how their environment affects them allowing for individuals with noise sensitivity to find control and improve their quality of life.

Chandlor Dobbs

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Erika Womack
#2 Ceren Yarar-Fisher

Abstract Name: The impact of combined-neuromuscular electrical stimulation (Comb-NMES) intervention on muscle cross sectional area (CSA) and signaling for inflammation

PURPOSE: To determine the effect of a combined-neuromuscular electrical stimulation (Comb-NMES) intervention on muscle inflammation and size in individuals with acute spinal cord injury (SCI). INTRODUCTION: Traumatic SCI often results in extreme skeletal muscle atrophy and loss of motor and sensory functions. Studies have shown that NMES can increase muscle mass and impact muscle signaling pathways for muscle growth and regeneration in the chronic stages of SCI. Still, the impact of NMES on muscle atrophy and inflammation in acute SCI is not comprehensively understood. METHODS: 19 (16 M/3 F) acute SCI participants aged 30.9±9.3 years with injury levels of C3-L1, classification ASIA A-C were enrolled. Comb-NMES involved concentric/eccentric contractions of the quadriceps and twitch electrical stimulation applied to the quadriceps muscle via surface NMES. The control group received passive leg extension and twitch contractions induced by TENS. Vastus lateralis muscle biopsies were performed before and after 3-5-week Comb-NMES treatments in patients with acute SCI. Western blot analysis was implemented to quantify proteins for inflammatory signaling. Immunohistochemical analyses were performed to determine muscle fiber cross-sectional area (CSA). RESULTS: The comb-NMES group (n=12) increased the expression of proteins Jak1, Stat3, Traf6, IL-6, and TweakR/FN14 and myosin heavy chain (MHC) IIx isoform CSA. The control group (n=7) decreased muscle CSA for MHC Ia, IIa, and IIX. CONCLUSION: The increase in signaling for Jak-Stat pathway and muscle CSA in the CombNMES group suggests that Comb-NMES intervention may lead to muscle remodeling/growth in the acute stages of SCI.

Kailey Dobson

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Kailey Dobson

Abstract Name: “You’re Doing That Wrong!”: A Comparison of Psychological Treatments from the 1930s and the Modern Era

It’s 1938 in Dayton, Kentucky and the beginnings of mental illness treatments are taking place. It’s her first day of her psychiatry course and she quickly files into the classroom along with her fellow nurses-in-training, taking a seat in the first row next to a woman with short hair done up in tight ringlets. The instructor comes in shortly after and places his hands on the podium. In response, she and the other women peeled open their new notebooks and pressed their pencil tips onto blank pages as words began to pour out of his mouth.Using a nurse-in-training diary from 1938 as inspiration, this short story will investigate the evolution in psychiatric care during the 20th century while capturing an intimate view into one woman’s experience at youth and old age. The Diary of an Unidentified Nurse, 1938, at the University of Kentucky Libraries Special Collections Research Center provides the genesis of this creative project. “You’re Doing That Wrong!” is the story of a young nurse in a modern memory care unit who receives a new patient, who is the woman who wrote the diary 85 years later. Due to the erosion of her memory, the patient has regressed to the time of her schooling, which allows one to make the comparison between the treatment of mental illness during the 1930s and the modern era because of the constant disagreements about treatments between the nurse and her patient.

Grant Doherty

NC - Elon University

Discipline: Education

Authors:

#1 Grant Doherty
#2 Jeffrey Carpenter

Abstract Name: New Apprenticeships of Observation for Pre-service Teachers through Social Media

The concept of the Apprenticeship of Observation was developed by Dan Lortie (1975) in his seminal book Schoolteacher: A Sociological Study. This particular kind of apprenticeship describes the influences that prospective teachers' own K-12 student experiences have on their understanding of education. Future educators spend significant time as students in K-12 classrooms observing their teachers, and this affects their understanding of teaching and what kind of teachers they want to become. More recently, the Apprenticeship of Observation arguably includes new elements, as technology allows aspiring teachers additional opportunities to observe teachers. In particular, many teachers are on social media, and due to the amount of time teens spend on these platforms it is appropriate to investigate how pre-service teachers have been influenced by what they observe of these social-media-using teachers and their classrooms. The purpose of this study is therefore to explore new digital Apprenticeships of Observation for pre-service teachers. Through 28 semi-structured interviews with pre-service teachers, we identified some of the influences of social media on pre-service teachers' understanding of teaching. The participants reported learning about various topics related to teaching and teachers through their social media use prior to and during their teacher education program. Participants stated that they tended to follow practicing teachers who shared the same education philosophy, priorities, and values. Many of the participants said that those looking to learn more about the education profession should use social media, but also must do so with caution. We build on these findings to conceptualize how social media adds new facets to teacher development, and identify implications for pre-service teacher education. The results of this research will raise awareness of how outside influences affect pre-service teachers' understanding of their profession. This will allow teacher educators to adapt their class content to include surfacing and analyzing such influences.

Emily Dolan

AL - University of Alabama at Birmingham

Discipline: Visual and Performing Arts

Authors:
#1 Emily Dolan

Abstract Name: Conflicts of Identity in Bipolar Disorder

The purpose of this project is to visualize the conflict of identity that exists within Bipolar Disorder. My interest came from reading Dr. Kay Jamison's "An Unquiet Mind". In her memoir, she went into great detail about her disastrous highs and dangerous lows, showing vulnerability throughout her difficult journey. For those who suffer from Bipolar Disorder, the line between their chemically-induced symptoms and sense of self can be difficult to draw, and my work was made to visualize that struggle. My research methodology began with multiple close readings of "An Unquiet Mind". Specifically, I analyzed passages that demonstrated her conflict in finding herself, and in not knowing which thoughts and feelings were hers or a product of her disorder. I will create three different paintings representing an aspect of her inner conflict. The first will represent her inability to separate her creations from herself, her inability to determine if her instances of mania are truly her or a symptom of her illness. The second will represent her conflict with medication, how something meant to cure her is actively separating her from herself. The last will represent her resolution: how she is the destructive, the creative, and the self. I want my paintings to express the difficulty that people with Bipolar Disorder have in finding themselves in the vast space of their emotional distress. I have submitted previous samples of landscape art and portraits that I will draw inspiration from. I expect the results to confirm that identity exists on a spectrum. That people with Bipolar Disorder do not exist as people and entities outside of their disorder, but as a culmination of the ideas, emotions, and actions they take in response to it.

Matthew Domanico

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
#1 Matthew Domanico
#2 Benjamin Sachs

Abstract Name: Assessing Sex Differences in Stress-Induced Alterations of DNA Methylation

Stress has been identified as a significant factor influencing the brain and is thought to contribute to the development of mental health disorders and inflammation. One specific mechanism through which stress affects brain function involves epigenetics and gene methylation. Previous research has demonstrated that stress can enhance the expression of the epigenetic enzyme DNMT3a, responsible for DNA methylation, in the nucleus accumbens (NAc) of female mice, but not in males. This project aimed to investigate the impact of stress on gene-specific methylation in both the mouse NAc and the hippocampus (HIP), another brain region included to explore global differences, and to assess whether any sex-specific differences exist. Two cohorts of c57BL/6J mice were subjected to a 5-day stress paradigm, while a control group remained unaffected. Following the completion of the stress period, mice were sacrificed either two hours or one week later. Bilateral brain tissue samples were collected from the NAc and HIP, and DNA was extracted. The extracted DNA was then either left undigested or digested with restriction enzymes sensitive (HpaII) or non-sensitive (MspI) to methylation. Subsequently, real-time PCR was employed to quantitatively assess methylation levels using the ΔΔCT method. The results indicate that the previously reported increase in DNMT3a in the NAc of stressed females does not result in a genome-wide increase in DNA methylation. While stress did result in elevated methylation of the IKKB and PDYN genes in the NAc of females, consistent with the hypothesis, it did not lead to the same pattern of methylation alterations in other genes and in the HIP. Overall, the findings align with earlier studies suggesting that both stress and sex play a role in influencing DNA methylation. However, the site-specific effects of these factors underscore the intricate nature of epigenetic regulation and have strong implications for potential therapeutic treatments.

Michael Dominguez

CA - California State University - Long Beach

Discipline: Engineering and Architecture

Authors:
#1 Michael Dominguez
#2 Amin Rezaei

Abstract Name: CycPUF: Cyclic Physical Unclonable Function

Physical Unclonable Functions (PUFs) leverage manufacturing process imperfections that cause propagation delay discrepancies for the signals traveling along these paths. While PUFs can be used for device authentication and chip-specific key generation, strong PUFs have been shown to be vulnerable to machine learning modeling attacks. Although there is an impression that combinational circuits must be designed without any loops, cyclic combinational circuits have been shown to increase design security against hardware intellectual property theft. In this paper, we introduce feedback signals into traditional delay-based PUF designs such as arbiter PUF, ring oscillator PUF, and butterfly PUF to give them a wider range of

possible output behaviors and thus an edge against modeling attacks. Based on our analysis, cyclic PUFs produce responses that can be binary, steady-state, oscillating, or pseudo-random under fixed challenges. The proposed cyclic PUFs are implemented in field programmable gate arrays, and their power and area overhead, in addition to functional metrics, are reported compared with their traditional counterparts. The security gain of the proposed cyclic PUFs is also shown against state-of-the-art attacks.

Ciara Donaldson

NJ - Bloomfield College

Discipline: Humanities

Authors:
#1 Ciara Donaldson

Abstract Name: Deconstructing Nature Metaphors: Women's Representation from Shakespearean Eras to Contemporary Narratives

Language allows us to identify with others, and make sense of the world around us. Yet, as Friedrich Nietzsche has famously pointed out, we often forget that the language we use is highly metaphorical, and those metaphors can sometimes determine what we count as truth. As early as 1512, Erasmus of Rotterdam noted the power of metaphor in De Copia - a text book that taught readers to write and speak effectively through an abundance of rhetorical techniques and copiousness of expression. While Erasmus celebrated the enriching power of metaphors, emphasizing their role in amplifying speech and contributing to copia, he also cautioned against excessive use, highlighting the need for careful selection to ensure that metaphors enhance language without causing unintended consequences.Today, George Lakoff and Mark Johnson have long argued that metaphors shape our understanding of the world, often dominating our understanding of it. While Erasmus cautioned against an overabundant use of metaphor, perhaps he didn't quite anticipate that metaphor use can be ideologically problematic - especially in the way they constitute women. For instance, the way women are metaphorized as "earth." Variations of the metaphor perpetuate the underlying idea of women as objects to be cultivated, dominated, or subdued, depicting them as land, birds, soil, and more. Interestingly, Darren Aronofsky's film Mother! uses this metaphoric construction of women to critique this potentially exploitative figure of speech, drawing parallels between the metaphoric construction of earth and femininity that exposes the metaphor in terms of the nefarious work it can do. Drawing from both Erasmus and Aronofsky, my presentation will demonstrate how these natural metaphors of women have troubling consequences in terms of how women are viewed and how they view themselves - ultimately, "unearthing" the ethical concerns behind the use of nature metaphors to construct femininity.

Qingwen Dong

CA - University of the Pacific

Discipline:

Authors:
#1 Qingwen Dong

Abstract Name: Empowering Undergraduate Researchers: A Mentor's Approach to Building Self-Efficacy and Engagement

Effective mentorship is pivotal in transforming undergraduate students into scholarly researchers. This process necessitates a deep understanding of students' interests and capabilities, coupled with strategies to

motivate them towards the benefits of undergraduate research. When students recognize these benefits, either directly or vicariously, their engagement and performance in research projects, both in and out of the classroom, significantly increase. Over decades of teaching Communication Research Methods, I have guided numerous undergraduates to present their research at regional and national conferences. Witnessing their public presentations, showcasing their analytical skills and research confidence, has been immensely rewarding. These experiences not only bolster students' self-confidence and competence in academic research but also contribute to their overall personal growth. In my presentation, I will highlight three key strategies employed in mentoring these students. First, understanding students' thoughts, interests, and abilities is crucial. This requires attentive observation, personal interaction, and direct communication. Second, building students' self-efficacy is essential. Conveying the message that they are capable and competent involves both verbal and nonverbal communication. Third, and most importantly, is assisting students in recognizing the benefits of their research endeavors. This recognition is a catalyst for them to think critically, engage deeply, and enjoy the process of scholarly inquiry. These methodologies not only advance students' academic trajectories but also lay a foundation for their future research endeavors, demonstrating the transformative power of dedicated mentorship in academia.

Sean Donner

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Sean Donner

Abstract Name: What's that Building? Exploring Public Perceptions of Architectural Functionality Based on Form.

A building's function has historically been tied to its form. We see this in civic buildings, schools, churches, and homes. Many of those recognizable forms were abandoned with the modernist movement in the early twentieth century. Are these new forms still related to their functionality and can average people perceive a building's functionality based on its form. Learning the opinions of the general public will enhance the architect's ability to design for the people who will live and work in and around the buildings they design.This study aims to answer those questions by means of an online survey. To gain a wider demographic of survey takers, the survey is largely spread through social media where I have access to a wide variety of people across the globe and of differing generations and backgrounds. The survey has two types of questions. The first presents two pictures of buildings and asks the survey taker to tell which holds a specific function. The second question type presents a single building and four choices of building function. In both question types, all signage or other markings of building type were digitally removed from the photographs. The survey includes fourteen architectural functions ranging from single family homes to State Capitols. Each category includes traditional and modern examples. This variety in style will help to analyze whether there is a difference in the general public's ability to perceive a building's function if the building is traditionally designed or if it takes a more modern approach in design. Although this survey is still active, the expected results are as follows: Traditional forms are generally more easily discernable than modern designs. Some building forms are equally recognizable regardless of form. The stand outs from this list are schools and stores/shoppes.

Sara Dooley

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Sara Dooley
#2 Hailey Brady
#3 Urvashi Sandhir
#4 Carin Huset
#5 Peter Bruggeman
Hailey Brady

Abstract Name: Degradation of Perfluorooctanoic Acid in Water by a Pin to Water Discharge Cold Plasma

This study focuses on the degradation of perfluorooctanoic acid (PFOA)-contaminated water by a Cold Atmospheric Pressure Plasma (CAP). Using PFOA as the choice of our contaminant is justified in today's ecosystem. PFOA is a "forever chemical" that does not break down easily and is toxic even at low levels, and its conventional treatment technologies such as advanced oxidation processes and activated carbon have scientific challenges. A 20-micromolar PFOA solution in conductive water was subjected to argon plasma at around 10 Watts in both positive and negative polarity respectively. The time of plasma exposure was varied from zero to two hours and the solution was analyzed with an LC-MS to quantify the percent degradation of PFOA over time using CAP. It was determined that PFOA degrades about 65% in an hour when CAP is run in positive polarity with Argon gas. The negative polarity trials provided evidence that about 40% of PFOA degrades in the same conditions mentioned above for positive. In the presence of a 1 mM solution of a surfactant cetyltrimethylammonium bromide, 75% of PFOA degrades in one minute in both positive and negative polarity. Scavenger experiments were carried out in both positive and negative polarity with a 7 mM solution of isopropanol, a scavenger of the H, and the OH radical. Results indicate an inhibition of PFOA degradation by around 55% in positive polarity and around 11% in negative polarity. This suggests that the H radical is most likely a probable species responsible for the degradation of PFOA as OH radicals are not supposed to be responsible for PFOA degradation as suggested in the literature. We will continue to probe similar scavenger experiments in the future to determine a specified pathway for degradation.

Mykah Doolin

MO - Rockhurst University

Discipline: Social Sciences

Authors:
#1 Mykah Doolin
#2 Bogdan Kostic

Abstract Name: Collaborative Memory and Stereotype Threat

Collaborative memory has garnered an influx of research within the last decade as cognitive psychology extended its exploration of cognition beyond a single individual. Although collaborative memory appears to have some improvements on memory retention, it also impairs initial performance, a concept referred to as collaborative inhibition (Weldon & Bellinger, 1997). Previous researchers have identified various mechanisms which could factor into group inhibition, such as social loafing or social contagion errors (Rajaram & Pereira-Pasarin, 2019; Weldon & Bellinger, 1997). Additionally, Pepe et al.'s (2021) study on collective inhibition in ethnically diverse settings suggests stereotype threat to be a factored mechanism.This study extends Pepe et al.'s (2021) collaborative memory study on ethnic composition by changing the uniform condition to Black Participants. The goal is to determine if stereotype threat contributes to collaborative inhibition and if so, to what degree.

Charlie Dors

AZ - Northern Arizona University

Discipline: Education

Authors:
#1 Charlie Dors

Abstract Name: Narrative Inquiry of Undergraduate Student Experiences in a Gender Inclusive Living Community

Gender Inclusive Housing Communities have become more common at universities in recent years, however, Gender Diverse students continue to be regularly harassed, are discriminated against by students and faculty, and often do not feel supported by the university. There is a large unmet need for social, emotional, and academic support for this population, which could close emotional and physical gaps if solved. The purpose of this study is to capture the stories of undergraduate Gender Diverse students' living in Gender-Inclusive Housing Communities through narrative inquiry at Northern Arizona University. As programs continue to be put in place in an effort to support Gender Diverse students, few studies have been done to explore their experiences, making it difficult to understand whether they are working as intended. This project aims to document which part of these programs are beneficial and what gaps still exist according to those currently living in one. The study will use narrative inquiry to report the experiences of these students and questions will be asked to document the experiences, stories, and needs expressed. The university which will be the platform for this project is a large, public university, so this study is significant to programs intending to support TNBGD people globally. Additionally, the findings may be able to guide NAU in making changes which will benefit GIH students.

Jade Dotoli

NC - University of North Carolina at Wilmington

Discipline: Health and Human Services

Authors:
#1 Jade Dotoli
#2 Jaden Koonts
#3 Hannah Moss
Jaden Koonts
Hannah Moss

Abstract Name: Association Between BioKinetoGragh Accelerometers and NeuroCom® Balance Master®

Purpose: Determine the association between two validated measures assessing gait and balance; the BioKinetoGragh (BKG) Accelerometers and NeuroCom Balance Master, respectively.Methods: Seventy-six healthy volunteers’ overall balance was evaluated using the NeuroCom® Balance Master®. Participants completed three sets of randomized three walking trials for the BKG under different visual conditions (eyes open, blindfolded, partially inhibited vision). During these 9 trials, participants completed a 20-foot forward-and-return walk while securely holding a mobile device against the chest with both hands. Pearson correlations were conducted to examine the association between the total score on the NeuroCom Balance Master and the BKG variables representing the domains of power, speed, and balance.Results: NeuroCom scores positively correlated with BKG forward power (r =.09, p =.01), total power (r =.15, p =.0001), vertical power (r =.18, p <.00001), medio-lateral power (r =.13, p =.0004), vertical/mediolateral power (r =.17, p <.00001), and power strike force (r =.14, p =.0002), indicating increased gait power. NeuroCom scores inversely correlated with BKG stride/timing variables including double stance interval mean (r = -.11, p

=.006), double stance interval standard deviation (r = -.11, p =.005), double stance time (r = -.16, p =.00002), stance phase (r = -.19, p <.00001), and stride time (r = -.16, p =.00002), indicating faster gait. NeuroCom scores inversely correlated with BKG balance measures of anterior-posterior range of motion (r = -.21, p <.00001), middle range of motion (r = -.16, p =.00002), and turnaround range of motion (r = -.22, p <.00001), indicating less postural sway.Conclusions: Dynamic gait variables, assessed under diverse conditions, predict NeuroCom total scores, reflective of balance across varied scenarios. Practically, a brief, widely available mobile device-based gait assessment offers preliminary screening capabilities to identify individuals warranting comprehensive balance assessments in clinical or research settings.

Dominick Dotson

MI - Northern Michigan University

Discipline: Natural and Physical Sciences

Authors:
#1 Dominick Dotson
#2 Maris Cinelli

Abstract Name: Investigating Plant Secondary Metabolites and Fungal Extracts for Acaricidal Activity

Our research project involves using underrepresented plant secondary metabolites to reduce the amount of Varroa destructor mites affecting European honeybees (Apis mellifera) within a beehive. Varroa mites are the leading cause of colony collapse disorder across the globe and spread diseases, such as deformed wing virus, to the bees. Current treatment methods involve using harsh synthetic chemicals to treat hives for varroa. The mites are becoming resistant to these chemicals, and that resistance has created a need for new treatment methods. Plant compounds such as thymol have successfully been used to treat varroa, but not many compounds have been tested. We assessed standards of natural plant products and fungal extracts to find additional compounds that may display miticidal effects. We collected varroa mites from the NMU Research Apiary during the summer of 2023. We used a brood frame that was designed to accommodate drone brood, as varroa mites prefer the much larger drones and would routinely uncap the cells and collect any varroa mites within. The mites were then placed in petri dishes containing bee pupae and stored at 30℃. Five mites were then placed in scintillation vials containing either 0.5 mL of a 1 mg/mL standard or a fungal extract. We then assessed the mite mortality every two hours over a period of six or eight hours. We found that extracts of Lion’s Mane mushroom in ethanol and cannabidiol (CBD) displayed substantial miticidal effects during our study. This is a significant finding, as cannabidiol has also been shown to boost honeybees' immune systems in low doses, so this compound could both benefit the honeybees and display miticidal activity. Going forward, we aim to investigate additional cannabinoids, such as THC-V, for miticidal effects and multiple concentrations of CBD to find the lowest effective dose that can be used.

Emma Doucet

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Emma Doucet
#2 Lillian Hodges
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#4 Brandon Scott Pruett

Abstract Name: Validation of Golgi Isolation Utilizing Immunoprecipitation in Human Postmortem Cortex

Na+/H+ exchangers (NHEs) play a significant role in cellular and intracellular pH regulation and have been linked to numerous psychiatric and neurodevelopmental disorders. We are looking into the role that NHEs may play in the serious psychiatric illness schizophrenia, which affects around 1% of the population worldwide and is associated with significant morbidity and early mortality. Altered pH regulation of the intracellular compartments by NHEs may play a role in a common molecular disturbance reported in postmortem schizophrenia cortex, namely the disruption of protein modification and trafficking. Using cell fractionation of human postmortem dorsolateral prefrontal cortex (DLPFC), we previously were able to separate endosomes from plasma membrane allowing for the identification of the intracellular localizations of NHE6 and NHE9, normally targeted to early/recycling and late endosomes, respectively. We are also interested in the specific intracellular localizations of NHE7 and NHE8, which are normally targeted to trans-Golgi and mid/trans-Golgi stacks, respectively. However, we found our previous method of cell fractionation was not successful in separating Golgi from plasma membrane. Now, we are investigating the efficacy of Golgi isolation through a combined approach utilizing both traditional cell fractionation as well as immunoprecipitation/immunopurification of Golgi. We are currently working to validate the immunoprecipitation of Golgi in human postmortem DLPFC for the first time. Once verified, we will combine this approach with cellular fractionation and Western Blot analysis to investigate and more accurately measure the true intracellular localizations of the NHE7 and NHE8 exchangers in schizophrenia postmortem DLPFC. This combined protocol will be useful not only in the future study of the localizations Na+/H+ exchangers but also more broadly to researchers studying protein trafficking through the Golgi.

Alyxandra Doughty

IA - Iowa State University

Discipline: Health and Human Services

Authors:
#1 Alyxandra Doughty
#2 Korinne Janson
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Abstract Name: Effects of Singing on Walking in Persons with Parkinson's Disease

Gait and balance impairment are major symptoms of Parkinson's Disease (PD) and can significantly impact functional mobility and quality of life in persons with PD. The benefits of PD medication for gait and balance impairment are in question. As an alternative, external cuing, such as singing, has shown benefits for simple walking tasks in persons with PD. However, complex walking tasks pose the greatest challenge for persons with PD, and there is limited research on how singing affects the performance of complex walking tasks in persons with PD. This study aims to determine the effects of singing on gait spatiotemporal measures during complex walking in persons with PD. Given that singing improved simple walking tasks, we hypothesized that singing would also improve complex walking in persons with PD. Participants performed a series of walking tasks over approximately 30 feet in length:1) over ground walking at their preferred pace, 2) over ground walking while singing, 3) serpentine walking at their preferred pace, and 4) serpentine walking while singing. The song sung was Row, Row, Row Your Boat. APDM Opals (apdm.com) were used to collect spatiotemporal measures; two placed on the top of the feet, two on the wrists, and one on the lumbar spine. The mean will be obtained for each spatiotemporal outcome measure and entered into a 2x3 repeated measures Analysis of Variance to determine differences between conditions (singing vs. no singing) and between groups (healthy young adults, healthy older adults and PD) for over ground and serpentine walking. Posthoc analyses will be completed with Tukey's Honest Significant Difference test. We expect singing to

improve temporal gait measures in both over ground and serpentine walking. This study may provide evidence for an adjuvant therapeutic technique to improve complex walking and mobility in persons with PD.

Alp Doymaz

NY - City University of New York - Hunter College

Discipline: Natural and Physical Sciences

Authors:
#1 Alp Doymaz
#2 Yue Liu
#3 Paul Cohen

Abstract Name: Impact of Obesity on Breast Cancer Immune Evasion

As cancer is defined by continual adaptation to its microenvironment, the trajectory of breast cancer growth and its treatment are defined by the coinciding health factors of its patients. We present a novel adaptation of mammalian breast cancer that promotes its evasion of the immune response, particularly within the context of obesity—one of the world's most common chronic diseases and a major risk factor for breast cancer. Obesity triggers systemic inflammation of adipose tissue, and the relationship between this molecular reprogramming and the aggravated growth of breast cancer is poorly understood.This study shows how obesity allows for breast cancer cells to suppress interferon gamma signaling—a hallmark anti-cancer cytokine. To find cancer cells that could adapt to the obese tumor environment, clonal tumor lines generated from a mouse-derived triple-negative breast cancer line (E0771) were transduced with DNA barcodes and pooled into an in-vivo tumor transplant. Competitive growth between different clones was tracked through barcode sequencing, and the most proliferative cell lines were isolated. Transcriptomic analysis of these competitive tumor lines revealed a heightened suppression of the interferon-gamma signaling pathway—in particular, downstream interferon-regulatory factors (IRFs) and guanylate binding proteins (GBPs).Ongoing molecular investigation aims to decipher the underlying mechanisms orchestrating this suppression. Unveiling these interactions promises crucial insights into how obesity-induced changes modulate breast cancer growth. These discoveries hold the potential to illuminate novel pathways for therapeutic interventions in this challenging clinical intersection, offering hope for improved cancer outcomes among obese patients.

Nelly Dragu

FL - University of Central Florida

Discipline: Social Sciences

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#1 Nelly Dragu
#2 William Saunders

Abstract Name: Coping with Creativity: The relationship between Depression/Anxiety and Creative Coping in College-Aged Students

The relationship between creativity and mental illness has been established in the literature. There are multiple possible explanations for how mental illness and creativity are connected, and creativity has shown to be an effective treatment for different mental illnesses (for example, through art therapy). Despite this, there is limited research on how those with mental illnesses use creativity to cope outside of a treatment setting. Information on type of creative coping that the mentally ill naturally gravitate to and find most

effective can further inform possible treatment plans and suggestions. This study aims to address gaps in the literature concerning how college-aged students with the most common mental illnesses, which are depression and anxiety, use creativity to cope. This study will look at how type of mental illness affects the type of creative coping chosen, how severity of mental illness impacts use of creativity, how severity of mental illness impacts frequency of creative coping, and if there is an interaction between multiple mental illnesses present and how that may affect frequency and level of creative coping.

Morgan Drozs

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
#1 Morgan Drozs
#2 Emmanuel Adusah
#3 Carolyn Karns
#4 Taylor Spidle
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#6 R. Jeremy Johnson
#7 Michael Beck

Abstract Name: Structure-Activity Relationship Studies of Human Carboxylesterases Using a Fluorogenic Ester Library

Human carboxylesterases (CESs) are crucial enzymes involved in drug metabolism through the breakdown of ester-containing drugs into active or inactive forms. Although indispensable in pharmacology, knowledge gaps exist regarding the specificity of the predominate forms of CESs, CES1 and CES2, toward different esters. This work seeks to determine the structure-activity relationship (SAR) of CES-substrate esters in vitro by leveraging a library of 96 fluorescein-based AM ester fluorogenic chemical tools. Our work will systematically annotate the substrate preferences of CES1 and CES2, thereby illuminating their distinct or overlapping roles in drug metabolism. Completing these studies will enable fine-tuning of ester-containing drug-candidates in addition to enabling more sensitive tools to study CESs ultimately enhancing the efficacy and cost-effectiveness of drug discovery.

Emma Drum

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Emma Drum

Abstract Name: Correlation of Staffing Turnover for Licensed Nursing Personnel to Quality of Care in Long Term Care Facilities

This research paper addresses the critical issue of substandard care quality in nursing homes, highlighting the significant impact of staffing shortages, inadequate compensation, and insufficient facility education on the well-being of elderly residents and the broader healthcare system. Employing a mixed-methods approach and a comprehensive literature review, the study is anchored in the Donabedian Model of Healthcare Quality, examining structural, process, and outcome aspects of nursing home care. Utilizing a quasi-experimental

design, the research evaluates innovative interventions, including the implementation of a unique digital health information platform and enhanced staff training strategies, aimed at promoting person-centered care and optimizing staffing ratios. This approach takes into account the complexities of nursing home environments, including socioeconomic factors and high staff turnover, especially in economically disadvantaged areas. Ethical considerations are paramount, given the vulnerability of the elderly, ensuring rigorous consent processes and data privacy. The project's success can be evaluated using tools like the modified Person-Centered Care Assessment Tool and the Nursing Home Staff Satisfaction Survey, alongside qualitative feedback. Despite potential limitations like implementation variability and response bias, the findings underscore the effectiveness of combining person-centered practices with technological advancements in improving nursing home care quality. The paper concludes by advocating for comprehensive policy reforms and resource allocations that support the implementation of such interventions, offering a transformative model for nursing home care that integrates both humanistic and technological elements. Moreover, this study underscores the critical role of ongoing education and support for nursing home staff as a cornerstone for sustainable improvements in care quality, addressing both the immediate needs of the elderly and the long-term viability of the healthcare system.Keywords: Nursing Home Care Quality, Staffing Challenges, Person-Centered Care, Health Information Technology, Donabedian Model

Jianyi Du

WA - University of Washington - Seattle

Discipline: Natural and Physical Sciences

Authors:
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#4 Dan Doherty

Abstract Name: Contribution of RNA Splicing Defects to Joubert Syndrome, a Rare Genetic Condition

Joubert syndrome (JS) is a rare, congenital neurodevelopmental condition diagnosed by the appearance of the “molar tooth sign” on axial brain magnetic imaging (MRI). Patients typically display hypotonia, abnormal eye movements, and ataxia. Substantial progress has been made on identifying the genetic causes of JS, which typically displays recessive inheritance. Nonetheless, the cause still cannot be identified in ~27% of our cohort of JS-affected families and the contribution of causal variants that impact RNA splicing remains unknown. Canonical splice variants impact RNA splicing by disrupting the splice site directly, whereas noncanonical splice variants affect it through alternative mechanisms, which must be validated by RNA analysis. Our goal is to evaluate the role of noncanonical splice variants in the pathogenesis of JS.We previously identified genetic causes in 582 of 714 families with JS. To identify additional causes, we used SpliceAI, a deep learning-based tool to identify variants with predicted splicing effects (SpliceAI score >0.5) for functional validation. We extracted RNA from patient cell lines and reverse transcribed it into complementary DNA (cDNA). Then we used polymerase chain reaction (PCR) to amplify the affected exons with two sets of primers flanking the relevant splice junction. We evaluated PCR products using gel electrophoresis and Sanger sequencing.We found 45 families with ≥1 canonical splice variant and 32 families with ≥1 candidate noncanonical splice variant. We confirmed the pathogenicity of three candidate noncanonical splice variants by demonstrating an abnormal splicing in JS genes, AHI1 and MKS1, in patient samples, bringing the total contribution of aberrant splicing up to 77/714 families. By extrapolation from our data in JS, splice variants may contribute ≥11% to the genetic causes of conditions. A precise genetic diagnosis informs prognosis, avoids unnecessary work-up, guides monitoring for associated complications, and opens the door to gene-specific treatments.

Kyra DuBois

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

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#1 Kyra DuBois
#2 Stephen T. Heller

Abstract Name: DBU Catalyzed Nucleophilic Aromatic Substitution: Arylation of Alcohols and Heterocycles

Many drugs are synthesized using nucleophilic aromatic substitution reactions (SNAr), including the antibiotic Linezolid. Etherification is a specific kind of SNAr reaction in which an ether group is created on an aromatic ring. Past methods of carrying out this reaction have significant limitations. For instance, Ullman condensations can only occur with electron-deficient aryl halides and require harsh reaction conditions such as the use of strong bases and high temperatures, which reduce functional group tolerance. For that reason, there has been a movement toward milder conditions made possible by new forms of catalysis, such as Pd-

catalyzed transformations.The organic base, 1,8-Diazabicyclo[5.4.0]undec-7-ene (DBU), in the absence of transition metal catalysts, has been found to increase the rate of SNAr etherification while simultaneously allowing the retention of substituent groups. This reaction has been optimized and tested with a variety of different nucleophiles to evaluate the tolerance to different functional groups. The optimization of the reaction, determination of scope, and chemoselectivity of the reaction will be discussed. With further study, we hope to expand the range of reactants evaluated to further our understanding of the chemoselectivity of the reaction.

Cameryn DuBose

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Hunter Samuel
#2 Priscila Chaverri

Abstract Name: Microbial Diversity in the Soil Surrounding Beech Trees on Bowie State University's Campus

The findings of this research contribute to our understanding of the intricate relationships between trees and their soil micro-biotic environments, emphasizing the importance of micro-biodiversity in sustaining healthy ecosystems. The research furthermore expresses results in a comprehensive analysis of bacterial and fungal communities utilizing samples collected from the soil of targeted trees, lab analysis which was sent for metabarcoding sequencing by NOVOGENE. The objective of this study is to examine the microorganisms in the soil of beech trees to analyze their potential interactions and ecological roles. We found the abundance of various fungi and bacterial groups that contribute to the sustained growth of these trees.

Cameryn DuBose

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Sylvia Ejeh

Abstract Name: Antibiotic Resistance of Bacteria Present in Local Water Sites

Resistance to antibiotics has become a major threat to society as a growing rate of bacteria and microbes that cause disease are becoming resistant to normal effective drugs. According to the UN, the rise in antibiotic-resistant bacteria is a global health emergency that could kill 10 million people by 2050. Antibiotic pollution is one way by which bacteria can develop resistance to the antibiotics, rendering them ineffective for human use. Most of the resistance genes we see in human pathogens come from environmental bacteria. The drugs find their way into soil and river via humans, animal waste and leaks from wastewater treatment plants and drug manufacturing facilities. Society must be aware of the spread of antibiotic resistant bacteria and antibiotic resistance genes. If care is not taken, we will head for a post antibiotic era in which common infections and minor injuries, which have been treatable for decades, can once again kill. This research aims to analyze the effects of urbanization along the waterbodies around Bowie State University on antibiotic resistance, comparing upstream (nonurban) and downstream (urban) water samples for colony growth on tetracycline (antibiotic) treated plates and non-tetracycline treated plates. This study may reveal a positive

relationship between urbanization and antibiotic resistance. Water samples were collected from Henry Circle Fountain and Loop Road Lake located on Bowie State University campus, as well as Horsepen Park, outside of the campus grounds. These samples were streaked in plates with antibiotic-treated nutrient agar and plates with no antibiotic treatment as a control, using similar agar preparation and plating techniques as comparable studies. Bacterial growth on plates treated with tetracycline confirmed presence of antibiotic resistant bacteria in the water samples from the three locations. Future research involves performing metagenomic analysis for the bacterial growth from the tetracycline treated plated to determine taxonomy.

ANTOINETTE GABRIELLE DUEÑAS

PHI - University of Baguio

Discipline: Social Sciences

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#2 BRIDGET ALCEDO

Abstract Name: Social Media: Its role in the social relationship among college students (Philippines)

Young people today grow up in a social landscape in which digital technology and social media are ubiquitous in daily life and interpersonal relations, including intimate (romantic and sexual) relationships. This study aimed at identifying why college students engage into a social relationship through different online platforms, it also identified the level of satisfaction on the challenges encountered by college students in staying in social relationships during pandemic towards transitioning to the new normal, and recognized the number of times college students used the coping mechanisms in sustaining a social relationship in the digital realm. The study employed a descriptive method. Seventy college students in the 18 - 21 age range studying at the University of Baguio participated in the study. The appropriate statistical tools for the level of satisfaction of the respondents in response to their online relationship was determined by the Likert-type scale (Dependent Variable). The Independent variables- The Levene's test for equality of variances (homogeneity of variances) and t-test for unequal variances are two statistical tools used to determine the type of social relationship (Platonic vs Romantic). The Burns Relationship Scale was also used to indicate the frequency of usage of the coping mechanisms in staying in social relationships during pandemic towards transitioning to a new normal. The study found out that social media had transformed the manner how college students approached and behaved in intimate relationships. Social media made it easier for college students to engage in social interaction, facilitate rapid relationship progression, and enabled digital togetherness.

Tristan Dufresne

TX - Tarleton State University

Discipline: Health and Human Services

Authors:
#1 Tristan Dufresne
#2 Sara Ratliff
#3 Leena Siraj

Abstract Name: The Effects of Trauma-Based Behaviors on Foster Youth Peer Relationships

This mixed methods study focuses on trauma-based experiences of foster youth ages 7 to 12. The student researchers used non-probability, purposive sampling and had a total of 26 participants. Significant themes

emerged from the qualitative data showing a variety of emotional responses to foster care placement, coping mechanisms, and positive and negative effects on youth self-esteem and peer relationships.

Milo Dufresne-MacDonald

TX - St. Edward's University

Discipline: Social Sciences

Authors:
#1 Milo Dufresne-MacDonald

Abstract Name: The Issue of Diversity and Multiculturalism in Undergraduate Psychology Curriculum

A continued lack of diversity in psychology curriculum perpetuates the marginalization of minority groups in society and conveys that the field of psychology places secondary importance on diverse perspectives of psychological issues. There has been consensus regarding increased inclusion of diversity in psychology (Boysen, 2011; Dingel & Sage, 2020; Simoni et al., 1999), but efforts to improve psychology curriculum has remained at the graduate level, despite recommendations and support from the APA to feature diversity in undergraduate curriculum (APA, 2022). Effective methods for how to incorporate these elements remain obscure, and there is a lack of studies outlining empirically tested teaching practices and assignments that have resulted in increased multicultural awareness among students. The objective of this study was to explore the current inclusion of minority sociodemographic factors within undergraduate psychology curriculum at a small, private, Central Texas liberal arts university and how students and faculty perceive their integration. A mixed-methods survey approach was used to gather data from faculty and student participants in order to identify gaps in diversity and reveal how minority sociodemographic factors were discussed. Visibility and intersectionality theories were used as frameworks to analyze the survey data collected from participants, as well as syllabi collected from faculty, to reveal where minority sociodemographic factors are salient and where there might be gaps. Differences between student and faculty perceptions in undergraduate psychology curriculum revealed the need for effective strategies for teaching diversity that will guide the field towards best practices for educating future psychologists on the important issues of intersectional diversity.

Hunter Duggin

NC - North Carolina State University

Discipline: Natural and Physical Sciences

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#1 Hunter Duggin
#2 Chueng Ryong-Ji

Abstract Name: Interpolating the 't Hooft Model between instant and light-front forms in the Coulomb gauge.

The 1+1D model of quantum chromodynamics (QCD) in the infinite number of colors, or ‘t Hooft model, is interpolated between the instant form dynamics (IFD) and the light-front dynamics (LFD) using an interpolation parameter δ in the interpolating Coulomb gauge which links the Coulomb gauge ($A^0 = 0$) in IFD and the light-front gauge ($A+ = 0$). While calculations such as these were performed [1] in the interpolating axial gauge which links the the spatial or axial gauge ($A1 = 0$) in IFD and the light-front gauge ($A+ = 0$), there are a number of benefits to the Coulomb gauge that cannot be ignored. All degrees of freedom are physical, making this an ideal choice for finding the bound-state equations and for renormalizability. Using this parameter δ, we find the mass gap equation using both hamiltonian formalism

and feynman diagram analysis, noting that it reproduces both the results for IFD and LFD in the Coulomb gauge and the light-front gauge, respectively. We then derive the quark-antiquark bound-state equation in the interpolating dynamics using the dressed fermion propagator. We also obtain the bound-state wave functions and compare the results between the interpolating coulomb gauge and the interpolating axial gauge. Since QCD respects the gauge symmetry, these results should all be independent of the gauge choice. These wavefunctions are particularly useful in the calculation of quasi-parton distribution functions (quasi-PDFs), in which we can produce an alternative approach to the quasi-PDFs not only with the frame dependence but also with the δ dependence. The interpolation may lead to an alternative quasi-PDF that can be implemented in the lattice QCD without suffering from the large momentum boost. Ma, Bailing, and Chueng-Ryong Ji. "Interpolating 't Hooft Model between Instant and Front Forms." Physical Review D, vol. 104, no. 3, 2021, https://doi.org/10.1103/physrevd.104.036004.

Elijah Duncan

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
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#3 Elana Ehrlich Ph.D

Abstract Name: The Creation of Ubiquitination-Resistant Proteins for Understanding the KSHV Lifecycle

The Kaposi's Sarcoma Herpesvirus, also known as KSHV or HHV8, is the known causative agent of multiple diseases such as Kaposi's Sarcoma (KS), primary effusion lymphoma (PEL), and multicentric Castleman's disease (MCD). KSHV is a human oncovirus with a lifecycle that is divided into two stages, latency, and lytic replication. Genes expressed during the different lifecycle phases are associated with the development of different cancers. The major lytic switch, RTA, is a transcription activator and also has E3 ubiquitin ligase activity. RTA interacts with cellular machinery to hijack the host ubiquitin-proteasome system to evade immune response and modulate cellular processes to promote lytic replication. Previous research conducted in our lab, resulted in the identification of novel substrates that are targeted by RTA. RTA targets proteins for degradation, by utilizing its ubiquitin ligase domain to attach ubiquitin molecules to lysines within target proteins. The goal of the project described here is to identify RTA-resistant mutants. Utilizing site-directed mutagenesis we are mutating each lysine codon to an arginine codon resulting in all lysines being changed to arginine in the resulting protein. Our long-term goal is to determine whether the mutants will be stable in the presence of RTA. RTA resistant mutants will then be expressed in virus-infected cells to evaluate the effects on viral replication, and protein abundance will be analyzed through western blotting.

Miles Duncan

GA - Kennesaw State University

Discipline: Humanities

Authors:
#1 Miles Duncan

Abstract Name: Unraveling Rhetorical Landscapes: DemeRx's Communication on Ibogaine for Addiction Recovery

This research seeks to identify rhetorical strategies used to create hype around using psychedelics for addiction recovery. In particular, I present a case study on DemeRx, a self-described "clinical stage drug development company advancing two molecules for the treatment of SUD." Ibogaine is an incredibly promising yet controversial treatment option for addiction. Ibogaine’s safety and efficiency are the subject of ongoing debate. The historical context behind ibogaine's uses will be added from research done in two ibogaine-related collections at Purdue University. By analyzing an archive of communication materials (public statements, patent documents, published website materials, and visual representations), this study aims to decode the rhetorical choices made by DemeRx. The central focus is on understanding how these choices might influence public perception and impact the acceptance of ibogaine as a viable treatment for addiction recovery. Ultimately, this research plans to shed light on how the complex rhetorical landscape of psychedelic rhetoric works to change society's receptiveness to alternative addiction recovery methodologies.

Kaitlyn Dundorf

NY - Long Island University

Discipline: Interdisciplinary Studies

Authors:
#1 Kaitlyn Dundorf

Abstract Name: “No Music on a Dead Planet”: How Indonesian Grassroots Change-Makers Use Music to Declare a Climate Emergency

The escalating threat posed by the rise in greenhouse gas emissions and environmental degradation highlights the urgent need for an immediate governmental response to avert a looming global catastrophe. This research project investigated how Indonesian grassroots change-makers within the Indonesian Knowledge, Climate, Arts & Music Lab (IKLIM) used art to raise awareness about the climate emergency in Bali, Indonesia. The project focused on IKLIM and their Music Declares Emergency Indonesia movement, a local chapter of an international initiative leveraging the cultural and economic influence of the music industry to advocate for systemic changes in addressing climate and ecological challenges. Utilizing a transdisciplinary qualitative approach, this three-month case study in Bali, Indonesia, employed participatory action research methods, including participant observations, archival research, and interviews with musicians and organizers. The findings illuminate music's pivotal role in fostering connections across interconnected issues and facilitating collaborative engagement among organizers, musicians, and audiences in intersectional change-making. Several participants and former activists noted that this collaborative process reignited their spirit to take action. Preliminary results also indicate a transformative journey for individuals within the musical community, transitioning from feelings of loneliness and disconnection to a sense of connection and collaboration. The research underscores the unique manifestations of Indonesian cultural identity within this global movement, offering valuable insights into the local dimensions of this critical issue.

Olivia Dungan

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Olivia Dungan
#2 Taylor Klipp

Abstract Name: Early Life Impacts on Beef-Dairy Cross Calves

Feed is the most costly aspect of raising livestock, and proper early life management of any production animal is crucial in maximizing profitability. Beef cattle require an efficient pound of feed to pound of body weight gain to create a viable business for the producer. Furthermore, beef-dairy cross calves are becoming more popular in the dairy industry as a way to increase dairy producer profit. Producers can use sexed beef semen in lower genetic quality dairy cows to produce a profitable dairy-beef steer instead of a lower-producing replacement heifer. Similar to replacement dairy heifers, young beef-dairy cross calves are fed calf-starter in addition to milk during early life to stimulate rumen function and growth. This experiment investigated the effect of a high starch (26%) versus a low starch (16%) Purina calf-starter on the growth of Angus-Holstein cross bull calves. The calves were assigned to the two treatments alternately at enrollment, and the study's trials consisted of 3 groups of 40 bull calves. The calves' body weight, dry matter intake, average daily gain, and body frame measurements were taken over their first four months of life and compared between the two treatments. Experimental results showed that a statistically significant difference occurred only in calf heart girth and dry matter intake ($P \leq 0.05$). Calves on the high starch treatment consumed more grain and had a greater heart girth circumference than calves on the low starch treatment. Body weight, body length, withers height, hip height, and average daily gain did not differ between the two treatments (P > 0.05). Results suggest that calf growers may be able to save money on feed costs by purchasing cheaper, low-starch calf starters with little sacrifice of the size and growth of their animals.

Brooke Dunkley

NC - North Carolina State University

Discipline: Engineering and Architecture

Authors:
#1 Brooke Dunkley
#2 Kyla Bosh
#3 Dr. Katherine Saul
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Abstract Name: Effects of Brachial Plexus Birth Injury on the Composition of Biceps, Supraspinatus, and Subscapularis Muscles

Brachial plexus birth injury (BPBI) occurs when the nerve bundle innervating the shoulder is damaged due to excessive stretching of an infant's neck during childbirth. It occurs in about 0.9 of every 1,000 births, with 30-40% of those resulting in lifelong shoulder impairment, including musculoskeletal deformities, reduced range of motion, and muscle paralysis. These deficits vary by injury location (preganglionic vs. postganglionic), but the effect on underlying muscle composition is unknown. We hypothesize diminished muscle growth from BPBI is related to increased collagen content (fibrosis), impairing muscle function. We will examine the effects of altered passive muscle loading and active functional loading on collagen buildup between muscle fibers using four groups.Sprague Dawley rats underwent surgery on one forelimb at postnatal day 3-6: preganglionic or postganglionic neurectomy, forelimb disarticulation (n=8/group/timepoint), or sham surgery (n=6/timepoint). Contralateral limbs served as added controls. Biceps, subscapularis, and supraspinatus muscles were dissected at 2, 3, 4, 8, or 16 weeks post-injury, snap-frozen, cryosectioned longitudinally, and stained using Masson's trichrome. Muscle sections were imaged and analyzed as a ratio of collagen to muscle tissue. Injured-to-uninjured limb ratios were calculated, and groups were compared using the Kruskal-Wallis test with Dunn's correction (GraphPad Prism, $\alpha=0.05$).Preliminary data for the biceps indicate that preganglionic injury has greater fibrosis than sham and disarticulation groups at 3 weeks and only the disarticulation group at 4 weeks. For subscapularis, preganglionic injury has greater fibrosis than postganglionic injury at 4 weeks, and for subscapularis and supraspinatus, postganglionic injury has greater fibrosis at 3 weeks than 4 weeks. This is the first study characterizing fibrosis development and progression in glenohumeral muscles following BPBI. Understanding the progression of altered muscle composition throughout development following BPBI may inform treatment planning.

Mackenzie Dunn

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Mackenzie Dunn
#2 Joshua Corrette-Bennett

Abstract Name: Using siHybrids targeting the fnbA mRNA in Staphylococcus aureus to suppress biofilm formation

Staphylococcus aureus is a bacterial species commonly found on the skin but is able to get inside the body and secrete a biofilm that promotes further infection. The biofilm produced by S. aureus acts as a shield to prevent antibiotics or the immune system from affecting cell growth or viability. With the dramatic increase in antibiotic-resistant bacterial pathogens, it is important to find new ways to treat and possibly prevent bacterial infections. The FnBPA protein, encoded by the fnbA gene, is anchored to the surface of S. aureus cells and aids in the formation and development of biofilm. The purpose of this research is to determine if suppression of the fnbA mRNA in S. aureus with siHybrids will reduce the production of biofilm. I predicted that S. aureus cells treated with 5ug and 10ug of siHybrids targeting the fnbA mRNA would cause a significant decrease in biofilm production. After the S. aureus cells had been treated with the siHybrids in a 96-well microtiter plate, the bacteria were stained with 0.4% Crystal Violet, and quantification of biofilm production was determined using a microtiter plate reader. Our results show that treating S. aureus with 10ug of fnbA siHybrids caused a statistically significant decrease in biofilm formation compared to the untreated control.

Leah Duong

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Leah Duong
#2 Bruce Hammock
#3 Ram Kandasamy
#4 Stevan Pecic

Abstract Name: Development of Non-opioid Therapeutics to Alleviate Chronic Pain

Chronic pain is pain lasting for more than 12 weeks and impacts people on both physical and mental health. Some medications available including non-steroidal anti-inflammatory drugs (NSAIDs) and opioids. NSAIDs are commonly used for inflammation but long-term usage could lead to serious adverse effects. Opioids have been used for acute pain but are associated with addiction. This leads to a demand for a therapeutics treatment that effectively reduces the pain in a non-addictive manner. Fatty acid amide hydrolase (FAAH) and soluble epoxy hydrolase (sEH) are enzymes responsible for degrading some naturally produced lipids which have anti-inflammatory effects. Thus, the inhibition of these enzymes produces pain alleviation and represents a novel approach for chronic pain treatment. Since the co-administering of drugs could result in serious drug-drug interactions, we decided to design a single drug that will simultaneously inhibit both aforementioned enzymes. This approach is known as polypharmacology and we previously identified several

potent dual FAAH/sEH inhibitors. Herein, the purpose of this study is to explore the structure-activity relationships of isoquinoline and pyridine moieties on FAAH/sEH inhibition. This will be done through a four-step synthesis. With microwave assistance, 2-chlorobenzene sulfonyl chloride and methyl isonipecotate were coupled through a sulfonamide bond. Then, through a saponification reaction, the ester became carboxylic acid intermediate. This underwent EDC coupling with a pinacol ester. With the optimized Suzuki-Miyaura microwave-assisted reaction, this precursor was coupled with different isoquinoline and pyridine moieties to obtain 15 final compounds in moderate yields. Nest, we plan to screen all these products in human FAAH, and human, rat and mouse sEH inhibition assays. In addition, we will perform the molecular modeling studies to better understand the binding modes of this set of analogs. Lastly, the best candidate will be scaled up to 1 gram and tested in chronic pain rat model.

James-Paul Duran

TX - The University of Texas at El Paso

Discipline: Health and Human Services

Authors:
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#2 Lizeth Holguin
#3 Gregory Schober
Lizeth Holgiun

Abstract Name: Hispanic Ethnicity and Access to Healthcare in the US-Mexico Border Region

What is the relationship between Hispanic ethnicity and access to healthcare in the US-Mexico border region? This study examines whether Hispanic ethnicity—and specifically Mexican-American ethnicity—affects one's ability to access healthcare in a predominantly Hispanic community (El Paso, Texas) on the US-Mexico border. The existing literature finds that Mexican-Americans face important barriers to accessing healthcare, such as relatively lower income levels, language difficulties, and immigration status challenges. However, within the US-Mexico border region, Mexican-Americans may have some advantages to accessing healthcare, such as increased capacity and willingness to access care in Mexico. Using original data from a representative survey of El Paso adults in 2022, we run generalized linear regression models to analyze the relationship between Mexican-American ethnicity and access to healthcare. The quantitative analysis helps fill gaps and improves our understanding of ethnic disparities in healthcare access in border regions. The results also have important policy implications for local governments and community organizations that are focused on increasing access to healthcare in predominantly Hispanic communities.

Michael Durand

TX - The University of Texas at El Paso

Discipline: Health and Human Services

Authors:
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#2 Michael Durand
#3 Christian Lozano
#4 Manuel Morales
Micheal Durand
Christian Lozano

Abstract Name: Exploring The Effectiveness of Podcasts in Health-Related Education Through Service Learning

Health equity strives to eliminate disparities in health outcomes, emphasizing the importance of providing equal opportunities for individuals to attain optimal health. Social determinants, including genetics, behavior, environment, medical care, and education, significantly influence health outcomes. This service-learning project aimed to evaluate the effectiveness of educational podcasts in improving health literacy, specifically focusing on cardiovascular disease, the leading cause of death in the United States. Collaborating with a Professor expert on cardiovascular diseases, a comprehensive podcast script was developed and recorded using high-quality equipment. Participants at the Monte Vista Senior Center were assessed on their knowledge through pre- and post-intervention questionnaires. The modified version of the validated "relationship between cardiovascular risk factors and knowledge of cardiovascular disease", by Adele Burger was used to assess health literacy on cardiovascular disease. The intervention involved presenting an educational podcast, meticulously crafted to enhance participants' knowledge on cardiovascular health. Results from a paired sample t-test on 25 participants demonstrated a statistically significant increase in total scores from pre-intervention (mean score= 2.80) to post-intervention (mean score=3.55), [$t(24) = -2.874$; $p = 0.008$]. Results showed a positive shift in health knowledge following the podcast. These findings suggest that the intervention had a meaningful impact on participants' health literacy, supporting the potential for positive outcomes through targeted educational interventions. This research not only benefits the local community but also contributes to the scientific understanding of effective strategies for community health education.

Samara Durgadin

NY - Pace University

Discipline: Natural and Physical Sciences

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#2 Eric Brenner

Abstract Name: Effects of Melatonin on Circumnutation in Arabidopsis thaliana

Melatonin (N-acetyl-5-methoxytryptamine) and auxin (indole-3-acetic acid/IAA) are both tryptophan-derived hormones found in various parts of all plants (Wang et al., 2016). Unlike melatonin, auxin has been extensively studied in plants since its isolation in 1928 (Enders & Strader, 2015), and is known to be involved in regulating circumnutation (Taylor et al., 2021). While recent studies have shed some light on the function of melatonin in plants including abiotic stress responses, root development, light responses, interkingdom communication, and phytohormone and plant signaling (Murch & Erland, 2021), no study has been published solely regarding melatonin's role in circumnutation, even though melatonin is involved with auxin biosynthesis and transport (Wang et al., 2016), which in turn affects circumnutation. This study aims to observe if treatments of melatonin within the range of doses reported to affect gene expression in the model plant organism Arabidopsis thaliana may have visible inhibiting effects on circumnutation due to melatonin's role in regulating auxin biosynthesis and transport. If melatonin is involved in regulating circumnutation in A. thaliana, and A. thaliana plants are grown in soil/medium containing 0–500 μM of melatonin, then I believe the plants grown on a medium with greater melatonin levels will circumnutate at a lesser frequency (displacement/time) than those with a lower melatonin level. Studying these circumnutation patterns will allow us to better understand how and why plants have autonomous, endogenous movements without apparent stimuli (Stolarz, 2009), and studying melatonin's effects on circumnutation in a model plant can shed further light on this hormone's role in the plant kingdom, as well as its relationship with auxin, the 1st phytohormone to be discovered.

Madison Durry

GA - Spelman College

Discipline: Natural and Physical Sciences

Authors:
#1 Madison Durry
#2 Davita Camp

Abstract Name: Kinetic Studies of Dimethyldioxirane Epoxidation of Various Alkenes

Epoxy resins have been widely used as resourceful polymers in material applications of coatings, electronic materials, furniture, and adhesives. One of the most important challenges to date is to obtain these epoxy resins without the use of non-renewable resources and cancerogenic/mutagenic and hormone-disrupting detrimental health effects. Dimethyldioxirane is a highly efficient oxidizing agent. Dimethyldioxirane can perform epoxidations under mild conditions and is selective and efficient with the epoxidations. Kinetic studies of dimethyldioxirane epoxidation of vegetable oil will be explored. The kinetic studies will include pseudo-first-order conditions with dried acetone at 23oC. Results will deliver information on the fundamental chemistry that is involved in dimethyldioxirane epoxidations of vegetable oils.

Noah Dyson

NC - Elon University

Discipline: Health and Human Services

Authors:
#1 Noah Dyson
#2 Dr. Vanessa Drew-Branch Ed.D., MSW

Abstract Name: Young, Black, & Grieved – The Grief Process of Receiving a Mental Illness Diagnosis

Inadequate utilization of mental health services among African American transitional-age adults (aged 18-26) following a mental illness diagnosis is a recognized concern. This qualitative study explores the experiences of transitional-aged adults as they navigate the grief process following such diagnoses. Currently, little research exists regarding the intersection of grief, race, and age in their utilization of mental health resources and the journey toward achieving psychological stability. Through in-depth interviews and thematic analysis, we gained insights into the multifaceted nature of grief in this context, expecting findings that reveal a unique spectrum of emotions and coping mechanisms among African Americans, while also highlighting the distinctive and challenging aspects of this transitional period. Key themes, such as identity disruption, loss of normalcy, and social isolation, were identified. This research study underscores the significance of understanding the grief experiences of transitional-age adults post-diagnosis, enabling targeted interventions and support systems to enhance well-being during the transition to adulthood while managing mental health challenges. The findings emphasize the need for more comprehensive mental health services and the importance of reducing stigma to facilitate a smoother journey through this critical developmental stage. This presentation will humanize the mental health journey of African American young adults and demonstrate that the mental challenges faced by this demographic go beyond the symptoms of their diagnosis.

Emily Dzikowich

WI - University of Wisconsin-Stout

Discipline: Natural and Physical Sciences

Authors:
#1 Emily Dzikowich

Abstract Name: Identification and Characterization of a Soil Isolate Utilizing p-hydroxybenzoate as a Sole Carbon Source

The present study is aiming to identify and characterize a strain of soil microbe. The microbe was selected by its ability to utilize p-hydroxybenzoate as a sole carbon source when grown on minimal media. The goal of this study is to identify and characterize the microbe through the microbiologic and genetic analysis. The microbe will also be grown on a larger scale and harvested to begin testing for enzymatic activity of metabolizing the p-hydroxybenzoate carbon source. Since the microbe is grown aerobically, the metabolic pathway is expected to contain a hydroxylase and a dioxygenase. The crude cell extracts generated from the cell paste will be tested for this activity. Results from the continuation of this work, presented last year, will be presented.

David E Evbayekha

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

Authors:
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#2 Jeffrey Goodman

Abstract Name: Born in Nation: Protest Music: Impacts on Racial Attitudes, Knowledge, and Emotions

Songs that contain messages of protest or calls to activism frequently appear on Billboard charts. However, little is known about the extent to which listeners process the true meaning of such songs. Occasionally, a specific protest song or music video has spurred significant conversation and debate, but this does not seem to be the case for most of these songs. Previous research has found that protest music can evoke emotions toward in- and out-groups. We conducted a study to determine if the messages conveyed in protest songs could be accurately inferred by participants and sought to evaluate the impact that protest music had on emotions and socio-political attitudes. A between-groups experiment was conducted in which participants were randomly assigned to watch one of two music videos (race vs. war), and then participants completed measures of emotions, moral foundations, and attitudes toward U.S. race relations and foreign and domestic policy issues. Demographic information was also collected. We predict that participants will understand the true meaning of the video and that the video they watch will increase concern for racial vs. foreign/domestic policy issues. We will also explore the impact of participants' identities on the relationship between protest music and socio-political attitudes. Findings from our study will contribute to our understanding of music's impact on society and may provide insight into the relative utility of using music as a form of activism for social change.

Chase Eastham

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
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#4 Shifeng Zhu

Abstract Name: Defining Cell Intrinsic Restriction Factor Activity Detrimental to Tombusviridae Replication

Plant viruses belonging to the Tombusviridae family have relatively small, positive sense (+) RNA genomes. Therefore, the few viral proteins encoded by these genomes must co-opt a variety of host factors to assist in the production of virions. The ongoing evolutionary battle between host organisms and RNA viruses has led to plant antiviral strategies that strive to limit co-opted host factor recruitment and eventual cell exhaustion. Although plants do not have immune responses resembling that of mammalian systems, previous literature has highlighted the presence of innate pathways providing non-specific and immediate responses to pathogens. Plant-infecting tombusviruses serve as excellent models to investigate antiviral activity of cell-intrinsic restriction factors (CIRFs). Recent literature has revealed viral induced gel condensates that are co-localized with viral replication organelles necessary for complete replication and packaging of progeny (+) RNA. Biomolecular condensates are membraneless organelles that are dynamic in nature as a result of liquid-liquid phase separation. The significant role of viral induced replication condensates has led us to question if antiviral proteins are present in the less protected bio-condensates. Therefore, this project will utilize high resolution confocal microscopy fluorescence recovery after photobleaching (FRAP) assays to visualize the ability of fluorescently-tagged antiviral proteins to diffuse into an area of the replication complex subjected to photobleaching. An absence (or very slow) recovery will suggest that antiviral proteins interact with membrane bound components of the VRO. However, medium recovery of fluorescent intensity (approximately 50 % - 60% of the original brightness) within 2 minutes of photobleaching will suggest that antiviral agents are able to disrupt the production of progeny (+) RNA via their presence in the more dynamic gel-like condensate. Understanding how host antiviral agents exploit dynamic, viral induced condensates will provide critical knowledge necessary for the development of more efficient antiviral agents that combat cell exhaustion and plant death.

Malavika Eby

PA - Swarthmore College

Discipline: Health and Human Services

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#5 Vivian Chi Ching Hui

Abstract Name: Exploring Website Resources Shared Within Online Health Communities (OHCs) In Response To Help-Seeking Posts By Women With Intimate Partner Violence (IPV) Experiences

One in three women worldwide are abused by their intimate partners. Many women with intimate partner violence (IPV) experiences seek help anonymously in online health communities (OHCs) instead of through legal or police services. As OHC members often share websites to answer each other's questions, we investigated the categories and domains of websites shared and how relevant they are to the type(s) of help requested by original posters (OPs). We extracted posts and comments from the r/domesticviolence subreddit on Reddit, including only help-seeking posts written by self-identified adult women with IPV experiences, with at least one website shared in the corresponding comments. Websites were annotated by topic and used

to iteratively develop a codebook. Then, shared websites were categorized as “relevant” or “irrelevant” to the topic(s) of help sought by OPs. Help-seeking posts were annotated for characteristics including post length, mentions of choking, and specific versus general questions. We used a chi-squared test to find that posts with specific questions received more relevant websites (p=0.023), while all other variables were found insignificant (p>0.05). A total of 170 website links were categorized into eight topics: 1) General IPV Resources and Support (34.7%); 2) Understanding IPV (26.5%); 3) Financial, Healthcare, Housing, and Food Support (10%); 4) Miscellaneous (5.9%); 5) Safety Warnings (5.9%); 6) Legal/Government-based Support (5.9%); 7) Escaping an IPV Situation (5.9%); and 8) Emotional Support (3.5%). Approximately 59.4% (n=101) of the shared websites were relevant to the topics of help sought by OPs. This study sheds light on the informational and emotional needs of women with IPV experiences that are currently addressed by website-sharing. These data could be utilized to create a digital tool that automatically suggests relevant and expert-reviewed website resources in IPV OHCs.

Anne Eby

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
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#2 Benjamin Sachs

Abstract Name: The Effect of Repeated Amphetamine Exposure on Stress Susceptibility in Mice

This project explores the question: how does repeated amphetamine exposure affect vulnerability to stress? Individuals who suffer from a substance use disorder often simultaneously experience a mental disorder, such as generalized anxiety and major depressive disorder. Despite the known high rates of comorbidity between substance abuse and mental illness, the causal relationships underlying these comorbidities remain debated and could go in either, or both, directions. Previous neuroscience research in rodent models has shown that prior exposure to repeated cocaine increases susceptibility to stress in male mice. In this study, we focus on the effect of 3 mg/kg amphetamine pre-exposure on behavioral outcomes in response to a three-day stress paradigm in male (n=33) and female (n=36) mice. Half were exposed to three consecutive days of stress (restraint, fox urine, and tail suspension), and all were subjected to a panel of behavioral tests [light dark emergence (LDE), elevated plus maze (EPM), forced swim (FST), and novelty suppressed feeding (NSF)] to evaluate depressive and anxiety-like behavior.The results from EPM and NSF suggest that stress and amphetamine differentially impact the sexes. In EPM, females demonstrated an increase in anxious behavior following stress, whereas males exhibited a decrease in anxious behavior following stress. Amphetamine contributed to an increase in locomotor activity in females but not males. In NSF, amphetamine-treated females appeared to be more anxious following stress, whereas amphetamine-treated males appeared to be less anxious post stress. A three-way ANOVA revealed a three-way interaction in FST: a history of amphetamine led to anti-depressant-like effects in females only, which were significantly reduced following stress. Future work in Spring 2024 will delve into the expression of FKBP51, a key protein involved in glucocorticoid dynamics along the hypothalamic-pituitary-adrenal axis, to examine the molecular mechanisms that may contribute to the behavioral data.

Easton Eddie

UT - Utah Tech University

Discipline: Natural and Physical Sciences

Authors:

#1 Jennifer Meyer
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#3 Gabe Matthews
Gabe Matthews

Abstract Name: "The Effects of Pterostilbene, a Novel Antioxidant, on NADH Oxidase Activity in Human Endothelial Cells Exposed to Hyperglycemic Conditions"

Diabetes is a prevalent chronic health condition associated with significant complications, including diabetic kidney disease. The accumulation of elevated glucose levels in cells triggers an upregulation of NADPH Oxidase (NOX) expression, contributing to diabetic kidney disease. NOX activation results in an increased production of reactive oxygen species (ROS), inducing oxidative stress and cellular proliferation. Pterostilbene, recognized for its natural antioxidant properties, has demonstrated efficacy in reducing oxidative stress across various cell types. This research focuses on elucidating the NOX pathways in endothelial cells exposed to hyperglycemic conditions and assessing the extent of oxidative stress reduction with the introduction of pterostilbene. Human umbilical vein endothelial cells (HUVEC) are cultured at varying timeframes of high glucose media exposure, ranging from 24 to 96 hours, in conjunction with two different concentrations of pterostilbene, 5 μM and 10 μM. To quantify cellular oxidative stress, an Amplex Red assay is employed in addition to a ROS Detection Cell-Based assay to measure superoxide and hydrogen peroxide levels within the cells. Quantitative polymerase chain reaction (qPCR) will also be utilized to assess NOX protein gene expression at the mRNA level. To complement these methods, a western blot analysis is conducted to quantify NOX protein concentrations under distinct environmental conditions. Our research aims to shed light on the potential of pterostilbene as a therapeutic agent in mitigating oxidative stress associated with hyperglycemic conditions in endothelial cells.

Joseph Edelheit

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Joseph Edelheit

Abstract Name: The Astronaut, Man of Today’s Tomorrow: The American Dream in Space

Following the Second World War, a new chapter of scientific discovery and human expansion seemed to open up in front of the American public. Space, the final frontier, offered apparently limitless resources, limitless adventure, and limitless growth to a nation riding a post-war high of technical advancement and industrial might. At the apex of the popular understanding of space was the astronaut—not the engineers, technicians, planners, or laborers who enabled the rocket launches. While the astronaut comfortably took a spot among popular American hero archetypes, the image itself and conceptions related to the astronaut would not remain stagnant: as American culture evolved, so too would the astronaut. Even if popular works about astronauts had no explicit political or social commentary intended, they are irrevocably linked to the time periods from which they originate, and also act as projections of their contemporary creators and audiences for their various insecurities, hopes, fears, and values. My project explores how the popular image of the astronaut has evolved over time through the American popular consciousness. It will address these issues by examining culturally significant popular media, including The Right Stuff, 2001: A Space Odyssey, and Disneyland episodes from the late-1950s, such as “Man in Space”. The evolution of the astronaut through these works can be studied to understand how the American public understood the role of science in society, the truthfulness or inherent failure of the American Dream, and as a case study of general trends throughout American society.

Audra Eding

MI - Hope College

Discipline: Education

Authors:
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Kelsey Osborn

Abstract Name: The impact of book bans on the creation of culturally sustainable classroom libraries and teacher practices.

As restrictive educational legislation increases throughout the country, teachers are facing barriers in the quest to teach in inclusive ways. Such legislation is intended to create more rigorous processes for adapting classroom materials, however, such policies may make it more difficult for teachers to create diverse, welcoming classroom environments. We were interested in studying the impact of such policies in our local and regional school districts. Book banning is not new, but has become increasingly prevalent (Harris & Alter, 2023). Public schools have received unprecedented pressures regarding the materials students can access. Book banning especially targets topics that may be considered controversial. This issue has proven to be highly divisive. On one side of these culture wars are those who seek more restrictive procedures for adapting classroom texts, such as parents' rights groups. On the other are advocates for allowing more freedom in choosing books for student use, especially those who hope to include identity-based texts that directly address race, gender, sexuality, and other issues that may be considered controversial for students (Harris & Alter, 2023).. In the midst of these culture wars, a question emerges: how can teachers include literature that welcomes, and sustains the varied and complex identities of students? Research indicates that classroom literature plays a significant role in student's perceptions of the world (Crocco, 1997), others, and themselves (Whitford, 2023). Thus, the use of Culturally Sustaining Pedagogy (CSP) through a literacy lens becomes vital. CSP amplifies and sustains the experiences of all students (Paris, 2012). In this study, we seek to discover the impact of book banning on teachers' materials and practices. Using survey data and sample books awarded for their portrayal of contemporary concerns and identity-based plots, we will draw conclusions to inform the field in moving forward.

Lumin Edmonds

VA - The College of William & Mary

Discipline: Social Sciences

Authors:
#1 Lumin Edmonds
#2 Joshua Murray
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Joshua Murray
Lydia Poulos

Abstract Name: Do All Georgian Rivers Lead to Europe?: How Foreign and Domestic Actor Interactions Shape Natural Resource Management in the Republic of Georgia

A country bordering Russia in the South Caucasus, Georgia is situated on a geologic plate boundary conducive to a unique geography with mountains serving as headwaters to high velocity rivers. These rivers foster biodiversity and power communities; at the same time, changes in climate threaten to increase glacial melt and heighten risk for natural disaster. Effective natural resource management is key to ensuring a

sustainable future for the country. Environmental NGOs in Georgia receive funding by foreign donors from the US and Europe to manage the country's natural resources. This research seeks to examine how environmental NGOs play a role in the sustainable development regime, mediating to accommodate the demands of Georgian civil society, bilateral agencies, consulting firms, and the domestic government, all within the confines of increasing government ties to Russia and a political pull from European integration. The research is particularly relevant as Georgian civilians seek candidate status in the European Union, causing a conflict of interests among domestic and foreign actors. The purpose of this research is to determine how foreign agencies and donors, Georgian non-governmental organizations, the Georgian government, and Georgian civil society interact with one another to achieve sustainable outcomes in natural resource management. Georgian civic engagement in development is pivotal to ensuring that programs implemented are socially, economically, and environmentally sustainable. The approaches that foreign aid agencies and donors employ affect the extent to which civil society is engaged in the process. The aim is therefore to uncover the interests, priorities, and constraints of each of these actors. To obtain data to understand these interests and constraints, we are conducting interviews with personnel from environmental NGOs in Georgia and their donors, foreign consulting firms, and the Georgian Ministry of Environmental Protection and Agriculture in Georgia.

Zander Edwards

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Zander Edwards

Abstract Name: The History and Future of Televised Advertising

Many forms of advertising have existed for as long as business has existed. After all, businesses need a way to get word of their goods and services out to potential customers. One of the most impactful and popular forms of advertising in recent history is that of televised advertising. After the first televised advertisement aired in 1941, the business has since taken off, continuing to evolve to fit the advertising climate. Although it is still a popular medium today, it's had some major competition. The internet, with its more interactive approach, has become one of the most popular platforms for consuming media, which in turn attracts advertisers. Media platforms on the internet also make use of algorithms, which select advertisements catered to the individual, which is something that television can't do. People want to watch their shows on demand, which is why many television stations have launched their own streaming platforms. This, however, does not spell the end of television; streaming via the internet is more of an evolution. Although the popularity of television has died down, it is still popular enough to deter advertisers from abandoning the medium.

Raven Edwards

GA - Fort Valley State University

Discipline: Natural and Physical Sciences

Authors:
#1 Raven Edwards
#2 Ajit Mahapatra
#3 Rabin Gyawali
#4 Sadia Afrin

Abstract Name: Application of Clove Bud Essentials Oil in Reducing Escherichia coli on Pecan Halves

Essential oils (EOs) have been found to be effective in reducing pathogens including Escherichia coli (E. coli) on food surfaces. In this study, we evaluated the efficacy of clove bud EO against E. coli on pecan surface. Pecan halves were first inoculated with ≈ 6.0 log CFU/g of E. coli (ATCC 8739) culture and air dried for 30 min at room temperature in a biosafety cabinet. The samples were then treated with different concentrations of EO (1%, 1.5%, and 2 %, v/w) for 1, 3, and 5 min. Each pecan half was then homogenized in 10 mL of 0.1% sterile peptone water and serial dilutions were spread on Tryptic Soy Agar plates. Plates were incubated at 37 °C for ~18 h and colonies were counted, and log values were calculated. The ANOVA procedures of SAS were used to determine significant differences in the values among treatment times and concentrations. Clove bud EO concentration and treatment time had significant effect on the E. coli reduction (p < 0.05). The log reduction of E. coli increased with the increase in concentration and treatment time. At 5 min of treatment with 2% EO, the populations of E. coli were reduced by 2.93 log10 CFU/g (≈ 99.9%). While the result of this study suggests that EO can be effective in reducing E. coli on pecan halves, further research is required to evaluate the quality characteristics of treated nuts. The use of EOs may contribute to establishing improved practices for enhancing food safety measures in the pecan industry.

Kaya Edwards

NY - Long Island University

Discipline: Health and Human Services

Authors:
#1 Kaya Edwards

Abstract Name: International NGOs Addressing Global South Realities: Hazardous Agricultural Child Labor in Costa Rica

The dominant stance in the international discourse on child labor held by international institutions and non-governmental organizations (NGOs) in the Global North argues for its prevention and eradication due its detrimental impact on children's health and development. In the Global South, there are communities who acknowledge that, while some labor can be hazardous, allowing children to work can also enable wider socialization and a potential to contribute to the family and earn for themselves. Can organizations successfully implement programs in communities with differing perspectives and protect children from tangible harm? Costa Rica is currently leading the charge to get rid of child labor within Latin America; however, there are still 30,000 children in what the government considers to be hazardous labor. This transdisciplinary qualitative case study explores the efforts to combat hazardous child labor within Costa Rica by Defensa de Niños y Niñas Internacional Costa Rica, an international NGO, and how their projects and methodology account for Costa Rican realities despite their Global North roots. Through a three-month internship with the organization from September to November 2023, field research was conducted via participant observation, interviews, surveys, archival research, and arts-based research regarding their work on agricultural child labor, one of the most hazardous and customary forms of child work. The findings highlight a lack of targeted approaches to combat hazardous labor for children in comparison to adolescents. Despite a stated prioritization of community collaboration, community beliefs that contradict the normative international child labor standards guiding the organization and the country's policies are disregarded. In addition, there have been no directed efforts to aid the communities most impacted by hazardous child labor in the country, such as Indigenous and Afro-descendant youth. This research suggests discarding the abolitionist approach for more hazard-focused and community-conscious work to maximize child protection efforts.

Luke Ehlert

WI - Carthage College

Discipline: Social Sciences

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#2 Anthony Barnhart

Abstract Name: A new technique for measuring the speech-to-song illusion: Timbre priming

The speech-to-song (STS) illusion is a phenomenon where an unchanged spoken phrase is repeated and starts to be perceived as a song by the listener (Deutsch et al., 2011). Although it is still up for debate, researchers theorize the meaning of the spoken words dominates the attention of the listener. After multiple repetitions, the semantics are satiated, leading to increased attentiveness to previously neglected pitch information. Prior research has studied this illusion through the use of self-report Likert scales after multiple repetitions. While this method has worked in the past, there are implicit ways to detect tonal properties, such as timbre priming (Margulis & Levine, 2006). This technique detects musical expectation through reaction times (RTs) to probe notes following a melody. The current study introduces a technique to measure the speech-to-song illusion without self-report. For 80 trials, participants listened to 5 snippets of speech followed by a probe tone that either matched the final phoneme frequency of the speech snippet or not. Participants had to classify the timbre of this probe tone. One of the five speech stimuli is known to elicit the speech-to-song illusion. Data collection is underway, and we expect to be finished with collection by March 2024. We plan to run a multiple regression analysis predicting RT from Trial Number and Speech Type (STS, Control). We expect to find that the STS trials will have a steeper negative slope due to participants hearing the speech more as a song over time. Overall, this study will provide evidence for a new technique to measure the STS illusion through implicit methods.

Adam Ehmke

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Adam Ehmke
#2 Alexander Parillo
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#6 Lisa Paciulli
#7 Adam Hartstone-Rose

Abstract Name: Exploring Mites On Lemurs

Mites (class Arachnida) are arthropod ectoparasites living on hosts. Mites have been investigated in mammals regarding their possible role in disease development, and few studies have examined mites on lemurs. Therefore, to study mite presence on lemurs, Duke Lemur Center (DLC) lemur hair samples taken from six facial and eight limb regions were examined under light microscopes. Potential mites were photographed and identified based on their morphology. 30 potential mites were found including some that look like they belong to Demodex, a mite genus commonly found on dogs. In the future, genetic analysis would be needed to identify the specific mite species found. Studying the presence of mites on lemurs will provide insight into the largely unstudied relationship between ectoparasites, mites in particular, and lemurs, and if / how mite proliferation causes illness in lemurs.

isabella eiland

FL - The University of Tampa

Discipline: Social Sciences

Authors:
#1 Benjamin Marsh

Abstract Name: The Cross-Race Effect in Recall on Positive and Negative Feedback

In this experiment, 40 White college-aged students were shown 6 distinct insults (e.g., you are disgusting) and 6 compliments (e.g., you are very sweet) paired with faces from three racial groups (i.e., Asian, Black, and White). Each message was shown three times, once with each face. After studying each message-face pair, the participants' memories of those pairs were tested by presenting each face they had seen with a multiple-choice question. The options were either a compliment, an insult, or "neither message". Lastly, participants took a survey that measured, level of interracial exposure, perception of personal similarity to, and concerns they had with each racial group. A repeated measures ANOVA found an interaction effect between the race of the faces and the type of message. Memory accuracy for White Insults (WI) and Black Compliments (BC) was higher than memory accuracy for White Compliments and Black Insults. Evidence of the CRE is seen in individuals' ability to better recall being insulted by their racial ingroup and complimented by their outgroups. Likely owing to a fear of rejection from desirable groups and a diminished impact of insults from those with whom they are already separated.Moreover, survey questions that asked participants about varying concerns with racial ingroup and outgroup were associated with memory for comments. The strongest correlation was seen between BC and concern about being either stereotyped or misjudged by the outgroup. In contrast, participants who were concerned with being stereotyped by their racial ingroup were more likely to remember WI. A possible result is that they connected unfavorable experiences with this group; hence, they predicted a negative distance.

Avery Eilenfeldt

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Avery Eilenfeldt

Abstract Name: Bad Cop Good Cop: The Effects of Fear of Crime and Visibility on Attitudes Towards Law Enforcement

One of the most contentious topics in modern American politics is the role of law enforcement and crime prevention. The recent climate has been increasingly negative due to the highly visible mistreatment of citizens, often racial minorities. Previous studies have found that citizens report a more favorable view of law enforcement when officers limit their use of force and engage with the public respectfully and politely (Avdija, 2010). Research has also demonstrated that these attitudes depend on characteristics like race (Bass, 2001), gender (Hodgson, 2002), and partisanship (Erskine, 1974). However, we know little about the influences of one's hometown and current town on their opinion of the police. This study utilizes an original survey of 350 college students from a regional state university. The survey asked questions about fear of crime and visibility pertaining to students' experiences with law enforcement in their college town and the nearest metropolitan area, and how they affect opinions on law enforcement. The results indicate that students

who have a fear of crime have approximately a 13% decrease in positive attitudes toward police in the college town. Additionally, Democrats were found to have approximately a 24% decrease in positive attitudes toward police as compared to Republicans and Independents. While police visibility broadly was insignificant, whether the interaction was seen as negative or positive was significant. For every additional negative interaction witnessed, the average student reported a 14% decrease in positive attitude toward the police, and for every positive interaction witnessed, a 10% increase in positive attitude toward the police was found. Going forward, if officers want to build a better relationship with the community they serve, we are going to need to see a positive change in their interactions with citizens in the communities they serve.

Sylvia Ejeh

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Sylvia Ejeh

Abstract Name: DNA Sequencing: Analysis and Authentication of Commercial Gluten-Free Products

Food allergies are a global concern for the health of communities and food safety. In the U.S, Wheat is reported as one of the eight most common IgE-mediated food allergens. The ingestion of wheat has been linked to health-related issues such as allergies such as wheat allergy, non-celiac gluten sensitivity, and various diseases. The most common disease within that group, Celiac disease or “celiac sprue,” is an inherited inflammatory disorder where damage is caused to the small intestine's lining. Sufferers experience symptoms such as skin rash, fatigue and vomiting, to name a few. To protect people with this autoimmune disease, regulatory boards across the globe ask for food products to have mandatory labeling information and declare the use of all ingredients. One tool for the specific identification and discovery of species is DNA barcoding, by analyzing short genetic (DNA) sequences from samples. Using this method, we seek to authenticate food products that are adulterated or misbranded by acts of food fraud.This study's purpose was to determine if gluten-free bread flour contained wheat. The DNA barcoding technique was utilized in this experiment to determine whether any wheat was present in the products. Five distinct types of gluten-free bread flour were tested to see if they would yield the same results. Data and photographs were collected as evidence of the experiment, and all samples were subjected to testing. DNA was extracted from each gluten-free bread flour, and PCR amplification was performed to detect the DNA. The samples were then sent for sequencing, and the results were uploaded to DNA Subway, a system that provides information on the genetic makeup of each sample.

Onyinye Ejiaka

TX - MD Anderson Cancer Center

Discipline: Natural and Physical Sciences

Authors:
#1 Onyinye Ejiaka
#2 Soma Ghosh

Abstract Name: Evaluating the Impact of Aurora Kinase Inhibition on Immunogenic Cell Death in HPV+ Murine Models.

Human Papillomavirus (HPV) causes over 694,000 cancer cases annually and is the leading cause of cancer

in women in developing countries. HPV-positive (HPV+) models express viral oncoproteins E6 and E7 that bind and degrade tumor suppressor protein p53 and Retinoblastoma (Rb) respectively, leading to abnormal cell growth and division, reduced cell differentiation, and an increased risk of cancer development. Although HPV+ tumors are molecularly distinct from HPV-negative tumors, their treatments are identical. Standard treatments for HPV-driven cancers involve radiotherapy and chemotherapy which have chronic side effects and are not ineffective in 20% of HPV+ cancers. Therefore, there is an urgent need for therapies that are less toxic and more effective. Previously, Johnson Lab conducted a high throughput drug screen (HTDS) evaluating 864 unique compounds. In that HTDS, Aurora kinase inhibitor (Alisertib) was more effective in HPV+ than in HPV- human cancer cells. To investigate the impact of aurora kinase inhibition on immunogenic cell death in HPV+ murine models, I assessed the effect of Aurora Kinase Inhibition on p_AURKA levels in HPV+ murine models, evaluated the impact of AKI on other markers of immunogenic cell death, analyzed the levels of Cytochrome C and HMGB1, and investigated the impact of ABC on p_AURKA levels in HPV+ murine models. The results showed that Aurora Kinase A inhibition leads to immunogenic cell death and apoptosis in murine HPV+ cancer cell lines (C343 and TC1) when treated with 300nM of alisertib. In addition, inhibition of ABC transporters increases alisertib-induced aurora inhibition and apoptosis in TC1. In conclusion, alisertib is more effective at inhibiting aurora kinase A in C343 than in TC-1 cells and drug efflux via ABC transporters may account for drug resistance to alisertib in TC-1.

Dreyme El Murray

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Dreyme Murray

Abstract Name: Empowering Lives Through a Wellness Center for Parkinson's Disease Patients and Caregivers

Parkinson's Disease (PD) affects millions worldwide, impacting not only individuals but also their families and caregivers. Parkinson's disease is a disorder that gradually affects the nervous system and the associated body. Symptoms start gradually and intensify. Symptoms include tremors, stiffness, altered speech, and loss of balance. This groundbreaking wellness center is designed to support PD sufferers and their support networks. The center aims to empower individuals with PD to maintain independence in daily living.Personal interviews, surveys, and precedent studies were utilized for my research methods. Personal interviews explored the daily struggles of PD patients, and their coping strategies. Survey respondents assessed the difficulty levels of routine tasks, revealing consistent challenges in activities such as cooking, housework, grocery shopping, walking, and writing. Through a range of social, physical, and occupational therapy activities, the center strives to create a supportive community that fosters resilience and a sense of belonging. Precedent studies involved the inclusion of occupational therapy is instrumental in equipping PD patients with practical skills and strategies to navigate daily challenges, promoting autonomy and a higher quality of life. Educational programs within the center further empower individuals with PD to understand and manage the complexities of their condition. Caregivers also benefit from essential tools and counseling services, acknowledging the unique role they play in the journey of their loved ones. This project envisions a holistic wellness center that becomes a beacon of support, education, and empowerment for those affected by Parkinson's Disease, strengthening the possibility of leading fulfilling lives despite its challenges.

Rayan Elahi

MN - St. Olaf College

Discipline: Natural and Physical Sciences

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Abstract Name: Towards a Method for Characterizing Neural Activity in Response to Magnetic Stimuli

Increasing evidence suggests that some migratory species of birds use the Earth's magnetic field to navigate. To characterize the responses of neurons to magnetic stimuli, a high-density microelectrode array was used to measure the firing patterns of ex vivo avian retinal ganglion cells. To validate the computational methods that were used, data were simulated to emulate neuronal firing patterns. First, stimuli of magnetic orientation were simulated, and linear filters detecting north-south orientation over time were created. After convolving these filters and stimulus and converting the result to spike probabilities, the spike train was simulated as a Poisson process with rate given by the spike probability. Neuron-level estimators were computed from the output to estimate linear filters of stimulus-triggered activity based on the spike-triggered covariance. To measure the accuracy of the findings, the cosine similarity between the estimated and original linear filter was calculated, resulting in a high value of 0.99. A randomization test was used to measure the significance of these results against a neuron that is agnostic to the stimulus, resulting in a significant p-value (< 10-10). This suggests that this method is able to reconstruct the filter of a magnetically-tuned neuron, and in future work we plan to apply these methods to electrophysiological data recorded from living retinas in response to magnetic stimuli to find neurons in the bird retina that encode information about low frequency magnetic field orientation.

Jasmine Elazm

NY - Brooklyn College

Discipline: Interdisciplinary Studies

Authors:
#1 Jasmine Elazm

Abstract Name: All Poets Dance With Death: A Memoir as an Explication of Biosemiotics and Intersectional History

According to biosemiotics, all living organisms — from the very first cell to all that embody animals and trees and humans — are sign producers. Semiosis permeates our bloodstream and our DNA and extends into the vast and interconnected system of communication. It functions, on certain layers, in tandem with phenomenology: in how subjective contours of the individual experience manifest realities, biosemiotics also ensure the intentionality of symbols, and how symbols compose the meaning of life. My project uses the frame of biosemiotics through the format of a personal memoir: one that will explore the links between biosemiotics and poetry and how it has influenced my personal life. This sign-producing exploration will serve as a platform for intersectionality–attempting to address how poetry impacts personal history–allowing us to define what the "soul" truly is: an expression of inexpressible symbols. Personal journal entries reflecting on life milestones (the death of family members, accounts of my first birthday party), poems, and paintings I have made over the years will be contextualized with biosemiotics research and historical accounts through the multi-dimensional framework of intersectionality. Comparisons drawn from history will focus primarily on deconstructing religious perspectives: the relationship between Calvinism and communism, the semiotic scaffolding of the Protestant Reformation and Creationism, and the

recontextualization of Biblical narratives. The memoir will be used to investigate the profound links between poetry, personal history, and biosemiotics, emphasizing how symbols influence our narratives and lives.

Christine Eldrenkamp

IL - Eastern Illinois University

Discipline: Social Sciences

Authors:
#1 Christine Eldrenkamp

Abstract Name: International Norms, Diffusion, and United Nations Efforts to Promote Judicial Independence

Judicial independence creates a baseline for whether people are treated with dignity and respect by their governments. The lives of people everywhere are influenced by the ability of their country's court system to uphold and protect their rights, and failure to secure this norm leads to grave abuses, especially against the most vulnerable members of a society. Prior research shows that RGOs have limited efficacy in advocating for reform, both for judicial independence and human rights in general. IGOs such as the United Nations also influence the transfer of human rights norms in general, either as a forum of debate or an actor. However, literature on the contributions of IGOs regarding judicial independence reform is entirely focused upon failure or remains lacking. This research answers the question of under what circumstances does the UN succeed. To establish processes by which the United Nations influences domestic judicial reform, I conducted semi-structured interviews and field work with human rights officers based in Geneva who have worked on judicial independence issues. From these interviews, I selected cases in the Democratic Republic of the Congo and Belarus relating to the arbitrary dismissal of judges. Archival work from UN archives, external human rights organizations, and the press, as well as statements from interviewees are then used to illustrate the causal mechanisms within these cases that led to implementation or failure. The research finds that recommendations from UN human rights bodies have higher chances for implementation if influential nations within the international community are applying pressure to adopt and civil society is sufficiently mobilized. UN human rights bodies transmit information on violations to the greater international community and provide legitimacy to civil society groups seeking reform. By creating openness and political will, judicial independence norms diffuse into society and increase overall respect for human rights.

Patrick Elia

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Patrick Elia

Abstract Name: Skip a Class, Sip a Glass: Unraveling the Teenage Conundrum

Today's literature has primarily examined daily drinking behaviors among teenagers within a sociocultural context. Notably, prior studies have focused on the broader cultural influences on adolescent alcohol consumption. However, the current study stands out as the first to explore the influence of number of class failures and school absences on daily drinking behavior. Leveraging a publicly available dataset from UCI Machine Learning, obtained through a survey of students in language courses in secondary school, our central research question examines the relationship between the number of academic failures and school

absences they experience on the frequency of daily drinking in teens. Addressing a gap in existing literature, this research utilizes a comprehensive dataset to unveil the intricate connections between academic struggles and adolescent alcohol consumption. Methodologically, students were categorized based on the number of academic failures and school absences, which was divided into two categories starting from zero to 5 absences and then 6 absences to beyond. A Two-Way 2x4 ANOVA revealed statistical significance between the number of academic failures and the incidence of daily drinking. Additionally, there is a noteworthy statistical significance between school absences and the frequency of daily drinking among teens. However, the combination of both the number of academic failures and incidence of daily drinking did not reveal any significance. The findings from this study hold significant implications for educators, parents, and policymakers. By identifying the links between academic struggles and daily drinking in teens, targeted interventions within educational settings can be developed to address both academic challenges and potential substance use. This knowledge can inform early detection strategies and tailored support systems for at-risk students, fostering a holistic approach to adolescent well-being.

Mia Elias

AL - University of South Alabama

Discipline: Natural and Physical Sciences

Authors:
#1 Mia Elias
#2 Rachel Rodenberg
#3 Robert Barrington

Abstract Name: Production of Amyloid Precursor Protein is Herpes Simplex Virus 1 Strain-Dependent

Cleavage of amyloid precursor protein (APP) generates the antimicrobial peptide amyloid beta (Aβ), the accumulation of which is linked to the pathogenesis of Alzheimer's Disease (AD). Herpes Simplex Virus Type 1 (HSV-1), a neurotropic DNA virus that establishes lifelong latency, is reportedly associated with AD though this link is controversial. Infection with different strains of HSV-1 lead to a range of presentations, from asymptomatic infection to lethal herpetic encephalitis. We hypothesize that distinct strains of HSV-1 also differentially associate with AD. To begin to address this hypothesis, we tested whether synthesis and proteolytic processing of APP varied following infection with three different HSV-1 strains. Analysis of single-cell RNA sequencing (scRNA-seq) libraries from infected corneas revealed that APP and its key processing components were differentially expressed dependent on HSV-1 strain. A similar result was observed in vitro using an immortalized corneal fibroblast cell line by reverse transcription quantitative polymerase chain reaction (RT-qPCR). Furthermore, APP and Aβ levels differed dependent on HSV-1 strain as measured by western blot. Clinically, these findings may contribute to resolving the controversy regarding HSV-1 association with AD.

Adam Eliezer

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
#1 Adam Eliezer

Abstract Name: Evidence of predation in vertebrate fossils from the Late Devonian (Famennian) Catskill Formation of Pennsylvania: further insight into the ecological context of the fin-to-limb transition

Trophic interactions among the vertebrate taxa of the Late Devonian Period (383–359 Ma) can illuminate the ecological context of the vertebrate fin-to-limb transition. However, the ecology of these Late Devonian environments has thus far been an understudied topic. The Catskill Formation of northcentral Pennsylvania, USA, has provided some of the best insights into the freshwater environments that played host to this transition. Fossils collected from many different sites across the region have produced a diverse assemblage of gnathostomes (jawed vertebrates) including 'placoderms,' 'acanthodians,' chondrichthyans, actinopterygians, and a variety of sarcopterygians including multiple distinct tristichopterid species and fragmentary remains of early limbed forms. To understand paleo-trophic interactions in the Catskill Formation, we looked at direct evidence in the form of bite traces. Here we analyze twenty-eight bone deformations in various types of vertebrate skeletal remains that fit the criteria we used to identify direct evidence of predation. Bite traces were primarily found in the head and trunk shields of smaller species of 'placoderm', with other osteichthyan skull material and additional postcranial elements also present. The small-bodied 'placoderms' studied here are inferred to sit at a lower trophic level in these paleoecosystems than their larger osteichthyan counterparts. With this new information, we can confidently establish that the small-bodied 'placoderm' species were prey items for larger sarcopterygians. Additionally, these bite traces confirm that tristichopterid species primarily represent the apex-predator roles in their respective paleoecosystems once they reach full ontogenetic development and that they engage in cannibalistic behavior. As they develop, our evidence also shows that niche partitioning occurs in sarcopterygians of the Catskill Formation, most notably amongst the representative tristichopterid species. All of this new information offers additional ecological context to the Late Devonian freshwater ecosystems of Pennsylvania, and thus to our understanding of the fin-to-limb transition.

McKenzie Elim

NY - Long Island University

Discipline: Health and Human Services

Authors:
#1 McKenzie Elim

Abstract Name: Accessing my Autistic Self: Reflections from Autistic Adults on the Benefits of Program Engagement with the Autism Society of Central Virginia in Richmond, Virginia

Autism, a neurological and developmental disability that impacts interaction, communication, and behavior, has historically been situated as a disorder that needs to be cured, fostering ableist stigma and social exclusion to the detriment of the well-being of the autistic community. Given prior literature's disproportionate attention to youth and males as well as its exclusion of autistic voices in a participatory manner and its operationalization of a medical model, I sought to identify the personal realities of autistic adults in the context of their engagement with a local non-profit support service that offers social, recreational, and educational programming. Drawing from critical disability theory, feminist methodology, and a transformative paradigm, this autoethnographic qualitative case study explores my own experiences as a recently diagnosed, autistic adult female as I navigate a new identity in community through a three-month internship with the Autism Society of Central Virginia from September to November 2023. In consideration of the diverse realities and support needs of individuals on the autism spectrum, which remain misunderstood and underrepresented, I supplement my personal reflections with archival research, participant observations, and five semi-structured interviews with autistic female and/or non-binary adults. Findings indicate participants are able to better embrace their autistic self and construct a positive strength-based identity as they gain access to affirmation and acknowledgement, education and empowerment, and inclusion and connection in a space of shared understanding and intersectionality through their engagement with the Autism Society of Central Virginia. I also conclude that professional skill-building opportunities in neuroinclusive environments should be expanded to reflect participants' challenges in the transition-to-adulthood process.

Sarah Elliott

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Sarah Elliott

Abstract Name: Improving Social Interactions by Reducing Screen Time and Promoting Physical Activity

Over time Americans have been spending more time looking at a screen which has created a sense of division in society. This division has taken a toll on mental illness, with over 50 million (20%) Americans being affected. Society is also seeing a drastic rise in obesity and other health-related problems due to the time spent looking at screens. It is shown that diet, exercise, and mental stimulation can help solve these issues. The purpose of this study is to explore how to create an engaging environment that encourages people to connect with others through board games and lawn games. An online survey was conducted using random and convenient samples to gain insight, knowledge, and data on how people spend their time and interact with different activities. Responses indicated that 32.7% of participants preferred lawn games, and 67.3% preferred board games. The overall space planning reflects this data by having a larger board game area and a smaller lawn game area for users. Studies also indicated that board games have been shown to increase brain function by stimulating parts of the brain that are responsible for memory formation and complex thought processes for all ages. Similarly, lawn games have several benefits, such as fostering relationships with friends and family, creating memories, and having fun in a social setting. These games can help promote physical activity by having individuals retrieve game equipment and physically participate in the games, therefore, increasing the heart rate and improving cardiovascular health. In conclusion, mental and physical well-being has been a concern in America, and this activity café can provide an environment that allows people to grow and improve their well-being.

Owen Ellis

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Owen Ellis

Abstract Name: Shifting Trends: An Analysis of Post-Cold War Military Expenditures (1992-2020)

Since the fall of the Soviet Union, military expenditures globally have seen major changes, from the status of the U.S. as the sole dominant power to the rise of China more recently. Previous research on the topic of military expenditure has looked at the significance of specific variables such as GDP and conflict on military expenditure or the effect of military expenditure on another variable such as economic growth. In this project, I look at shifts in military expenditure from 1992-2020 and the causes of military expenditure for specific countries during this time. I find that global military expenditure has shifted from primarily Western nations in Europe and the United States to Asian nations such as China and India. This is primarily due to stagnation in European military expenditure and a steady and continued rise in spending in Asia. In addition, I analyze military expenditure for specific nations including the United States, where I develop regression models that predict factors that shape military expenditures in these nations.

Raeann Ellison

MD - Morgan State University

Discipline: Health and Human Services

Authors:
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#2 Gaylord Brooks
#3 Glenda Lindsey

Abstract Name: Assessing Racialized Sexual Violent Experiences and Stress Biomarkers in Black Transwomen

An estimated 1.5 million individuals in the United States are transgenders, and 40% belong to a minority racial or ethnic group. Members of minority and marginalized demographic groups experience sexual victimization more than twice the rate of majority or dominant demographic group members. One's hypothesis is that race and gender uniquely intersect to influence the victim's experiences, attitudes, perceptions, and resilience. Sexual violence against African American transwomen, for example, is intersectional because it includes both the racial and gender identity of the victims. The hypothesis underpinning this study is that race and gender uniquely intersect, shaping the experiences, attitudes, perceptions, and resilience of victims. Due to the scarcity of instruments that account for intersectional identities, the researcher proposes to develop and validate a novel questionnaire for uncovering factors related to the intersectionality of race, gender, and related trauma due to sexual victimization. Many studies account for race-based and gender-based victimization as distinct constructs, but specific demographic groups, such as Black transwomen are understudied. The methodologies are often insufficient due to sampling bias or lack of adequate survey instruments. This double victimization, in turn, might increase the physiological and psychological stress burdens for this marginalized population.Furthermore, perceptions about victimization might also influence stress hormones like cortisol or immune reactivity.However, these conjectures require further study.

Willem Ells

DC - American University

Discipline: Social Sciences

Authors:
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Abstract Name: Behind the Wave: Conservative Advocacy Groups and the Diffusion of State-Level Anti-LGBTQ+ Legislation

Between January and May 2023, conservative lawmakers introduced more than 500 anti-LGBTQ+ bills in state legislatures. Public support for LGBTQ+ individuals rose consistently through the first part of the 21st century until a national coalition of conservative organizations launched a campaign in 2015 for state "bathroom bills" that sought to prevent transgender students from using bathrooms that align with their gender identities. After this campaign largely failed, there was less anti-LGBTQ+ action in state legislatures, until 2020. The rapid passage of anti-LGBTQ+ laws since 2020, and the similarities between the bills, cannot be explained by a traditional policy diffusion framework. Instead, I argue that the spread of these laws follows the pattern of anti-trans bathroom laws and same-sex marriage bans. That is, the expeditious adoption

of recent anti-LGBTQ+ legislation is the result of a coordinated campaign by conservative advocacy groups. In this paper, I show that these groups have launched concerted lobbying and organizing efforts. Through quantitative textual analysis, I show that the text of most anti-LGBTQ+ laws passed by state legislatures is closely related. I argue that this is because of the advocacy movement—and that state legislators may have copied text provided by conservative organizations or other states. Specifically, I use network software to spatially map bill text similarity, analyzing clusters of high correlation and connecting them to concrete advocate action. Further, applying event history analysis, I demonstrate that the passage of anti-LGBTQ+ laws over time is associated with the rise in advocacy by a coalition of conservative groups at statistically significant levels. This paper departs from traditional explanations of policy diffusion, adding evidence to recent work by other researchers showing a growing trend where state lawmakers pass bills because of national advocacy campaigns rather than broad public support.

Farida Elminiawy

EGY - The American University in Cairo

Discipline: Social Sciences

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Abstract Name: Factors Affecting the Resilience of Unhealthy Relationship Dynamics From Childhood into Adulthood

AbstractThis study aims to investigate the effects of parental abuse and self-verification on the levels of emotional abuse in intimate relationships in adulthood within an Egyptian context. The study includes a total of 40 students from Egyptian private universities ages 18 to 24. Participants completed a self-report questionnaire via Qualtrics which explores three primary subtopics; namely, parental abuse, self-verification and emotional abuse in intimate relationships. Linear regression models are utilized for data analysis to explore correlations between study variables. Results indicate that there is a significant positive correlation between parental abuse in childhood and adult emotional abuse from a significant other. Meanwhile, there is no significant relationship between self-verification and emotional abuse in adulthood. Limitations and implications of the findings are discussed.

Jorjia Elmore

AL - University of South Alabama

Discipline: Natural and Physical Sciences

Authors:
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#3 Darrien Caudle
#4 Jason Strickland

Abstract Name: Interspecific Venom Variation Between Two Shades of Aphonopelma Tarantulas

Interspecific phenotypic variation is a common occurrence throughout the animal kingdom and evolves in response to differential selection pressures between species. Species-based differences occur frequently in venomous species including arachnids, and is often due to differences in gene presence/absence. These differences tend to be dramatic in closely related species. The North American tarantulas (Theraphosidae: Aphonopelma), have undergone recent taxonomic changes which identified several lineages of previously undescribed species. To test for interspecific venom variation in two species, we converted mRNA to cDNA from the venom gland and sequenced the RNA-seq libraries on an Illumina NovaSeq 6000. Using our data, we generated the first venom gland transcriptome for A. hentzi (Texas Brown Tarantula) and A. anax (Texas Tan Tarantula). By comparing annotated transcriptomes between species we found evidence of interspecific differences. Specifically, we found similar protein families between the species but differences in expression and sequence that may be leading to the overall differences in their venom transcriptome profiles. Examining interspecific venom variation offers a window into the evolution and ecology of both species, and provides data for a poorly studied family of organisms.

Merna Elnesr

MA - Bridgewater State University

Discipline: Visual and Performing Arts

Authors:
#1 Merna Elnesr
#2 Preston Saunders

Abstract Name: Beyond Simple: Exploring Intricate Jewelry Techniques

Seemingly simple yet intricate jewelry pieces were what sparked my research passion. However, my love for delicate and detailed jewelry collided with the realization that crafting such elegance posed challenges. Undeterred, I embarked on the journey to explore and answer how simple and complex can be merged into one entity. This project aimed to explore and create intricate jewelry using diverse techniques. My journey began with wax casting, where I refined my wax carving skills by meticulously crafting fine, detailed rings. Upon completing the casting process, I started learning more about filigree, what it was, and its techniques. Simultaneously, I forged jump rings and chains to attach them to my filigree and casting creations. Expanding further, I ventured into designing various chain types, bringing beautiful bracelets and necklaces to life. Toward the conclusion of my summer-long project, I ended up creating thirteen rings, two pendants, five earrings, three bracelets, and a complete jewelry set. These outcomes stimulated me to bring life into more creations as my journey advances. I am currently working on an honors thesis project, delving into the intricacies of gold plating. I aim to apply the skills acquired from this research to yet another honors thesis project. Throughout this journey, I faced notable challenges, particularly in mastering filigree and fine-chain building techniques. However, these challenges inspired me to craft jewelry pieces that are a reflection of my hard work. This experience has not only unlocked new skills in precision and patience but also advanced my existing ones in creativity and handcraftsmanship.

Mysara Elsayed

NJ - Kean University

Discipline: Mathematics and Computer Science

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Abstract Name: Utilizing Optical Character Recognition for Handwritten Arabic Alphabet Learning

The emergence of interactive language learning tools like Duolingo or Rosetta Stone has revolutionized the process of learning new languages, making it easier than ever before. While these tools excel in teaching spoken and basic written language skills, they face limitations when it comes to recognizing and deciphering handwritten texts. This challenge creates a divide between people's willingness to engage in handwritten language learning, particularly in alphabets like Arabic. The different styles of handwriting, strokes, and character shapes pose difficulties for language learners, often discouraging them from continued learning. To address this gap, this project is underway to develop a program utilizing optical character recognition (OCR) techniques to assist language learners in deciphering and distinguishing letters from photos of handwritten texts, specifically focusing on the Arabic language. Utilizing OCR unconventionally and breaking away from traditional translation applications, this project breaks down individual characters from handwritten Arabic

texts, enhancing readability for users. To train the application on handwritten Arabic characters, the Arabic Handwritten Characters Dataset (AHCD) and the Hijja dataset were employed. The chosen approach involves exploring various convolutional neural network (CNN) training models, assessing dataset compatibility, and optimizing accuracy. TensorFlow was selected as the preferred model for its accuracy and effectiveness in recognizing individual characters as separate entities. Future steps involve implementing TensorFlow training into an accessible OCR learning tool, offering a dynamic style of learning for recognizing individual letters from word compositions. Beyond language learning, the tool's capabilities can extend to diverse applications. For instance, it could be employed in product design to automatically break down 3D objects into exploded 2D views, potentially streamlining the design process, offering benefits to design professionals and contributing to broader educational initiatives. The project signifies a step towards unlocking the versatile potential of OCR beyond its traditional applications.

Joshua T. Elston

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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#2 Erin E. Richardson
#3 Allison P. Anderson

Abstract Name: Navigating High-Dimensional Data for Stable Cognitive State Modeling in Human-Autonomy Teams

Developing autonomous systems that can predict the cognitive state of their human ‘teammate(s)’ is important for facilitating effective human-autonomy teaming in many settings, such as on deep space missions. Predictive models can use physiological features derived from electrocardiogram, respiration, electrodermal activity, and eye-tracking data to predict an individual’s trust, workload, and situation awareness (TWSA). A core challenge of using physiological signals to monitor cognitive states is that the large number of candidate features able to be derived from these signals results in high-dimensional data. Current methods of down-selecting features often result in overfit models or unstable feature sets. Alternative dimensionality reduction methods must be analyzed to define physiological-based model-building processes that achieve both stability and high predictive performance. This research compares a variety of dimensionality reduction approaches, including both supervised and unsupervised methods, which include or exclude the desired TWSA variable in their reduction processes. Physiological data was collected from 10 participants while they completed a habitat monitoring task. Each participant completed 15 trials, yielding a total of 150 observations. Physiological features were extracted from the data collected during the task. Comparisons are made regarding the predictive accuracy and stability of the feature sets selected by stepwise, principal component analysis, partial least squares, and LASSO methods. Strong internal validation is performed through bootstrapping. Identifying dimensionality reduction methods that are both stable and yield predictive accuracy is critical to providing consistent, useful solutions when working with high-dimensional data. This work can also be expanded to analyze different types of datasets across other fields, as different combinations of dimensionality reduction algorithms may achieve better performance for other datasets.

Ariana Enciso

WI - University of Wisconsin-Stout

Discipline: Social Sciences

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Abstract Name: Is Stout A Food Desert?

This study examines the connection between food accessibility, transportation, and student perceptions at the University of Wisconsin-Stout to determine if it qualifies as a food desert. Using a mixed-methods approach, including a survey and an interview with a local food pantry manager, the study explores housing arrangements and transportation modes as independent variables and perceived abundance of food deserts, food pricing, and student satisfaction with fruits and vegetables as dependent variables. The hypothesis is the belief of Stout is a food desert because of the on-campus stores selection of food is moderately nutritious is severely lacking in options. Contrary to the initial hypothesis, the results reveal no statistically significant evidence supporting the anticipated links. The findings underscore the complexity of factors influencing food accessibility, pricing, and satisfaction, challenging the simplicity of the basic hypothesis. While the study does not provide evidence to classify Stout as a food desert based on on-campus food options, it emphasizes the need for continued research and refined methodologies to understand students' nutritional landscapes and suggests exploring interventions and policies to address the identified complexities.

Meirola Endraws

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

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Abstract Name: Biological Evaluation of Novel Tubulin Inhibitors for Treatment of Cancer

Cancer is a leading cause of death worldwide. Cancer cells are defined by uncontrolled and abnormal cell division. Therefore, inhibiting cancer cell division is a validated anti-cancer approach clinically. Both cell structure and cell division depend on active microtubule dynamics, which is a process in which alpha and beta subunits of tubulin polymerize and depolymerize. Small molecule tubulin inhibitors are used in chemotherapy cocktails to treat various cancers, however current tubulin inhibitors are toxic and cancer cell resistance can occur. To overcome these issues, we have been part of a research project to discover novel tubulin inhibitors that target the colchicine binding site on the beta subunit. Paneling of these novel small molecules that are potential tubulin inhibitors reveals that out of those tested, two compounds show the potential to inhibit tubulin polymerization directly and cause effects consistent with tubulin inhibition in cancer cell lines. The data from this research will help to understand which chemical structures function best to impair microtubule dynamics. Design and testing tubulin inhibitors like these may be able to overcome issues with those currently in the clinic and ultimately could be developed to aid patients in their fight against cancer.

Megan Endries

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

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Abstract Name: Three-State Donor-Acceptor Biaryl Lactone Molecular Switches with Enhanced Solubility

Our research is focused on the synthesis of a bridged biphenyl molecule with an amino donor and tetraethylene glycol solubilizing groups (TEG). This three-state biphenyl molecule, due to its chemical properties, will find applications as nanoscale fluorescent sensors and molecular mechanical devices. Biphenyl molecules have known dihedral angles, leading to differing optical and conducting properties when manipulated. Utilizing a lactone-bridge, we can force the molecule into and out of planarity. At low pH, the molecule takes a planar conformation (“ON”), while at high pH it's non-planar (“OFF”). Previous research has shown similar two-state molecules’ effectiveness at readily switching conformations when exposed to different chemical environments. Prior research combined cyano and nitro acceptors with differing amino donors within biphenyl molecules to enhance optical properties and pH sensitivity. This pH sensitivity will be more precise with the addition of a third “OFF” state. At low pH, the amino group should become protonated, leading to the second “OFF” state and giving a narrow “ON” state. The “ON” state results in visible color differences from the “OFF” states of the molecule. These characteristics improve the usefulness of these molecules as pH sensors. Our research aims to synthesize a biphenyl molecule with a cyano acceptor, and TEGs. Prior research shows nitrile fluoresces better than its nitro counterpart. Long TEGs will increase the solubility of the molecule, enhancing the practicality of the planar biphenyl molecule as a dye. We have successfully synthesized one of our target molecules, a benzene ring with an iodine and a para-TEG group. We will be continuing our work to synthesize a three-state donor-acceptor biaryl lactone molecular switch with a cyano acceptor and TEGs, enhancing solubility and fluorescence.

Mia Eng

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
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Abstract Name: Impact of Personal Narrative on Victim Empathy

Throughout the United States, Asian Americans face many struggles, including discrimination, stereotypes, and violence. The current study was conducted to assess the impact of hearing a personal narrative on readers’ empathy for hate crimes against Asian Americans. Previous literature does not address how responses to hearing stories may differ based on gender. Thus, 27 Asian Americans were studied through a convenience sample, 12 of which were men and 15 of which were women, to see if gender also played a role in empathy. Random assignment was used to expose half of the participants to a personal narrative. The personal narrative described each researcher’s empathy for the hate crime victims. Data analysis revealed no interaction between gender and personal narrative. Asian American women exposed to the personal narrative did not have different empathy ratings compared to the women who were not exposed to the narrative. Asian American men had decreased empathy scores when exposed to the personal narrative versus those not exposed. However, women reported statistically higher empathy than men in the study for both experimental and control conditions.

Peter Engle

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
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Abstract Name: Digital Display and the Evolution of the Icon

The personal computer has changed the way that we live our daily lives, though it is an invention we have come to take for granted. This paper explores the way that the personal computer came to be something that is accessible to people from all walks of life and intuitive enough that people can instantly navigate and decipher tools from each other. The design of the interface of the personal computer is intentional down to each and every pixel. People like Susan Kare played a massive role in converting what we knew about icons into their digital equivalent, forging a new way to interact with the digital interface. The adaptation of icons into the digital world has played a pivotal role in creating an inclusive and cohesive space stitched together with intentional design. Icons now play a massive role in our understanding of user interface and experience design, connecting people around the world by limiting language barriers.

Peter Engle

OK - University of Central Oklahoma

Discipline: Humanities

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Abstract Name: Disconnection of Hindu Symbology & Culture From Its Origin Due to Cultural Appropriation

Due to the vast amount of information at the fingertips of the world the responsibility to do research and use cultures iconography respectfully grows. We know there have been cases of cultural appropriation leading to defamation of certain people and symbols in the past, but it goes much deeper than just those that make it to the news over lawsuits. The world is slowly becoming desensitized to its rich history of culture and storytelling as ancient symbols become nothing more than marketing material and product branding. The people (art directors, designers, business owners, etc.) in charge of these situations whether that be in marketing, movie-making, graphic design, book-writing, or otherwise, now have to be conscious of the pains they inflict on cultures when they use imagery that has such deep roots. While Coca-Cola using the swastika lovingly in an ad campaign may not have directly led to the Nazi Regime picking it up as their emblem, the actions that we take as a world culture have consequences, unseen, that may ripple throughout the foreseeable future. While the swastika may already be banned in many countries, we have a duty to do due diligence to make sure that this doesn't continue to disconnect ancient cultures any further from their origins than they already have been.

William Ennis

CA - University of the Pacific

Discipline: Humanities

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#1 William Ennis

Abstract Name: The CIA's Dark Arts: The Strategy of Tension and Stay-Behind Units

The United States has a long and storied history of cooperation with bad actors with the goal of "sowing Democracy," "protecting national security interests," and "thwarting the rise of authoritarian governments." Through the recruitment of Nazi veterans, the Italian Mafia (La Cosa Nostra), neo-fascists, and the Roman Catholic Church, the CIA has been able to orchestrate key events globally in the war against communism launched just after World War II. Due to the threat of its Communist Party and its strategic location adjacent to the Iron Curtain, Italy was ground zero for the collaboration of all these forces, through the creation of stay-behind units, rampant rigging of elections, and a number of false flag operations all meant to keep the Italian Communist Party from ever taking power. Major funding for these endeavors came from the smuggling of heroin into American jazz clubs, a practice that became a primary funding blueprint for future CIA-trained "freedom fighters" supporting American national interests.

Jamie Enright

MN - Hamline University

Discipline: Natural and Physical Sciences

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#2 Jodi Goldberg

Abstract Name: Evaluating the Impacts of 6-gingerol on the Metabolic Activity of HCT-116 and DLD-1 Colon Cancer Cell Lines

About one third of Americans are diagnosed with some type of cancer in their lifetime. Numerous studies are looking into anti-inflammatory natural therapies that inhibit the growth of different cancers to make treatments affordable, safer, and more accessible. The purpose of this study is to see if ginger can be used as a natural therapy in colon cancer treatment and how different concentrations of ginger affect the metabolic activity of colon cancer cells. In this study, I investigated the effects of 6-gingerol, a pungent compound in ginger, on the HCT-116 and DLD-1 colon cancer cell lines. Previous scholarship has looked into the relationship between 6-gingerol and colon cancer cell lines using different compounds for testing cell activity. These studies have also looked more specifically into the mechanisms involved in the inhibition of cancer cell growth. In this study, the cancer cell lines were treated in vitro with differing concentrations of 6-gingerol to examine if there is a connection between 6-gingerol concentration and the inhibition of cancer cell metabolic function using an MTT assay. Healthy cells metabolize MTT, a yellow compound, to formazan, a purple compound. The light absorbance of these colored compounds can be measured spectrophotometrically which can then be interpreted to see the change in metabolic activity of the cancer cells. In this in vitro study, we found that 6-gingerol inhibits most of the metabolic activity of both HCT-116 cell lines and DLD-1 cell lines at concentrations of 600μM to 800μM of 6-gingerol. These findings show that 6-gingerol has an impact in decreasing the activity of colon cancer cells.

Faith Faulyn Enriquez

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

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#4 Jennifer Martiny

Abstract Name: The Role of pH Preference in Shaping Soil Microbial Communities: A Study on an Abundant Soil Bacteria

Microorganisms are fundamental for ecosystem processes like carbon and nutrient cycling in soil. Environmental changes affect the composition of soil microbial communities and thereby, their contributions to ecosystem processes. However, it still remains difficult to predict which soil microorganisms will respond to environmental changes. A plausible solution is to understand how traits contribute to their community composition and functioning. By analyzing the traits and phylogeny of Curtobacterium strains, an abundant soil bacterium, we can gain insight into how environmental change affects soil microbial composition. It has been shown that soil pH is a main driver of community composition, therefore pH preference is a relevant trait to understand community responses. We isolated 271 Curtobacterium strains by collecting grass or dominant flora litter at 24 different locations managed by the University of California Natural Reserve System. We identified Curtobacterium strains by genomic sequencing and classified them into clades and subclades on a phylogenetic tree. To test for pH preference, we performed growth curves with selected strains representing all the clades in the phylogeny. Strains were grown in minimal media with pH ranges from 3.2 to 10.1 in 0.3 increments. We calculated the maximum growth rate at each pH level to obtain a pH performance curve. We then performed mantel correlation tests between phenotypic distance (pH performance) and genetic distance to assess whether phylogenetic similarity can predict the pH performance of the strains. Our results show an overall correlation of ($r = 0.24$,$p < 0.05$) and this correlation is higher when comparing very closely related strains ($r = 0.44$, $p < 0.05$). Overall our results suggest that pH performance is a trait that is conserved at the clade level.

Cassandra Erickson

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

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Abstract Name: Intertidal Temperature Variation and Mussel Physiology

Mussels of the genus Mytilus are biological engineers, creating mussel beds in intertidal habitats that increase biodiversity. Mussels experience daily tidal fluctuations that expose them to abiotic stressors (heat, changes in salinity) and their tolerance to stress can inform us regarding ecosystem health. However, climate change (CC) is predicted to increase seawater temperature and decrease salinity, which may have detrimental effects on coastal marine animals, like mussels. Therefore, the goal of our study was to determine field thermal and salinity conditions experienced by mussels at various sites and use these data to collaboratively develop a laboratory heat ramping device that exposes mussels to simulated stress allowing us to study the effect of CC on mussel physiology. We deployed temperature and conductivity loggers at four sites (Ballona Creek, Marina del Rey, Pacific Palisades, Malibu) in Los Angeles County at three intertidal heights (high, mid, low) and within tide pools in August 2023. Loggers continuously collected data every 15-30 min and logger data was offloaded every few weeks. We found that minimum and mean seawater temperatures were similar across all sites but maximum temperature and standard deviation varied by site. The highest temperature

recorded (32.15ºC) was measured during a mid-day low tide. Salinity within Ballona Creek had the greatest variation compared to Marina del Rey, with the lowest salinity recorded being 0 ppt and the highest at 37 ppt. Thus, our study shows that there are microhabitat variations in abiotic conditions within the sites we surveyed. Our study identified changes in environmental conditions experienced by mussels at various sites that we will use as experimental parameters in the development of our mussel heat ramping device.

Brooke Erickson

MN - University of Minnesota - Rochester

Discipline: Social Sciences

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#4 Abraham Ayebo

Abstract Name: Exploration of Reluctance to Speak about Controversial Topics on a Small College Campus

Controversial topics are important parts of discussion in many college classrooms, and due to the nature of these topics, students may feel reluctant to speak freely about them. Today, students feel polarized as a reflection of the world outside academic settings. This study aims to explore whether students at a small college follow the national trend of being reluctant to speak about controversial topics and, if so, what factors may influence their reluctance. The Campus Expression Survey is a nationally distributed survey that asks students if they are reluctant to speak about five controversial topics. The sample consists of 233 UMR undergraduate students. We hypothesize that students who are reluctant to speak about controversial topics are more concerned that peers will criticize their views as offensive than they are that their professors will criticize them. A McNemar's Chi-Square test was used to analyze the results of the survey to determine if students were more concerned about criticisms from their peers or criticisms from their professors. The results indicate that students were more concerned about their peers than about their professors. This may be due to the likelihood that peers influence behavior more than professors and how social media affects in-person behaviors. We also used a t-test to examine whether the amount of topics students are reluctant to speak about affects their GPA, and found that the average GPA of students who are reluctant about a moderate number of topics is higher than those reluctant about an extreme number. These results may highlight areas in classroom structure that may be targets for attempting to decrease reluctance to speak.

Novalee Erickson

CA - California State University - San Bernardino

Discipline: Natural and Physical Sciences

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Abstract Name: Generation and characterization of feline macrophage cell lines to identify host factors that promote lethal outcomes from feline coronavirus.

Feline Coronavirus infects epithelial cells of the intestine as feline enteric coronavirus (FECV), leading to mild symptoms. During infection the virus can switch target cells and infect macrophages as feline infectious peritonitis virus (FIPV), causing a systemic and often lethal disease. The factors responsible for conversion from FECV to FIPV are not well understood. In domestic cats the switch from FECV to FIPV occurs in 5-10% of cases, whereas exposure of cheetahs to FCoV at U.S. Zoos resulted in 90% exhibiting symptoms of FIPV. While domestic cats are genetically diverse, cheetahs lack genetic diversity. We aim to investigate the increased rate of FECV to FIPV conversion in cheetahs compared to domestic cats. However, tools to study FCoV infection in vitro are lacking, with just one feline macrophage cell line available from the American Tissue Culture Collection (ATCC). We generated a new domestic feline macrophage cell line, termed FMAC, using single integration lentivirus to integrate an immortalizing gene into isolated primary macrophages. Here we show this cell line is easy to propagate, displays macrophage characteristics, and is susceptible to infection with FIPV isolate of FCoV. While infection of FMAC with FIPV results in little cytopathic effect, infectious virus is produced. We are currently analyzing infection of FMAC with FECV isolate of FCoV. Next we intend to isolate RNA for RNA-seq transcriptome analysis to compare host antiviral gene expression in response to FIPV and FECV in FMAC and a feline kidney epithelial cell line, CRFK (from ATCC). Our laboratory aims to generate additional domestic feline macrophage cell lines and at least one cheetah macrophage cell line to identify host genetic factors that correlate with differences in FCoV replication. We will deposit FMAC and any additional cell lines generated with ATCC to allow researchers access and advance studies of feline pathogens.

Bettina Ernst

CA - Loyola Marymount University

Discipline: Interdisciplinary Studies

Authors:
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Abstract Name: Queer Gender and Sexuality Versus Traditional Systems of Power in Popular Anime Series

How does fluid gender and sexuality in Ouran High School Host Club challenge or affirm traditional power structures? Since its emergence in the late 20th century, anime, or Japanese animation, has grown in increasing global popularity, with strong ties to consumerism and fan culture. Our work integrates television studies, animation studies, anime studies, and queer studies to examine the popular television series, Ouran High School Host Club. Using existing literature on Japanese culture, particularly the club and educational system, as well as queer concepts such as Camp and queer temporality, we offer a close textual analysis of several episodes of Ouran High School Host Club. In our work, we evaluate the formal elements of animation as well as common anime motifs in order to highlight genre and medium specific conventions. Our paper examines how the host club space constructs queerness by obscuring heterosexuality and gender conformance through costume and a play with sensuality and eroticism. We focus on sequences where outside characters, who conform to the traditional power structures, interact with the queer space of the host club. Through this assessment, we observe how the club either transforms or defeats its critics. We also note how the characters use the host club space to help others, and themselves. Through the adaptive functionality of the club space, the club members resist the pressures to grow up and integrate into more rigid cultural structures. Through our examination of the conflict between queerness and the systems of power in Ouran High School Host Club, we indicate further questions for analyzing other anime works.

Tianna Espe

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Discipline: Natural and Physical Sciences

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Abstract Name: Role of L-2-hydroxyglutarate (L-2HG) in t(4;14) positive myeloma

Although an oncometabolite D-2-hydroxyglutarate (D-2HG) produced by isocitrate dehydrogenase (IDH) mutants has been extensively studied in cancer, the role of its enantiomer L-2HG remains elusive. Our previous untargeted metabolomics study of bone marrow supernatants from patients with monoclonal gammopathy of undetermined significance (MGUS), which is a pre-malignant condition, and multiple myeloma (MM) identified 2HG as a biomarker of myeloma disease progression. However, it remains unclear how 2HG contributes to myeloma progression. Here we show that oncogenic constitutively active fibroblast growth factor receptor 3 (FGFR3) directly phosphorylates LDHA at Y10, which activates its non-canonical activity to produce L-2HG. We also found that the FGFR kinase inhibitor TKI258 (Dovitinib) decreased LDHA Y 10 phosphorylation, LDHA levels, L-2HG levels, and proliferation of t(4;14) positive myeloma (t(4;14)+) cells, in which FGFR3 is overactivated. Interestingly, TKI258-induced defects in myeloma cell proliferation were rescued by octyl-L-2HG and LDHA knockout decreased L-2HG levels and proliferation of t(4;14)+ cells. Thus, our data strongly supports a model in which increased L-2HG production from LDHA might increase myeloma growth in the presence of overactivated FGFR3 signaling. I recently found a novel LDHA mutant that selectively inhibits the canonical LDHA activity while activating the non-canonical activity. By using this mutant, we will address the hypothesis that LDHA Y10 phosphorylation coordinates the canonical and non-canonical activity of LDHA, thereby regulating t(4;14)+ myeloma growth.

Emely Espino Bardales

CA - California State University - Fullerton

Discipline: Social Sciences

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Abstract Name: Practitioners' Experiences Delivering Social Services for Latinx Families

Introduction. Children grow and develop, with people, and communities being their most significant influences (Hayes et al., 2023). Studies show that responsibility for the care and education of children are divided between family and early childhood education settings (Sadownik and Jevtić, 2023). However, there is limited research on practitioners' experiences serving Latinx families. Using Bronfenbrenner's Ecological Model, this study explores: 1) What supports practitioners need to better address Latinx parents' concerns and challenges through programs and services? 2) What are practitioners doing to culturally align services for Latinx families? Participants & Methods. 37 interviews were conducted in English & Spanish with practitioners. Practitioners included teachers, administrators, community liaisons,program coordinators, and community-based organizations. The interviews lasted 30 minutes to an hour. Audio recordings of the interviews were transcribed in their original language and will be coded in Nvivo. Findings. Preliminary findings indicate that practitioners thought multiple programs were working well for families. For practitioners to be able to effectively provide these services, they needed resources such as additional staff, funding, space, and more outreach events to connect with the community. Additionally, practitioners attempted to culturally align social services with Latinx families by offering English learning classes for

parents to facilitate navigating services, and surveys to understand parents' cultural background. Discussion. Findings suggest that to provide adequate support for Latinx families, we need to explore further how to best support that practitioners for them to effectively guide Latinx families in accessing resources to support their children's learning.

Mayra Espinoza

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Abstract Name: Assessing the Sublethal Impact of Glyphosate on Culex quinquefasciatus: Insights into Larval Development, Adult Emergence, and Oviposition Behavior

Glyphosate, a widely used herbicide, has been a subject of increasing concern due to its potential environmental impact. This study investigated the effects of glyphosate exposure on the developmental stages of Culex quinquefasciatus, a mosquito species of public health significance. Two distinct larval groups were employed, with one serving as the control exposed to tap water and the other as the treatment group, exposed to glyphosate solutions at concentrations of 0.1 and 1 mg/l. Daily data collection commenced from hatching to adult emergence, with a focus on larval and pupal development, adult emergence rate, adult morphometrics, e.g., wingspan and body length, oviposition rate and the egg viability. Statistical analyses revealed significant differences in larval and pupal counts between treatment and control groups, particularly on days 8 and 9, suggesting a critical impact of glyphosate on larval development during this period. Adult emergence showed no significant differences, but morphometric analysis indicated a reduction in adult size with an increase in glyphosate concentration. Oviposition and egg viability experiments displayed no significant differences. The triple-choice assay demonstrated no preference in oviposition medium selection. Overall, this study provides valuable insights into the sublethal effects of glyphosate on Culex quinquefasciatus, contributing to our understanding of the potential ecological consequences of glyphosate exposure on mosquito populations.

Mabel Espinoza

CA - University of California - Merced

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Social Life Cycle Assessment of Strawberry Production in California

California is the leading state of strawberry production, producing 90% of the U.S. strawberries. Harvesting

and processing of strawberries is highly labor intensive. With the ongoing effects of climate change in California, strawberry production will be more challenging. In order to keep up with strawberry demand, there has been the development of agriculture technology implementation. The primary goal of this research is to assess the social, positive and negative, impacts of strawberry production in California. California produces a diverse set of crops, making up a large percentage of the nation's food supply. Many underserved communities and laborers also reside and work in California's agricultural areas. We will utilize the Social Life Cycle Assessment methodology for workers and the three sub-categories of: Health and Safety, Fair Salary, and Working Hours. Under health and safety, we investigated the possible chemical exposures, such as Azoxystrobin and 1,3-Dichloropropene, and required personal protective equipment to assess health impacts. Further, we used CalOSHA and Workers' Compensation Insurance Rating Bureau data to evaluate the reported injuries. Workers' Compensation Insurance Rating Bureau was also specifically used to extract compensation rates. Higher impacts for health and safety were found in the planting and harvesting stages compared to packaging. Not all data was available by stage of strawberry production, and a more in-depth survey needs to be conducted. We have conducted two field visits to five strawberry producers to collect more information for the re-planting and harvest stages. Assessing strawberry production from cradle to gate, will allow us to thoroughly evaluate the social impacts to create collaborative solutions and sustainable practices such as mechanization.

Kobe Essien

IL - Quincy University

Discipline: Mathematics and Computer Science

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#2 Dustin Dupont
#3 Husam Ghazaleh
Dustin Dupont

Abstract Name: QUdar The Future Of Baseball Analytics

Baseball is one of the most popular sports across the entire world, with this being the case there are many different forms of analytics that are involved to constantly evolve the game. One of these metrics is velocity or how hard a player is throwing. This is currently measured by a device called a radar gun that is pointed at the ball to read the velocity. These guns are often very expensive and fragile and have little to no other reliable options. This is why we created QUdar, an application for iPhone that can read the velocity of a ball just by using the camera of the phone in order to fill this void. We used Unity in order to accomplish this task by making a program that breaks down a video frame by frame and uses Artificial Intelligence (AI) Technology in order to read the velocity of the ball. Along with making the program to read the velocity we have also made the application user-friendly and displayed the results in a way that would be helpful for a coach or a player. Our poster shows some of the process of application and also shows why our application is more feasible than using and buying an actual radar gun.

Chauncey Evangelista

CA - University of California - Irvine

Discipline: Health and Human Services

Authors:
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#3 Stephanie Hachey
#4 Christopher Hughes

Abstract Name: Investigating colorectal cancer tumor heterogeneity and crosstalk within a vascularized niche

Colorectal cancer (CRC) is one of the most common and aggressive gastrointestinal tract malignancies and has the second-highest mortality rate across all cancers. Understanding tumor and microenvironment cell-cell communication is pivotal to comprehending tumor progression. Previously, the Hughes Lab developed a three-dimensional vascularized micro-tumor (VMT) recapitulating the complex human tumor microenvironment by including perfused vasculature, cancer cell lines, and stroma within a transparent organ-on-a-chip microfluidic device. By conducting scRNA sequencing on control microfluidic devices and two CRC VMTs using the TP53 and KRAS mutant SW480 and the KRAS mutant metastatic HCT116, we hypothesized that tumor heterogeneity alters cell-cell communication, driving tumor progression. We robustly integrated the dataset through numerous techniques, such as scMC, Seurat V3, and Harmony, to confirm changes in cell populations induced by the tumor and to characterize tumor heterogeneity. In doing so, we identified a unique tumor population. To identify specific ligand-receptor interactions unique to the VMTs, cell-cell communication was performed. Analysis revealed signaling from the tumor to the fibroblasts via receptors CD44/CD74. Additionally, intratumor signaling showed upregulation of Wnt and FGF signaling pathways through FGF2/18-FGFR1/4. Importantly, these pathways aid in cancer metastasis, immune evasion and growth. As 90% of the anticancer drugs developed fail to get FDA approval despite showcasing promising preclinical results, this data may bring light to understanding cancer heterogeneity in-depth and aid with the future development of immunotherapies and drug screening to reduce mortality rate.

Katelyn Evans

PA - Slippery Rock University of Pennsylvania

Discipline: Social Sciences

Authors:
#1 Katelyn Evans

Abstract Name: It’s Not All in Your Head: The Autonomic Nervous System’s Effect on Dance Performance

The autonomic nervous system is a section of the peripheral nervous system that controls the internal organs and involuntary bodily functions. The autonomic nervous system activates the “fight or flight” response within the body which can have adverse effects on performance and works to return the body to a state of homeostasis after responding to stressful stimuli. Any stressful situation that the body detects as a threat can trigger the autonomic nervous system, including fears surrounding embarrassment, social rejection, or occupational failure. This fear is often enough to trigger the autonomic nervous system and negatively affect performance, especially in dancers. The autonomic nervous system can drastically affect dancers on performance day through a multitude of physical symptoms due to the immense amount of stress and pressure dancers place on themselves during performances. While the autonomic nervous system can present symptoms that make performance difficult, with the right tools and techniques, dancers can view performances in a positive manner to lessen their symptoms on performance day. This research was supported by articles surrounding behavioral neuroscience, sports psychology, and dance science with sources including An Introduction to Brain and Behavior by Bryan Kolb and Ian Q. Whishaw.

Hailie Evans

WI - University of Wisconsin-Superior

Discipline: Humanities

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#1 Hailie Evans

Abstract Name: “The Real Dorian”: Oscar Wilde’s The Picture of Dorian Gray and Social Networking Culture Today

Social networking sites (SNS) today allow people to suspend and edit their world at the click of a finger. The images we create and alter become a form of autobiography—a life story in which we aim to present ourselves in a particular light that eventually becomes our identity within society. Every period in history has certain physical characteristics that are mutually understood to signify specific personality traits. In the Victorian period, this was true in life as well as in literature. The line between life and literature is a border that Oscar Wilde masterfully blurs in his timeless depiction of human behavior in The Picture of Dorian Gray as he creates the world of Dorian Gray—a world of influencers and the influenced. My project is a literary analysis in which I juxtapose Wilde’s novel The Picture of Dorian Gray with today’s social networking culture through a contemporary lens of social comparison theory and cognitive dissonance to demonstrate the Victorian novel’s timeless themes of influence, image, and perception. In my project, I engage with previous scholarship addressing the Victorian Era, the history of portraiture, doubles in literature, life writing on SNS, and recent studies on social comparison and cognitive dissonance as they relate to SNS. I conclude that Wilde’s novel is still relevant today because his attention to human behavior correlates with the danger of losing oneself in our culture of fast-changing trends and glorified, manipulated life images.

Elizabeth Evans

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Evans
#2 Bridget Jacques-Fricke

Abstract Name: Setting Up and Using Electroporation to Knock Out Genes to Investigate Neural Crest Cell Migration

Neural crest cells are an embryonic stem cell population in vertebrates. They form in the neural tube but migrate during early stages of development and differentiate to form several different parts of the organism. Some of the derivatives of neural crest cells include skin pigment cells, craniofacial bone and cartilage, and the vast majority of the peripheral nervous system. Disruptions in neural crest development can result in birth defects like cleft lip and palate, neurofibromatosis, and familial dysautonomia. However, the mechanisms of neural crest formation and migration have not been fully described. In previous research, Dr. Jacques-Fricke identified 674 genes that could be potential regulators of neural crest cell development. Previous student researchers have described the expression patterns of candidate genes across neural crest development, however, this analysis has not determined functional relevance. My research was to establish a functioning electroporation system that allows us to knock out genes to examine their function in neural crest cell migration. Electroporation works by injecting a chemical underneath an embryo and then using electricity to drive the chemical into the embryo. In our lab, we inject morpholinos, which are an antisense method of blocking specific gene expression. Unilateral injection of a morpholino, followed by reincubation, allows for a side by side comparison of neural crest development between control and knockdown conditions. The morpholinos that we use have a FITC tag, which allows visualization of morpholino targeting with fluorescence microscopy. I was able to detect effective electroporation, with FITC fluorescence appearing in the electroporated embryos. Future work will optimize targeting of morpholinos to areas of interest within the embryos. Because we can now electroporate and examine gene function in neural crest development, this

could lead to the identification of new targets for preventative measures for developmental disorders caused by aberrant neural crest cell migration.

Olivia Everett

UT - University of Utah

Discipline:

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Abstract Name: Using Natural Observation to Indicate Generalization of Social Skills in Children with Autism Through a Web Program

Developing social skills in school-aged children with cognitive disabilities is critical to classroom learning, forming peer relationships, and independence in adolescence and adulthood. This study is a continuation of research examining the efficiency of We Are Friends, an app designed to increase social skills in children who struggle behaviorally and emotionally. Results from the previous study showed that skills were greatly improved in participants when the program was used in conjunction with ongoing classroom instruction as opposed to the control group that received no intervention. However, the original results did not reflect whether targeted social skills were generalized outside contrived settings. The current study aims to expound on this to determine whether skill acquisition from the use of the program will generalize to unstructured settings, as well as if peer socialization will positively affect social skills in non-participant groups. Participants are 1st to 4th-grade students with cognitive disabilities. Natural observations of participants were conducted at outdoor recess to gather frequency data on specific social skills. This data is composited to determine whether participants improved socially after intervention compared to baseline. Results show that We Are Friends is effective in social skill acquisition and generalization among participants. These findings suggest that state educational systems should support and implement the program as an aid for teachers for the lasting impact it has on children who experience social impairments. Future research should be conducted to determine whether the program will generalize these skills outside of school to home and community settings.

Hassan Ezzeddine

MI - Wayne State University

Discipline: Social Sciences

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Abstract Name: Examining America's Socio-Spatial Problem by Comparing Oakland County with North Holland

This paper argues that America’s reliance on automobiles hinders mobility for all Americans. Census data from 2013 stated that 76.4% of Americans commuted to work alone by car. Aside from select metropolitan cities where public transit has long been established, Americans need a car to get around their environment. Sociological research details the distinct way that cars have implemented themselves into American society. Unlike countries that embrace public transportation, America’s system of car dependency isolates individuals,

convincing them that privacy outweighs the drawbacks that cars have to societal arrangement. Furthermore, it decreases social acceptance and physical space for transportation alternatives, like bicycles. This paper will compare Oakland County, Michigan to the Dutch province of North Holland. The two regions are similar in their geographic size and population but have contrasting perspectives of how mobility functions in society. Oakland County plays a vital role in the Detroit auto industry, while North Holland and its largest city, Amsterdam, are beacons of bicycle accessibility. This paper will assess how the two regions utilize space, specifically space for mobility, and how it impacts their respective social environments. Expected results from this investigation will show that the Dutch system allows more space for society to thrive and humans to interact, while the American system spreads individuals from their desired destinations and limits interactions. Although many Americans need their car to get around, an analysis into Dutch mobility will highlight that individuals do not need a car, if space for bicycles are provided. If bicycles are viable in a region like Oakland County, they are also viable in other regions across the United States. where they are currently not prevalent.

Jessica Faber

MT - Montana State University - Bozeman

Discipline: Engineering and Architecture

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Abstract Name: Using Surfactants on Microbially Induced Calcium Carbonate Precipitation to Promote Uniform Precipitation in Shale Fractures

Hydraulic fracturing is commonly used to crack impermeable shale reservoirs hundreds of meters below the ground to extract natural gas. Once the commercial gas production ends, the cracks in the subsurface may start to leak remaining greenhouse gases into the atmosphere. Microbially induced calcium carbonate precipitation (MICP) can be applied in this situation as a biological cement and is preferred over cement due to its low initial viscosity and ability to penetrate small cracks. Hydrocarbons trapped within the shale matrix is hydrophobic and may inhibit attachment of microbes to the shale during the MICP process. Sporocarcina pasteurii is commonly used for MICP, due to its ability to produce urease, a catalyst for urea hydrolysis. Using this process in the presence of urea and calcium, calcium carbonate precipitates. Addition of surfactants in shale microbe injection have previously been found to decrease the wettability contact angle of the shale, which also reduces the hydrophobicity. This study aims to use surfactants in the MICP process to promote uniform precipitation of calcium carbonate in shale fractures. Kinetic growth studies have been performed with S. pasteurii in the presence of surfactants including Tween-80, Cocamidopropyl betaine, Sodium dodecyl sulfate, Triton x-100 and Rhamnolipid. These studies revealed that all surfactants tested except Tween-80 and Rhamnolipid inhibit the growth of S. pasteurii. A flow through experiment in three shale columns will be performed next. In each column, S. pasteurii with either Tween-80, Rhamnolipid or no surfactant will be injected into the column at 1 mL/min along with urea and calcium. NMR imaging will be used periodically during the flow-through experiment to measure the total pore space in each of the columns. It is expected that cores in the presence of surfactant will seal both faster and more uniformly than the core without surfactants.

Pablo Fabregas Navas

FL - Florida Atlantic University

Discipline: Business and Entrepreneurship

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Abstract Name: Econ vs Eco - Analyzing Public Perspectives on the Interplay Between Economic Development and Environmental Protection

Over the past decade, there has been a noteworthy shift in the landscape of discussions surrounding climate change and pollution. A growing number of Americans are expressing heightened concern about the potential repercussions of human activities on the Earth's ecosystems, particularly in the context of economic pursuits. Interested by the work conducted by Dr. Gene M. Grossman and Dr. Alan B. Krueger in their studies focusing on the environmental impacts of the North American Trade Agreement (NAFTA), and curious about public opinions on the delicate balance between economic development and environmental protection, I conducted a sixteen-question survey created on survey monkey and published on Amazon Mechanical Turk, targeting a broad spectrum of the American populace. Analyzing the data from 200 survey participants using SPSS Statistics cross tabulations unveiled statistically significant correlations between demographics and their responses. Notably, female respondents demonstrated a heightened awareness of their individual impact in the larger-scale economy compared to their male counterparts. Overall, men leaned more towards favoring economic development, seemingly downplaying their individual role in the economy and worrying a lot less about its environmental effects. Turning to age, intriguing generational "gaps" surfaced in favor of environmentally conscious initiatives. Individuals aged 65 and over emerged as the most pro-environment group, standing in sharp contrast to the 18 to 29 and specially the 30 to 64 age groups, who leaned heavily towards favoring economic development. These findings paint a nuanced picture of how personal values, national interests, and societal priorities interact within the American landscape. Such insights prove invaluable for understanding perspectives on macroscale projects and guiding government entities on what the general population considers essential for modern societal progress.

Parker Fairfield

NC - Elon University

Discipline: Social Sciences

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Abstract Name: A Mixed Methods Exploration of the Relationship between Fathers' Physical Play and Infant Motor Skill Development

Recently, fathers have become increasingly involved in parenting decisions and behaviors. These changes have led to extensive research on the importance of fathers in child development, demonstrating that compared to mothers, fathers engage in more hands-on, physically stimulating play with their children, and encourage exploration of the environment. However, it remains unclear when these behaviors begin, and whether fathers shape infant motor development specifically. The current study aims to examine specific beliefs fathers have about infant development with a focus on physical play and stimulation of motor skills.For Study 1, 259 American first-time parents (170 mothers) of infants 1-7 months completed the Parental Beliefs about Motor Development and Infant Motor Habits Questionnaires online (PD-MD and MOHAB). Results revealed many similar parenting beliefs across mothers and fathers, but fathers emphasized stimulating infant’s motor development significantly more than mothers (p=.021), and this was associated with infants spending more time in stimulating positions such as prone (p=.026).To further

investigate fathers' beliefs, Study 2 involved 12 additional first-time fathers of infants 1-10 months who participated in online interviews and completed the PB-MD and MOHAB surveys. Interview questions asked how fathers engaged in physical play and whether they presented motor challenges to their infants. Though the study is ongoing, many fathers described making use of objects or modifying the infant's environment during times of play to induce engagement of specific muscles or body parts (n = 10), as well as fathers using their own body to stimulate infants' grasping, crawling, and more (n = 7). Responses demonstrate that fathers show intentional engagement of even young infants in ways that stimulate motor skill development, but they gauge their interactions based on their child's ability status and around advice they receive from external sources and role models.

Chloe Falls

OK - University of Central Oklahoma

Discipline: Humanities

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Abstract Name: Stefan Sagmeister; Transcending Conventional Boundaries

This paper delves into the creative world and mind of Stefan Sagmeister. Sagmeister has altered the graphic design industry through his work as an influential figure in the realm of visual communication. Stefan Sagmester, a well known Austrian graphic designer, has influenced the creative world with his work for the last 50 years; his intentional decisions, sabbaticals, and attitude towards his work are displayed through the thoughtful process he has explained in many interviews, as well as his own books. Sagmeister's practices set him apart from other designers due to his intentionality in his work. Through a meticulous review of Sagmeister's notable projects, creative processes, and philosophical pinnings, this research aims to unravel the intricacies of his design thought process, as well as the effects his upbringing and personal experiences have on his mindset. The paper starts with a provision of a brief history of Stefan Sagmeister's background, then later elaborates key milestones in his career and the evolution of his distinctive style. Primary sources such as interviews, articles, and Sagmeister's own writings demonstrate his influences and his unique approach to graphic design. Additionally the paper sheds light on how he transcends conventional boundaries to create visually compelling and thought-provoking designs.

Ermiya Fanaeian

UT - University of Utah

Discipline: Social Sciences

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Abstract Name: Policing the Campus: University of Utah Student and Faculty Satisfaction with Campus Police

The continuous discourse revolving around policing in America has two sides, one suggesting police do not serve to stop gender-based violence, and another side that argues policing is the only way to adequately address gender-based violence. Using the situation of gender-based violence as either a defense or rejection of police. With the events that have occurred on the University of Utah campus in regard to Lauren

McCluskey, a student who was murdered by her male partner after reporting to campus police, policing on the University of Utah's campus has found "itself in the center of such national debate, amongst a population (college students) that faces high levels of gender-based violence. In this research, we analyze current scholarship on police satisfaction, campus gender-based violence, and police perception differences among racially oppressed people. We created a survey with a line of questioning that allows us insight into the current satisfaction of students and faculty at the University of Utah with their campus police department's handling of violence and crises. We utilized recruitment methods that involved outreach initiatives on the part of administrators from all different departments on campus to collect adequately representative data. Analysis of the survey data will be completed a couple of months following the NCUR 2024 Conference and will use a combination of bivariate and multivariate statistical analysis.

Amanda Fang

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

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Abstract Name: Investigating the neuronal identity of the preoptic area neurons projecting to the ventral tegmental area affected during the development of depressive-like behaviors

Depression is a common but serious mood disorder that can lead to severe symptoms which influence how a person feels, thinks, and handles daily activities. Recent research has theorized that depression is primarily associated with more complex neuroregulatory systems and neural circuits, which then cause secondary disturbances of neurotransmitter systems. Notably, GABA, an inhibitory neurotransmitter, and glutamate, an excitatory neurotransmitter, have been identified to play a role in the etiology of depression. An imbalance in GABA and glutamate levels have been implicated in depression, where impairments in the GABAergic and glutamatergic systems have played significant roles in depression pathophysiology. Our lab has collected preliminary data on the impact of the preoptic area to ventral tegmental area (POA → VTA) circuit on the development of depressive-like behaviors. We have found that when depressive-like conditions were induced in mice through the social defeat stress (SDS) protocol described by Golden et al., the RABV-labeled POA neurons projecting to the VTA decreased compared to the control and were reversed following a ketamine injection. Now, the question is which POA neurons projecting to the VTA are affected by SDS: excitatory, inhibitory, or both. This project's aim is to determine the neuronal identity of the POA neurons projecting to VTA as GABAergic or glutamatergic using in situ hybridization. Comparison of the percentage of GABAergic and glutamatergic POA neurons between the control and SDS groups will allow us to identify the predominant POA neuronal subtype, which is expected to be glutamatergic, aligning with the excitatory synapse hypothesis of depression from Thompson, et al. Identifying the predominant POA neuronal subtype projecting to the VTA affected during SDS enables targeted modifications of its activity. This, in turn, facilitates a better understanding of its involvement in the onset of depressive-like behaviors and contributes toward potential therapeutic interventions for depression.

Makyra Farmer

GA - Spelman College

Discipline: Social Sciences

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Abstract Name: DO BLACK WOMEN DESIRE PREGNANCY?: GENDER RACIAL SOCIALIZATION ON THE RELATIONSHIP BETWEEN STEREOTYPE-CONFIRMATION CONCERN AND PREGNANCY DESIRE AMONG COLLEGE-AGED BLACK WOMEN

Although research concerning racial differences in pregnancy attitudes has concluded that Black women are less positive than White women toward childbearing, few studies have examined possible predictors for why this difference in pregnancy desire exists. Young adult Black women's pregnancy attitudes may be influenced by the gendered-racial stressors Black women encounter in healthcare during pregnancy. Previous literature suggests that when Black women are aware of racial stereotypes prior to interacting with a healthcare official, they experience symptoms related to depression and low self-esteem due to the fear of confirming preconceived stereotypes, known as stereotype confirmation concern. Also, due to gendered racism, Black adolescent girls are socialized in particular ways by their guardians, influencing how they understand their racial and gender identities. Therefore, the current study aims to examine Black women's desire to get pregnant by investigating whether the relationship between stereotype confirmation concern and pregnancy desire is moderated by the gendered racial socialization messages received among young Black women. This research is informed by the reproductive justice framework, which places importance on the sexual and reproductive health and rights of women with marginalized identities. Data will be collected from Black women currently serving as undergraduate students at Spelman College. Participants will complete an online Qualtrics survey after randomly viewing one of three flyers with statistics regarding pregnant Black women. It is hypothesized that there will be a negative relationship between stereotype confirmation concern in healthcare and pregnancy desire, in which more stereotype confirmation concern will lead to the desire to avoid pregnancy. The researcher also hypothesized that gendered-racial socialized messages about sexual behaviors will moderate the relationship between stereotype confirmation concern and pregnancy desire, which will strengthen the relationship. This research may assist in the development of healthcare policies that ensure the proper care of Black women.

Joshua Farrelly

NC - North Carolina State University

Discipline: Engineering and Architecture

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Abstract Name: Effects of Brachial Plexus Birth Injury on Muscle Spindle Morphology of Biceps, Supraspinatus, and Subscapularis Muscles

Brachial plexus birth injury (BPBI) is a neuromuscular injury that occurs in 1 out of every 1,000 live births, often causing lifelong shoulder muscle paralysis, reduced range of motion, and musculoskeletal deformities. Deficits depend on severity and location of injury (preganglionic vs. postganglionic), resulting in different effects on functional mobility and neuromusculoskeletal signaling that disrupt muscle and bone development. Muscle spindles are stretch sensory organs located within skeletal muscle responsible for afferent signaling pathways and can be denervated following injury. We hypothesize muscle spindle quantity will be lower in injured limbs and higher in uninjured limbs to overcome limitations in injured-limb muscle function.Sprague Dawley rats underwent surgery on one forelimb at 3-6 days postnatally: preganglionic neurectomy (n=4), postganglionic neurectomy (n=5), forelimb disarticulation (n=7), or sham (n=6). Biceps, supraspinatus, and subscapularis muscles were dissected for injured and uninjured limbs at 2, 3, 4, or 16 weeks post-injury,

snap-frozen, cryosectioned, and stained using hematoxylin and eosin. Muscle sections were imaged, and muscle spindles were counted. Limb comparisons were made using paired t-tests, and group comparisons were performed with Kruskal-Wallis tests (GraphPad Prism, α=0.05).Analyses are ongoing to understand the progression of altered muscle composition following BPBI. Preliminary results at 3 and 4 weeks indicate that muscle spindle quantity tended to decrease over time in the injured biceps and supraspinatus muscles for the postganglionic group (p<0.1). While no significant differences were observed, this could be attributed to the current small sample size. This study is the first to characterize progressive changes to muscle spindles after BPBI injury, which may inform optimal timing for treatments.

Casey Faulkner

OR - Corban University

Discipline: Natural and Physical Sciences

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Abstract Name: Leveraging Encapsulated Nanoparticle DNA to Advance Tracing Technology

Nanoparticle DNA tracers are a new technology that we are working to characterize as a useful tool designed to replace the use of chemical tracers in the oil and gas industries. The current chemical tracers, fluorobenzoic acids (FBAs), demonstrate many limitations that reduce the accuracy of data obtained from fields while also bringing into question their cost-effectiveness and impact on the environment. These new tracers are composed of several DNA strands bound to an iron oxide bead within a silica capsule. The iron bead allows the tracer to be removed from the environment with a powerful magnet, and the silica capsule enables the tracer to withstand high temperatures and pressures and prevents the DNA from interacting with underground rock formations. After the tracer is recovered, quantitative polymerase chain reaction (qPCR) is utilized to determine the identity of the tracer. Unlike FBAs, the tracers can be designed as either hydrophilic or hydrophobic, allowing them to trace either oil or water. Also, the base pairs in the DNA strand can be rearranged to create an essentially unlimited number of unique tracers. These factors increase the accuracy of data obtained from the field, which provides insight into the location of underground resources and the productivity of current wells. This data can prevent unnecessary drilling and lead to the closure of unproductive wells, saving vast amounts of water and electricity. In addition, DNA tracers are more cost-effective than FBAs since they can be synthesized rapidly. Current efforts are focusing on ensuring the accuracy of tracer detection and synthesizing new tracers. Overall, nanoparticle DNA tracing technology is an efficient, reliable, and environmentally friendly alternative to the traditional tracers used in the oil and gas industries, and it has a wide variety of potential applications including tracing microbes for infectious diseases, environmental tracing, and leak tracing.

Ayobami Fawole

GA - Spelman College

Discipline: Natural and Physical Sciences

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Abstract Name: Localizing the neurons that regulate sleep-deficiencies in Angelman Syndrome mouse brains

Sleep is regulated by both homeostatic and circadian mechanisms. The neuronal mechanisms responsible for sleep homeostasis have yet to be identified. Previously, we demonstrated that removing the maternal Ube3a allele alters sleep homeostasis. The maternal deletion of Ube3a causes Angelman Syndrome phenotypes in mice. To determine the neuronal population responsible for Ube3a action, we conducted genetic screening using conditional knockout of Ube3a and identified neuronal subtypes within the mouse brain that appear to be responsible for sleep homeostasis. Through this screen, we identified a neuronal subtype that expresses the vesicular inhibitory amino acid transporter (VIAAT), a protein that is commonly used to identify GABAergic neurons. Additionally, this neuronal subtype does not express GABA-synthesizing enzymes GAD65/67 and does not uptake glutamate (GABA precursor) or glycine. Thus, Ube3a functions in a small subset of potentially GABAergic neurons to regulate sleep homeostasis. The location of this neuronal subtype is not known, and the goal of the present study is to locate this population. We are implementing transgenic mouse models that expressed GFP in VIAAT-expressing cells and mCherry in GAD2-expressing cells to locate the cells of interest via two-photon serial tomography. We have identified the striatum, superior colliculus, inferior colliculus, subiculum, post subiculum, hypothalamus, and hippocampus as potential locations for VIAAT-expressing cells that do not express GAD65/67. Currently, we are investigating the localization of these neurons within the identified brain regions, and we plan to characterize this neuronal population in the Ube3a knockout. Determining the location of these VIAAT-expressing cells has the potential to reveal a brain center responsible for sleep homeostasis and provide insight into mechanisms that underlie sleep regulation.

Julianne Fazekas

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Abstract Name: Nano-intercalated Bioactive Molecules Modulate Colorectal Cancer Stem Cells- HCT-116

Bioactive molecules derived from plants have the potential to modulate the proliferation of cancer cells. Previous research in our laboratory has shown that curcumin, lutein, capsaicin, and lycopene are effective at modulating the growth of certain cancer cell lines; viz. breast cancer cells (MCF-7), colorectal cancer cells (HCT-116), and prostate cancer cells (PC3 and LnCap) by apoptosis. We hypothesize that phytochemicals intercalated in montmorillonite (MMT) nanoclay will be a more effective nano-delivery system that targets cancer cells and reduce effects on healthy cells. Characterization studies were conducted on curcumin and MMT alone and then intercalted MMT and curcumin, using thin-layer chromatography and fourier transform infrared spectroscopy to confirm intercalation. A release study of the curcumin was performed under different

pH conditions over 24 hours to determine the quantity of the phytochemical released at specific times. The shortest time was observed at pH 3 with a concentration of 14.17 µg/ml after 3 hours for curcumin and the highest was at 6 hours, with a concentration of 17.89 µg/ml. The starting materials alone and the intercalated phytochemicals were then used as a treatment for colorectal cancer cells for 48 or 96 hours, and cell proliferation was assayed using a crystal violet assay. After 96 hours of treatment, a biphasic cancer cell modulatory inhibition effect was observed in the HCT116 cell line by curcumin alone and MMT intercalated curcumin. These findings confirm that edible MMT nanoclay intercalated phytochemicals could be a potential cancer therapy in the field of nanomedicine.

Kazune Fei

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Abstract Name: Identifying Critical Memory-Related Genes through Single-Cell Genomics and Deep Learning Analysis

Immediate-early genes (IEGs) are swiftly transcribed in response to stimuli, crucial for stress responses and gene regulation. Among these, Jun, part of the AP-1 transcription factor with Fos, is linked to memory and plasticity. Jun expression is heterogeneous at a single-cell level in response to stimuli, a phenomenon influenced by gene expression and suppression pre-stimulation. Identifying key genes driving Jun upregulation at the single-cell level can unveil memory formation mechanisms. Single-cell RNA sequencing (scRNA-seq) was employed for its precision in gene expression analysis at the cellular level, in contrast to bulk RNA sequencing.ScRNA-seq data from the mouse hippocampus pre- and post-stimulation with brain-derived neurotrophic factor (BDNF) were collected. Deep learning was applied to unravel complex relationships in high-dimensional data, and gradient class activation mapping (Grad-CAM) helped identify key genes.A deep, fully connected neural network was built, trained to predict changes in Jun expression post-stimulation using the expression of 5000 highly variable genes measured at the single-cell level pre-stimulation. The model achieved ~65 percent accuracy in predicting Jun regulation. Grad-CAM revealed the top 150 key genes governing Jun's heterogeneous expression in response to stimuli. The findings suggest that genes related to neurite growth and neuron morphogenesis are vital for memory formation.

Rei Fejzulla

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Rei Fejzulla

Abstract Name: Electrochemical Desulfurization Of Cysteine Containing Peptides

An electrochemical desulfurization method for cysteine-containing peptides has been established, employing a phosphine reagent. The preliminary investigation of this method was conducted using the Ikea ELectraSyn system. A protected dipeptide was employed as a screening tool to assess the optimal conditions for

electrochemical desulfurization. This protocol necessitates a methodical exploration of alternative phosphine reagents, electrode potentials, and solvents. Additionally, the method versatility will be examined by attempting the desulfurization of various peptide substrates, encompassing both protected and unprotected functional groups

Shanna Fellows

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Shanna Fellows

Abstract Name: Insights into the Dynamics of Climate-Induced Heat Wave Events in the United States

Anthropogenic emissions have caused wide-ranging effects on our planet and its inhabitants. It is important to understand the changes our climate will undergo at a local scale so communities can plan and adapt for future impacts as emissions cause warming to become more prevalent around the world. Our study classified heat waves as two or more consecutive days where the average daily temperature reached the 95th percentile of a 30-year historical period. Analyzing the changes in the intensity, duration, and frequency of heat waves across the continental United States under a climate change mitigation scenario (e.g., SSP2-4.5) and assessing corresponding changes in the population exposed to heat waves can significantly deepen our societal understanding of climate change effects within different regions of the country. Our results show that the frequency of heat waves is expected to increase while the intensity and duration of heat waves vary regionally. Regional differences within “Building America Climate Zones” showed duration and intensity increasing in the Cold, Hot-Humid, Marine, Mixed-Humid, and Very Cold zones while staying approximately constant in Hot Dry and Mixed Dry zones, showing that moisture of the zone could impact heat wave trends over time. We investigated the population impacted by heatwaves within the US throughout the 21st century (every decade from 2010 to 2090). An overall increase in the population affected by heatwaves through the first half of the twenty-first century is anticipated. The peak is predicted to occur in 2060 with 112 million people, 27% of the population, experiencing at least one heat wave event during the year. From 2060 to 2090, a plateau in the population affected by heatwaves is observed. As the number of people impacted by heat waves increases, a rise in the health impacts and costs associated with heat events may follow.

Lily Ferguson

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Lily Ferguson

Abstract Name: Investigating Persistent Increases in Anxiety and Insular Cortex Response to Stress Following Recovery from Activity-Based Anorexia in Adolescent Female Rats

Anorexia Nervosa (AN) is a common neuropsychiatric illness that primarily affects adolescent females. AN has the highest mortality rate among all neuropsychiatric disorders due to severe weight loss from caloric restriction and increased activity. The causes of AN are complex and multifaceted but often include anxiety, which is comorbid with AN, commonly persists following recovery, and may contribute to high relapse rates; thus, it is imperative to understand long-lasting neural alterations that contribute to anxiety and relapse. The

insula - a cortical brain region - mediates feelings of bodily state including satiety and disgust, and changes in insular structure/function remain after AN recovery. Increased caloric intake during recovery may increase feelings of disgust, triggering heightened anxiety responses and relapse. To assess this, we used activity-based anorexia (ABA) to model AN in rats. Adolescent female rats were assigned to 4 treatment groups: Sedentary (SED): ad libitum food + no running wheel; Exercise (EX): ad libitum food + running wheel; Chronically-Food Restricted (CFR): restricted food + no running wheel; Activity-Based Anorexia (ABA): restricted food + running wheel. This treatment caused precipitous weight loss in ABA rats, and food restriction and wheel access were halted when ABA rats lost 20-25% BW, at which point ABA/CFR rats were allowed to recover their body weight. Following recovery, rats were assessed for anxiety on the elevated plus maze (EPMZ) and open-field test (OFT) and then either exposed to restraint stress or left undisturbed and sacrificed, after which brains were processed for cFos using immunohistochemistry. We observed increased anxiety in ABA rats following recovery, and we are currently assessing whether persistent changes in insular activation also occur following stress exposure. Our results will provide important information regarding the role of insula in long-lasting neural changes and anxiety following recovery from AN.

Greta Ferguson

MA - Babson College

Discipline: Business and Entrepreneurship

Authors:
#1 Greta Ferguson

Abstract Name: Recommendations for Federal Regulations of Third-Party Litigation Funding in the United States

Past research on third-party litigation funding (TPLF) has established that while the industry is attracting attention from investors, it needs to be regulated to some extent. Additionally, professionals agree there are both societal benefits and risks stemming from this type of money lending. TPLF describes a situation in which a plaintiff pursuing a lawsuit cannot cover their legal expenses and accepts a loan from an investor or company in exchange for a portion of the settlement or interest payments. This can help provide legal access to people who cannot financially afford it independently, but there are potential issues with bringing a third party into the relationship between a lawyer and their client. While authors have conducted research exploring some of these perspectives, they have yet to focus on how lawsuits have responded to regulations placed on the industry in other countries. Nations with more developed TPLF markets, such as Canada, the United Kingdom, and Australia, are examples that the United States should look to before taking its next steps in writing legislation. This research aims to analyze historical trends and patterned responses that lawsuits have had to the regulations that the three countries, Canada, the U.K., and Australia, have implemented and recommend if and how the United States should federally restrict the unregulated TPLF industry. This study combines looking at the current legislation from these nations and comparing that with any reported data available. In addition to this, individual cases were used to provide context to how these laws play out in real claims. This year, there is a bill circulating in the U.S. Congress to impose restrictions on TPLF at the federal level. Using conclusions drawn from the case studies of the three aforementioned countries, I will proceed to determine if the currently proposed bill is sufficient.

Yusur Ferman

CA - California State University - Fullerton

Discipline: Humanities

Authors:

#1 Yusur Ferman

Abstract Name: Living Like a Ghost: Iraqi Refugee Women and the Social Relocation Gap in Feminist Identity Theory

Social relocation, marked by sudden shifts in geography, culture, and societal expectations, disrupts an individual's equilibrium and her understanding of her community. The Iraqi-American refugee woman, torn from her homeland and thrown suddenly into a foreign culture, is forced into what feminist theorists call “the borderlands experience” – the experience of navigating between two cultures at odds with each other. This experience is both damaging to their sense of identity, and undertheorized in feminist literature. That this experience is undertheorized is surprising, given the inclusive aims and ideals of feminist philosophy. At present, my sisters and I continue to exist on its outskirts. Women like me have yet to feel included or represented in the literature or broader community discourse. The focus of this research paper is twofold: first, I aim to investigate the experiences of Iraqi refugee women in the United States, what they go through, and how they live out their identity. I will explore their experience by conducting a series of interviews, including the voices of my family and the elders in my community. I will include their narratives in my paper and make space for their voices in my theoretical analysis. Second, I will extend two dominant intersectional feminisms, multiplicity theory (Fujiwara 2018) and borderlands identity theory (Anzaldúa 1999) into a new domain: the experience of Iraqi refugee women. I will argue that forced social relocation is detrimental to the Iraqi-American woman’s experience in ways not yet captured by the feminist literature on complex immigrant identity.

Cesar Fernandez

CA - Cal Poly Humboldt

Discipline: Natural and Physical Sciences

Authors:
#1 Cesar Fernandez
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Abstract Name: Quantifying Water Uptake on Atmospheric Particulate Matter (PM) under various Relative Humidity levels Analyzed with Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFTS) Technique.

Clouds are a critical component of the atmosphere, which predominantly cools the planet by scattering solar radiation back to space. Particulate matter (PM) are small solids suspended in the air that can initiate the seeding process for cloud formation. This process is directly related to the relative humidity (RH) above the PM surface and how much water it absorbs/uptakes. In the initial stages of this process, PM collects sparingly small layers of water, otherwise known as monolayers. Details of water uptake at this level are still lacking in the literature and we desire to quantify water uptake on atmospheric PM to enhance literature values. Two types of PM (Fe_2O_3, TiO_2) are investigated in these studies using the Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFTS) technique. Spectra are recorded using two modes, absorbance, and Kubelka-Munk (KM) as a function of relative humidity (RH), to assess which is more reliable. Integrated absorbance and KM data can be used with the Brunauer-Emmett-Teller (BET) equation to determine the number of monolayers created with increasing relative humidity levels. The data shows that the maximum amount of monolayers formed from 5% to 84% humidity was 2.5 for TiO_2, which is smaller than reported in the literature and indicates differences between the absorbance mode and KM mode in quantitative DRIFTS studies.

Asher Fernandez

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

Authors:
#1 Asher Fernandez
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Yutzil Zavala

Abstract Name: The Impact of Sodium Bicarbonate on Alkenone Production in Haptohyte Algae

Alkenones are unique very long chain fatty acids, spanning from 35 to 41 carbons long with 1 to 5 trans double bonds and are produced by only five known species—all of which are haptophytes, a phylum of unicellular algae. Although the biological significance of alkenones remains largely unknown, a couple hypotheses have proposed roles as energy storage molecules or membrane fluidity modulators. A variety of potential commercial applications for alkenones as anti-fungal and antibacterial compounds, biofuels, and UV protective products have also been explored, but further research requires the identification of the genes and proteins involved in alkenone synthesis, which are currently unknown. By identifying compounds that disrupt or upregulate the production of alkenones in the cell, we can identify the genes and proteins involved. The goal of this project was to quantify the effect of sodium bicarbonate, a source of carbon, on the alkenone production of three species of haptophytes: Isochrysis galbana, Emiliania huxleyi, and Gephyrocapsa oceanica. This was achieved by growing cultures of each species for 11 days total, adding 25mM sodium bicarbonate on the 10th day. After growth, cells were lysed through liquid nitrogen grinding and lipids were isolated using solvent extraction, being later identified and quantified through GC-MS. We found that, in G. oceanica, carbon supplementation doubled alkenone production while decreasing it in E. huxleyi by about 78%. Alkenone extraction in I. galbana proved difficult, indicating a need for further study and possible alterations in the extraction method.

Kayleigh Fick

CA - University of the Pacific

Discipline: Humanities

Authors:
#1 Kayleigh Fick
#2 Laura Gutierrez

Abstract Name: Feminism for the Descamisadas: a Rhetorical Analysis of Eva Perón’s Speeches

Eva Perón’s “moral reform” feminism inspired the beginnings of feminist expansion in Argentina by praising tradition and promoting gender equality. Peronism, a populist movement, mobilized the Argentine working-class after decades of socioeconomic oppression. Eva Perón empowered Argentine working-class women, her descamisadas (“shirtless ones”), in fiery speeches. Eva Perón’s feminism was exceptional for a first-wave feminist context:: working as a female politician in a traditionalistic nation. Though scholars have labeled Eva Perón a “non-feminist,” I contend that her approach to feminism was extraordinary because of her ability to craft rhetorical appeals to working-class women. I analyzed Eva Perón’s speechwriting during her political career (1946-1952), determining how her visions for feminism and social welfare changed over time and by location. I utilized the rhetorical framework, starting with the historical and rhetorical situation and then finishing my analysis by examining how Eva Perón’s rhetorical choices appealed to messages of respect, loyalty, and love.

MiKaela Field

UT - University of Utah

Discipline: Natural and Physical Sciences

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Abstract Name: Defining the Role of Focal Adhesion Kinase in Melanoma

The propensity of melanoma to metastasize to distant sites, including the brain, makes it the deadliest form of skin cancer. Despite the success of new FDA-approved therapies, resulting in a decline in melanoma mortality rates over the past six years, the development of brain metastases is one of the primary causes of treatment failure. Understanding the mechanism of melanoma metastasis development will allow for novel therapeutic strategies to improve the overall survival of afflicted individuals, specifically in the case of brain metastases. Concurrent interplay signaling between the mitogen-activated protein kinase (MAPK) and the phosphatidylinositol 3'- kinase/protein kinase B (PI3K/AKT) pathways has been demonstrated to lead to metastasis of melanoma. However, the use of pharmacological AKT inhibitors in melanoma clinical trials has either had limited efficacy or exhibited significant toxicity. To identify alternative targets, we used a proteomic analysis of non-metastatic and metastatic melanoma tumors and discovered that focal adhesion kinase (FAK), a non-receptor tyrosine kinase, is a specific effector of AKT1. Therefore, we hypothesized that FAK may be sufficient to promote melanoma metastasis and may be an alternative therapeutic target. To test this hypothesis, we utilized an established autochthonous mouse model of melanoma to evaluate the effect of FAK on tumor progression and metastasis. Tumors were induced in mice through expression of activated FAK in cooperation with mutant BRAF, a gene altered in over 50% of all human melanomas, as well as loss of the tumor suppressors Cdkn2a and Pten, which are commonly silenced in melanoma. Expression of activated FAK phenocopied the expression of activated AKT1 as assessed by tumor penetrance, latency, and metastasis thereby validating our proteomic data. These results enhance our mechanistic understanding of melanoma brain metastases and suggest that FAK may be a viable therapeutic target to improve the survival of patients with metastatic melanoma.

Alanna Fields

NY - Weill Cornell Medical College

Discipline: Natural and Physical Sciences

Authors:
#1 Alanna Fields
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Abstract Name: Determining the Structure(s) of the CYRANO long noncoding RNA

MicroRNAs (miRNAs) guide Argonaute (AGO) proteins to bind and repress target RNAs. However, some targets, referred to as trigger RNAs, direct miRNA degradation instead. Trigger RNAs base-pair extensively with the miRNA, which induces a conformational change in the miRNA–AGO complex and recruits the ZSWIM8 E3 ubiquitin ligase, resulting in destruction of both AGO and miRNA. The CYRANO long noncoding RNA is a potenttrigger, reducing miR-7 levels up to 50-fold and the CYRANO miR-7 binding site is required but not sufficient for this activity. Preliminary studies in the Kleaveland lab have identified at least three accessory regions of CYRANO that enhance miR-7 degradation, however, the mechanistic basis for this enhancement is not known. Our hypothesis is that RNA structure affects CYRANO-directed miR-7 degradation. To begin to test this hypothesis, we will determine the 2D structure of the CYRANO miR-7 binding site in vivo in control cells and miR-7-deficient cells using chemical probing with dimethyl sulfate (DMS) followed by high-throughput sequencing. DMS methylates accessible nitrogenous bases in RNA, which can be detected as mutations after reverse-transcription. As the same RNA sequence may exist in multiple structures, we will use deconvolution and annotation of ribonucleic conformational ensembles (DANCE-MaP) to identify the number of unique structures in the ensemble and characterize each of their features. Follow-up studies will determine how loss of CYRANO accessory regions affects structure of the miR-7 binding site and how loss of miR-7 binding affects the structure(s) of these accessory regions. By identifying structural characteristics of CYRANO, we can better understand how CYRANO and perhaps other triggers work.

Addison Fields

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Addison Fields

Abstract Name: Barney Bubbles Known to Few, an Inspiration to Many

The designer, Barney Bubbles, was an influential figure during the 60s psychedelic art movement, mostly known for his album cover works. Despite his short career he still had a noticeable impact on graphic design due to his bold, experimental ideas, that pushed boundaries and expectations while still managing to be a designer who makes appealing works. Bubbles is a lesser-known designer, who despite this has still managed to have a good sense of quiet influence on graphic design today. Even still, Barney Bubbles' album covers and other works on magazines, and even music videos should be studied by designers of today, as they can take mass inspiration from Bubbles' work and add more creativity and variety within the field.

Kimberly Figueroa

CA - Medanos College

Discipline: Natural and Physical Sciences

Authors:
#1 Kimberly Figueroa
#2 Jesus Saucedo
#3 Stephen Thompson
#4 Tyler Britto
#5 Jill Bouchard

Abstract Name: Can Plant Growth Hormones Minimize the Effects of Salinity Stress on Brachypodium distachyon?

Soil salinization is a process of excessive buildup of various soluble salts in soil that can negatively impacts plant growth and overall health. With the increase in droughts due to climate change, salinity stress is one of the most detrimental problems faced in agriculture that will lead to a reduction in overall quality and quantity of crops, especially in areas where there is already limited access to food. Thus, these prior studies indicate that finding ways to mitigate salinity stress in plants is important. Interestingly, plant hormones, besides regulating plant growth and development in normal conditions, may also be able to mitigate these effects and help plants adapt to environmental stressors such as salt stress. We hypothesized that gibberellic acid (GA3), a plant growth hormone, could mitigate the effects of salinity stress by up-regulating physiological activities. To test our hypothesis, we cultured Brachypodium distachyon, a small grass plant used as a model to study biomass and biofuels, in mini-fabricated ecosystems (EcoFABs) in different conditions: No salinity stress, salinity stress, and salinity stress with the addition of GA3. Each week plant root and shoots were measured and analyzed using Image J, an image processing program. We found that the increase of salinity stress negatively affected B. distachyon growth of roots and shoots when compared to the control (roots were 10% shorter and shoots 17.8% shorter). With the addition of GA3, the negative effects of increased salinity were reduced by 10%. These data show that GA3 mitigates the effect of increased salt salinity in plants. Additional studies are needed and with more replicates per group to strengthen these conclusions and to determine the dose-response effect of GA3 on mitigation of salinity stress.

Graciela Figueroa

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

Authors:
#1 Graciela Figueroa
#2 Kate Creutzinger

Abstract Name: Investigating calf satiety after a meal of whole milk or electrolytes using taste aversion

Satiety in dairy calves can be experienced in varying degrees based on the environment they are put in. Transported calves typically experience more hunger than those on commercial farms or other places due to restricted or no feed given. Dairy calves can be transported for up to 28 hours with no access to feed or water causing hunger and greater body weight loss to be experienced. Previous research shows that transported electrolyte-fed calves had a greater body weight loss than milk-fed calves. It is proven that while electrolytes provide immediate hydration, providing milk as a pre-transport meal instead has a longer-lasting effect and reduces the need for glucose to be utilized as a primary source for energy. Although studies have been done to show the effects of both meals, the impact of feeding electrolytes vs milk on calf hunger is unknown. In

this study, 100 study calves were given a meal of whole milk or electrolytes in the morning and performed a taste aversion test in the afternoon with regular or bitter milk. The treatments given to the calves were determined using a Latin square design to investigate the varying degrees of calf satiety experienced. A randomized selection of calves were also given activity monitors to determine the effect of the meals given on their activity. Looking at some data, it was seen that dairy-fed calves drink <10% of the bitter milk 41% of the time while electrolyte-fed calves drink <10% of the bitter milk 28% of the time. Dairy-fed calves who consumed >90% of the bitter milk did so 33% of the time while electrolyte-fed calves consumed <90% of the bitter milk 48% of the time. We can also see that electrolyte-fed calves consumed more grain than those fed milk showing the unsatisafcation of electrolytes to their hunger.

Kevin Fink

OK - University of Central Oklahoma

Discipline:

Authors:
#1 Kevin Fink
#2 Melissa Powers
Melissa Powers

Abstract Name: Building a Research Symposium from the Ground Up

Undergraduate research experiences increase students' understanding of the research process and confidence in their research skills as well as develop transferable skills such as thinking critically, communicating research findings and experiences to both general and practitioner audiences, and working independently and/or in small groups. In our department, we encourage undergraduate and graduate research experiences both in and out of the classroom. Each semester, our department hosts a student symposium giving students the opportunity to present their undergraduate and graduate research and capstone experiences. The purpose of this session is to share the evolving story of our departmental symposium with specific emphasis on "nuts and bolts" guidance on how the symposium is organized each semester. Now in its 16th year, our symposium has transformed over time to meet the changing needs of our students and in consideration of sustainability efforts. Currently, each semester nearly 100 students submit abstracts to present poster presentations, class projects, oral presentations, and round table discussions. Students report feeling empowered and excited after having the opportunity to share their research in a public setting with a departmental and community audience. Departmental faculty mentor students, create the program, identify and invite outside community members, evaluate presentations, moderate sessions, and coordinate administrative tasks while creating a conference-like experience for our student body. We have learned many tips and tricks over the years that help the symposium run smoothly and support student learning. In this session, we will not only share our own plan for hosting a student symposium, but also limitations that we have found and potential solutions for future symposiums.

Anna Fisher

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Anna Fisher

Abstract Name: Causes, Consequences, and Correlates of Intimate Partner Violence among College Students

Intimate partner violence (IPV) is a prevalent issue, defined as any form of violence inflicted by a current or former intimate partner, including psychological, physical, sexual, and economic abuse. This deeply concerning problem not only jeopardizes the well-being of victims but also has a global reach, affecting millions. College students, however, are uniquely vulnerable to IPV due to a combination of factors in relations to their life stage, social environment, and stressors they encounter. This research aims to investigate the causes, consequences, and correlates of intimate partner violence among college students. Utilizing the American College Health Association's 2022 National College Health Assessment III (ACHA-NCHA III) data, this study incorporates an array of variables, encompassing risky behaviors, mental health indicators, substance misuse (including alcohol and drug abuse), personal experiences of intimate partner violence, general violence encounters, and demographic characteristics such as academic year, age, gender, and race. This research will be using IBM's Statistical Package for the Social Sciences (SPSS), this research endeavors to unravel the intricate web of factors contributing to IPV among college students. By shedding light on problems, we can advance our understanding of this issue and work towards more effective prevention and intervention strategies, ultimately striving for safer and healthier relationships within the college community and beyond.

Luciana Fisher

NY - Borough of Manhattan Community College

Discipline: Business and Entrepreneurship

Authors:
#1 Luciana Fisher

Abstract Name: Exploring the Economic Implications of Subscription-Based Services on Low-Income Households

The subscription-based business model has emerged as a dominant force across diverse industries, offering convenience and flexibility to consumers. However, its impact on low-income families and individuals remains largely unexplored. This research proposal aims to delve into the economic ramifications of subscription-based services on households with limited financial resources. By scrutinizing its effects on purchasing power, investment capabilities, retirement prospects, and other opportunities for this demographic, this study seeks to uncover potential challenges faced by low-income groups trapped in this modern age business model.The significance of this research lies in its potential to offer practical insights to subscription service providers, policymakers, and consumer advocacy groups. Understanding the nuanced impact of this business model on low-income households is pivotal in fostering inclusivity and equity within the market landscape. By shedding light on the implications for this demographic, this study aspires to contribute to a more comprehensive understanding of the subscription-driven business model.

MEMPHIS FITZGERALD

GA - Kennesaw State University

Discipline: Business and Entrepreneurship

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Abstract Name: Corporate Governance Factors and Financial Performance of Public U.S. Restaurant Companies

The sales of the restaurant industry in the United States are expected to reach $997 billion by the end of 2023. The industry is characterized by many minority managers and owners, a substantial percentage of single-unit businesses, and numerous chains. For publicly listed restaurant companies, strong corporate governance is a critical determinant of firm success. This study aims to investigate the relationship between corporate governance characteristics and company financial performance. The sample of this study consists of public restaurant companies in Security Industry Codes (SICs) 5810 and 5812. The observation period will be between 2010 and 2022. The total sample will include approximately 55 restaurant firms. Data on corporate governance characteristics will be manually obtained from Def 14A (Proxy statements) and SEC annual filings (10-Ks) by a team of researchers. The dependent variable in this study is firm financial performance, measured by Return on Assets and Stock Returns. This study uses control variables such as company size (number of restaurant stores), liquidity, debt to equity, and more. Data for the dependent and control variables will be obtained from the Center for Research in Security Prices (CRSP) and Compustat. Potential independent variables are corporate governance measures such as board diversity (inclusion of individuals from various backgrounds), franchising proportion (number of franchised stores to total stores), shareholder rights (the legal privileges of owners for a corporation), etc. The variance in firm financial performance will be captured through multiple regression analysis. This research study expects the board of director's independence and CEO duality to harm firm financial performance. On the other hand, franchising proportion and stronger shareholder rights are hypothesized to have a positive relationship with company performance. The results of this study will provide implications for company executives about how to achieve better corporate governance that leads to firm success.

Sara Fitzgibbon

WI - Carthage College

Discipline: Natural and Physical Sciences

Authors:
#1 Sara Fitzgibbon

Abstract Name: The COVID-19 Pandemic in Spanish and Portuguese-Speaking Countries: An In-Depth Spatial-Temporal Analysis in Latin America, and Spain and Portugal in Europe

I plan on pursuing a public health project utilizing GIS and spatial data science, specifically investigating the spatial-temporal analysis of COVID-19 in Latin America and Spain and Portugal in Europe located at country level. This will be achieved by using daily and cumulative case data from the WHO (World Health Organization) and air quality data from the World Air Quality Index Project 2020 data. The COVID-19 pandemic has become one of the most major public health concerns in over 100 years. Since late 2019, there have been over 700 million cases and almost 7 million deaths. Every country has handled the pandemic differently. Some have had the ability to remain stable, while others have struggled to return to normalcy. Latin America and Europe have had very different experiences regarding the pandemic. Due to cultural similarities, this study involves the comparison of Latin America and European countries such as Spain and Portugal during the time period of March 2020 through July 2021. This time period was chosen because there was a lot of uncertainty during this time with a lot of new patterns emerging regarding how to deal with the pandemic. This study is solely focused on the spatial-temporal patterns of COVID-19 infections among the select countries, correlation between lockdowns, vaccination, infections, and correlation between infection and air quality. This in-depth analysis will directly benefit a deeper understanding of the dynamic nature of this ongoing pandemic and inform more effective and efficient public health policies and actions at varying

spatial scales. A better understanding will allow society as a whole to learn from their mistakes and be better prepared for another possible public health crisis in the future.

Laura FitzSimon

TX - Trinity University

Discipline: Humanities

Authors:
#1 Laura FitzSimon

Abstract Name: Human Entanglement and Jeff VanderMeer's Southern Reach Trilogy

In this environmental humanities project, I look at The Southern Reach Trilogy by Jeff VanderMeer and its themes of human transformation and entanglement in the environment. My work connects with Dr. Heather Sullivan's book project, The Dark Green: Plants, People, Power, but focuses on the multi-species relationships and human entanglement in VanderMeer's novels–Annihilation, Authority, and Acceptance. I argue that the total physical transformations of human characters by nonhuman organisms in novels illustrate human entanglement in the environment; VanderMeer makes our connections to and dependency on nonhuman species visually blatant in the novels through the transformation of human bodies into wild hybrids of altered forms. Current concepts of bodily entanglements arise from contemporary science, new environmental thought, and ancient and indigenous cultures that point towards the interconnectedness of organisms. This understanding is in contrast to the prevailing idea of separation in industrialized cultures, that somehow humans are outside of the environment that they inhabit. The living world is built upon the connections between different organisms. Plants and fungi form and rely on relationships with each other to exchange energy and nutrients. Other fungal species infect insects so that they are able to disperse their spores. Our own bodies are supported by a multitude of microbes that help us break down food and protect us from illnesses that enter our bodies. Without these connections and relationships, there would be no multicellular life on Earth. VanderMeer's Southern Reach Trilogy acts as a thought experiment about such entanglements by pushing human-nonhuman relationships into extreme new form and making visible the very ecological interactions we often overlook.

Ellie Fivas

GA - Emory University

Discipline: Humanities

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#1 Ellie Fivas

Abstract Name: Even Silent Women Seldom Survive: Disobedience, Silence, and Audre Lorde in Shakespeare's King Lear and Measure for Measure

Shakespearean heroines, too, "have been taught that silence would save [them], but it won't" (Lorde 41). Examined through a feminist lens of Audre Lorde's beliefs on the power of speech, this paper investigates how King Lear's Cordelia and Measure for Measure's Isabella wrestle with gendered power dynamics within their plays. Both heroines pointedly wield speech and silence both, struggling against the environments within which they exist. Cordelia and Isabella are each heavily scrutinized for their actions within Shakespeare's worlds; Cordelia, for her stubbornness, and Isabella, for her internal turmoil. Each woman has moments of bold silence and intrepid speech. By viewing these women's actions as results of the anti-

feminism landscape in which they function, we can revisit what it means to be a woman, and to choose silence over speech, or vice versa. Using a lens of Lorde's work relating to female power through speech demonstrates how gendered environments transgress both literature and reality. Lorde's work becomes especially poignant once we realize the oppression of Cordelia and Isabella within the environments of their plays. Whilst both challenge the gender norms of Shakespeare's time, and do so for the benefit of King Lear and Measure for Measure's plots, neither are liberated from gender oppression. This paper challenges research that frames Shakespeare's plots as revolutionary for gender stereotyping, because, while these scholars are certainly correct, they overlook the underlying power dynamics that disallow Cordelia and Isabella from surviving their stances against symbols of power. While the choice may be between speech or silence for both heroines, Lorde's words ring true, and the weight of anti-feminism forces them each to sink.

Elenor Fix

TN - Columbia State Community College

Discipline: Natural and Physical Sciences

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Levi Fritsch

Abstract Name: Comparative analysis of the novel singleton phage Magritte and other Microbacterium phages.

Bacteriophages (phages) are genetically highly diverse viruses that specifically infect bacterial cells in order to survive and reproduce. The taxonomy for the majority of phages is based on their grouping into clusters and subclusters according to their shared genomic characteristics. Alongside known clustered phages, unique phages called singletons also exist that lack genomic similarity with one other and other clustered phages. The presence of unique genomic characteristics makes it more difficult to annotate them, even if they were to be isolated on the same bacterial host. Our goal in this study was to comparatively analyze genomic relationships between our novel singleton phage Magritte with other singletons and clustered phages, and to establish the possible evolutionally associations between them. Phage Magritte is a lysogenic phage isolated on the Microbacterium foliorum host. Electron microscopy analysis revealed that Magritte exhibits the Siphoviridae morphotype and has a long flexible tail. In comparison with other singletons, Magritte has a large genome of 133,228 bp, while the average singleton genome size is 60,866 bp. It also contains numerous tRNA genes. Three unique genes are also present within the genome with a length of 5975, 4697 and 4358 bp which do not belong to any known phage phams and do not have any known functions at present. Using the gene content similarity (GCS) analysis tool and Phamerator maps, we identified specific phams that make Magritte a unique and complex phage. These phams were not concentrated along a single point in the genome. The analysis of the enormous diversity and evolutionary relationships of bacteriophages is a big task, and studying the unusual genomic characteristics of singleton phages like Magritte can shed light into understanding bacteriophage biology and evolution.

Luke Flaig

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:

#1 Luke Flaig
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Abstract Name: Design and Synthesis of Peroxisome Targeted Fluorophores

Peroxisomes are organelles that house multiple key metabolic pathways often mirroring the mitochondria in processes like beta-oxidation. The single membrane of the peroxisome isolates their oxidative metabolic processes from the rest of the cell and results in import processes being required to deliver biomolecules to the peroxisomal matrix. Despite their known role in these important pathways, the peroxisomes remain understudied. We believe that the dearth of methods to target small molecules to the peroxisomes is a major factor preventing a better understanding of peroxisomal biochemistry. To address this need, our group is interested in delivering a wider range of fluorophore classes to the peroxisomes to be able to expand the color pallet of peroxisome fluorescent dyes. To achieve this, we are designing molecules that utilize the Pex5-dependant peroxisomal import pathway to target their import to the peroxisomes. Here, we report our efforts to date to design, synthesize, and evaluate these new peroxisome targeted fluorophores.

Willem Flaugher

WI - University of Wisconsin-Oshkosh

Discipline: Visual and Performing Arts

Authors:
#1 Willem Flaugher

Abstract Name: The Places In Between

According to the 2020 Census, Milwaukee is the second most black-white segregated area in the United States. It’s been this way for the last 10 years. In Milwaukee, there are 191 neighborhoods. There are six neighborhoods where 9 of 10 residents are black. In contrast, there are five neighborhoods where 8 of 10 residents are non-Hispanic white. In between these eleven neighborhoods are the neighborhoods of Harambee and Riverwest. Both neighborhoods tell the same story about fighting off gentrification, but on two different sides of the coin. One neighborhood, Harambee, has been a cultural hub for people of color for almost 100 years, and is slowly beginning gentrification. The other, Riverwest, has lost its cultural significance as the shadow of gentrification casts over. The project allows viewers travel to these neighborhoods and get to know the places that existand the stories of the people that survive in these areas. It showcases the real life stories of people who have spent their lives in the places in between gentrification and segregation. These people are often forgotten, but deserve to have their stories heard, remembered, and memorialized. This is my city, and this is my project.

Catherine Fleischer

MN - University of Minnesota - Crookston

Discipline: Natural and Physical Sciences

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Abstract Name: Isolation and characterization of potential antimicrobial producing microorganisms from wetlands of Minnesota in a general microbiology laboratory

The need for new antibiotics is becoming critical worldwide as more antibiotic resistance is revealed. To this end, we used the Tiny Earth model to identify, isolate, and identify potentially new sources of antibiotics from soil samples from the wetlands of Minnesota. The Tiny Earth project is a student-sourcing antibiotic discovery community dedicated to discovering potential new antimicrobials. This project was made possible through funding provided by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). The current research project compares the results from three successive semesters of general microbiology (Fall 2021, 2022, and 2023). The media used were the following: nutrient, 10% tryptic soy, actinomyces, and glycerol yeast extract (gyea). The following were used as ESKAPE safe relative pathogens: Enterococcus raffinosus, Staphylococcus aureus, Escherichia coli, Acinetobacter baylyi, Pseudomonas putida, and Klebsiella aerogenes. Chemical extraction involved growing the isolate on agar plates and using ethyl acetate to extract substances to be tested against the ESKAPE safe relative pathogens. This process produced 58 isolates recovered from Fall 2021, 43 isolates were found to be pure and 13 of them showed continued inhibition against the ESKAPE pathogens. From the Fall 2022 samples there were 34 isolates demonstrating continued inhibition with ongoing effort to isolate pure cultures. And finally, there were 75 isolates initially recovered that demonstrated inhibition against the safe relative pathogens in this current fall semester. Ongoing research to isolate pure cultures and characterize the chemicals associated with the observed inhibition will be presented. Lessons learned over the course of this project will also be presented as well as future drug discovery opportunities related to the wetland environment.

T Flesner

MN - University of Minnesota - Morris

Discipline: Interdisciplinary Studies

Authors:
#1 T Flesner

Abstract Name: Disabilities Represented in Theater

In the summer of 2023, research was conducted on how disabilities are portrayed in theater. This research is specified in the literature part, for example: how the character is written, how people treat them, how the disability is portrayed, and the overall emotion towards the disability/disabled character. Within this conduction, fourteen plays were used. Out of these plays: Forty-three percent (43%) beastify the disabled character. Fifty percent (50%) infantilize the disabled character. Twenty-nine percent (29%) objectify the disabled character. Fifty percent (50%) of the plays were overall negative in regards to the character with a disability. Fifty percent (50%) of the plays resulted in the disabled characters' death. Seventy-one percent (71%) used slurs and derogatory names against the character with a disability. In conclusion, disabilities are portrayed in a negative manner. This typically results in some form of discrimination, violence, and or death. The reason why this research is important is to bring light on this situation, the situation being that the theater world has a tendency to depict those with disabilities in a negative way and very little story’s show disabilities being a positive thing. This can be impressionable to audiences as they only typically see disabilities being portrayed in a negative light rather than a positive one. If left unchecked it could allow

people to feel as though disabilities are only these negative things that cause problems and nothing else. Not only damaging those who have disabilities, but also potentially subjecting them to unfair biases.

DeAngelo Fletcher

GA - Morehouse College

Discipline: Social Sciences

Authors:
#1 DeAngelo Fletcher

Abstract Name: An Examination of Emotion Perception Mediated by The CRE

The Cross Race Effect (CRE) is a sociocultural phenomenon that affects the ability to perceive and remember the faces of individuals based on race. Understanding the differences in emotional perception based solely on race may be a key factor in terms of understanding dangerous perceptions in racist/prejudiced encounters. These underlying, potentially incorrect, differences in emotional perception are key factors in carving systems of racial disparity that rely upon face-to-face screening and communication: including healthcare, job opportunities, education, and more. The present study expanded upon prior literature on emotion perception mediated by the CRE while controlling for common limitations. Utilizing a free-choice, untimed, and continuous exposure emotional perception task, it was postulated that 1.) participants would be able to more accurately recognize the facial expressions of own-race faces and 2.) participants would have a wider variety of emotional perceptions for own-races faces. A total of N = 19 participants were selected through a non-probability convenience sampling technique from an HBCU in Atlanta, GA. A demographics survey was provided to the participants to assess the perceived interaction with Black and Caucasian Americans. Afterward, participants met with the researcher to complete one of two versions of a self-made emotion recognition instrument. Emotion expressions for the instrument were obtained from the Chicago Face DatabaseTM and contained Happy, Neutral, Fearful, and Anger expressions. Participants were tasked with identifying any number of facial expressions perceived on all 32 faces. A dependent T-test shows that participants were able to correctly identify significantly more emotions on Black American faces opposed to Caucasian American faces (t(18) = 1.938, p<.05). This indicates strong support for emotion perception being mediated by the CRE and interracial contact. Further research includes a more diverse sample, investigation of the role of racial implicit bias, and systematic definition of success criteria.

Sarah Fletcher

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Sarah Fletcher
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Abstract Name: Medium spiny neuron excitability is greater during early development in rats

The striatal brain regions are key for important processes like premotor function, habituation, and motivated behaviors. When these regions are disrupted, disorders such as Parkinson’s Disease and drug addiction can result. The medium spiny neuron (MSN) is a key neuron type that serves as the output neuron of the striatal brain regions. Though the MSN is present in striatal regions such as the caudate putamen (CP) and the nucleus accumbens core (AcbC), it is unclear whether the physiological properties of the MSN differ between

each of those regions. Many computational models assume identical MSN properties across regions by default, despite these regions mediating different behavior properties. Very few neuroscience studies differentiate between sex and developmental period even though there are known sex and developmental differences in the functional output of the striatal regions. Thus, we tested if MSN electrophysiological properties differ by striatal brain region, sex and developmental period. Meta-analysis included four previously collected datasets, each capturing whole-cell patch clamp recordings in tissue from females and males in one region (i.e., CP or AcbC) and during one developmental period. Excitability was assessed via a battery of biophysical attributes describing the input-output properties of the MSN. We found that MSN excitability differed by all three variable groups, though developmental period exerted the most influence. For example, rheobase, the amount of current needed to elicit an action potential, differed significantly in the CP between prepubertal and adult male rats. Overall, we found an age-linked difference in neuronal excitability wherein prepubertal rat MSNs were more excitable than those of adult rats. These findings indicate that MSN electrophysiological properties, particularly those implicated in excitability, exhibit complex regional, developmental, and sex-based specificity not accounted for by existing models.

Ben Flicker

NM - University of New Mexico - Valencia Campus

Discipline:

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Abstract Name: A Genetics Course-based Undergraduate Research Experience (CURE) Designed to Improve Transfer Student Success in STEM: Lessons Learned from Multiple Implementations.

The University of New Mexico-Valencia Campus is a two-year branch of the University of New Mexico serving mainly first-generation and low-income students. Recent internal university data measured low levels of retention, graduation, participation and feeling of belonging in STEM students, particularly of transfer students, at UNM. STEM students that participate in research as undergraduates have been shown to have increased retention and graduation rates of students that do not. I designed this CURE to address these issues by providing future STEM transfer students with experience using modern genetics laboratory, field, and data analysis techniques. In this project, under predefined parameters, students design, propose and carryout a 16s metagenomics survey of a habitat of their choosing. The course in which the students are enrolled is the second semester in the biology majors' introductory series, typically taken by students in their second year as an undergraduate. Working in self-selected groups, students propose a research site and collection protocol, supported by research literature. They then collect and preserve their samples appropriately before extracting DNA, preparing the 16s libraries and sequencing. Finally, using Mothur on the Galaxy platform, students analyze their sequence data to present their research at the campus' year-end STEM research symposium. Lessons learned through the years of implementing this course as well as ideas for future refinement of this course will be presented.

Vanessa Flores

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
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#2 Shirlaine Juliano
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Abstract Name: Rapid and Tunable Self-assembly of Microscopic Particles using Light

Self-assembly is an autonomous process in which small components organize into large structures. Self-assembly of micro- and nanoscale colloidal particles has gained attention recently as an accessible, bottom-up method of fabricating functional materials. We developed a light-driven mechanism to engineer the self-assembly of microscopic particles into ordered structures within the timescale of 1-10 minutes. We prepared a binary mixture of gold nanoparticles (d = 15 nm) and microscopic colloidal polystyrene particles (D = 0.7 μm-10 μm), and illuminated the suspension with high-intensity green LED light (power = 14 mW). The photothermal heating of the gold nanoparticles generates a temperature gradient which causes a convection flow. We observe the large polystyrene particles form a crystalline monolayer under the convective flow. We achieved large-scale, rapid crystallization for 10 μm particles within 10 minutes and 1 μm particles within a few seconds. We found that the crystalline order of the assembled monolayer can be tuned by using gold nanoparticles with different surface functionalizations. We observed more crystalline structures formed when using CTAB (Cetyltrimethylammonium bromide) coated gold nanoparticles compared to citrate-functionalized gold nanoparticles. We attribute this effect to the screening of the repulsive interaction between negatively charged polystyrene particles in the presence of the positively charged CTAB-coated nanoparticles. Finally, we experimentally measured the temperature increase of the suspension caused by the gold nanoparticles to be in the range of 5℃ to 10℃ by performing a melting experiment of CTAB crystals under light. Our simple experimental system using gold nanoparticles and LED light is a significant step towards achieving rapid, light-driven self-assembly of colloidal particles.

Genesis Flores

NY - SUNY Geneseo

Discipline: Humanities

Authors:
#1 Genesis Flores

Abstract Name: The Unspoken Reality of Our Communities: How We Are Conditioned to Build Better Communities for All Those Except Us

My research focuses on Black and Latino communities and how their social and natural environments impact them. It examines how social structures lay the groundwork for how communities function, as well as understanding the structure's overall functionality. I will not only write about this issue but I want my writing and research to be used as a resource to help improve any difficulties experienced in my community, modeling methods that can be used in other communities, as Karenga touches on in his paper "The Crisis of Black Middle Class Leadership: A Critical Analysis". My project focuses on the Bronx, since it has numerous cultures in each neighborhood but is still segregated based on culture, racial and ethnic background. Additionally, I am from The Bronx so I have seen how these structures have changed. However, I want to make sure that I incorporate and highlight the lived experiences of my fellow community members, as I do not know everything about my community, to shape the improvement that is needed. In discussing the background and technicalities of how these communities function, I use findings from interviews with former teachers and classmates of mine and participant observation to propose realistic solutions that use already existing resources in these communities (e.g. contacting the only bookstore in the Bronx, contacting our mobile book stores, make better use of recreational and college help centers, and contact NYC schools about accurately and effectively providing a Culturally Responsive Sustaining Education and Teaching (CRSE/CRT)). It takes a lot of strength to get out of the vicious cycle of a lifestyle of just settling, though it may be comforting, the younger generations need to see how they can make use of their resources and education. That encouragement and representation starts in the community they live in.

Ari Flores

CA - Occidental College

Discipline: Humanities

Authors:
#1 Ari Flores

Abstract Name: Purloined Poe: Borges's Art of Translation

While Saussure argued that a translation can never be true to an unattainable 'original', Borges responded with the opposite - "the original is not true to the translation" (Krystal 2002). My research will explore the theory of translation at work in one of Borges's renderings of an English language text. Borges translated dozens of works in various languages from different genres, from Sturluson's 'Prose Edda' to one of the founders of detective fiction, 'The Purloined Letter' by Edgar Allan Poe. Many scholars in both English and Spanishhave argued that Borges in his translations has created a 'Poe' that is uniquely his. It isn't a matter of translating Poe into Spanish, or even into Borges, but Borges's act of translating the 'idea' of Poe into Latin American thought and cultural perspective. The pillars of Latinoamerican literature that rose from the literary boom in the 1960s were made possible by a surge of translation of literature of many languages into Spanish, transforming the cultural and linguistic perspective of these works. While a certain level of creativity is necessary for a successful translation, Borges approaches translation as the creation of something new. To translate Poe is not to translate the words themselves, but to create a 'Poe' specific to the cultural and linguistic framework of Argentine Spanish. With these ideas in mind, I will explore what W.V.O. Quine calls 'linguistic understanding' and 'linguistic being' of Borges's Poe in his translation of 'The Purloined Letter'.

Emily Flores

TX - Laredo College

Discipline: Social Sciences

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#3 Laura Lopez

Abstract Name: The Relationship Between Age and Gender on Dream Recall Frequency

Sleep and dreams have always been a topic of interest for many psychologists and neuroscientists. Dreaming occurs in everyone each night and is speculated to benefit the human body in information processing and memory. However, dream experience varies with each individual. Previous studies suggest that dream recall frequency (DRF) is linked to age and gender; specifically, DRF declines with increasing age, and women are more likely to recall more dreams compared to other genders. This study aims to determine whether there is a correlation between age and DRF as well as gender and DRF. A 17-question survey was sent out in Laredo, Texas by means of social media to gather information about individuals' dreams and factors that may affect their DRF. 62.3% of participants (48 responses) reported sometimes recalling their dreams upon awakening. 18.2% (14 responses) always remember their dreams, 16.9% (13 responses) rarely recall their dreams, and 2.6% (2 responses) never remember their dreams. The average score on dream recall was 1.96 out of a 3.0 scale. A slight incline with a correlation coefficient of 0.0095 in dream recall frequency with increasing age was noted. However, the change was not significant enough to accurately identify a relationship between age and dream recall. Findings suggest that more data needs to be collected before reaching any conclusions about the relationship between DRF and 1) age and 2) gender due to small sample size in this study.

Kenan Andre Flores

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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#4 Jessica Blackburn

Abstract Name: Repurposing FDA-approved drugs to sensitize TP53 Mutant Diffuse Intrinsic Pontine Glioma to radiation therapy

Diffuse Intrinsic Pontine Glioma (DIPG) is a form of pediatric brain cancer that originates in the brainstem, mainly affecting children aged 4-11. The survival of children with DIPG has not changed in more than 50 years, and remains <1% with a prognosis of 8-11 months. The standard of care, radiation therapy, will shrink the tumor in most patients and provide symptomatic relief. However, all DIPG will become resistant to radiation therapy. Almost all DIPG have mutations in the p53 pathway. TP53 plays an important role in regulating apoptosis, cell cycle arrest, and metabolism. A common phenotype that is associated with TP53-inactivating mutation is resistance to radiotherapy. To find drugs that could sensitize DIPG cells to radiation, we utilized a TP53 mutant zebrafish line for an in vivo screen of 1,400 FDA-approved compounds to find radiosensitizers that did not rely on an active TP53 pathway. TP53 mutant zebrafish embryos are insensitive to radiation, while radiation halts development in wild-type zebrafish embryos. Drugs were considered hits if they induced apoptosis in the TP53 mutant zebrafish embryos in combination with radiation, but had no adverse effect on embryos that were not irradiated. The top nine hits from this drug screen were further screened against human DIPG cells that had a mutation in TP53 and were radiation resistant. We found that 3 of the nine hits from the zebrafish screen significantly sensitized the human DIPG cells to radiation both in vitro and in an in vivo zebrafish xenograft model (p<0.01). These drugs will next be tested in other DIPG cell lines to confirm their effectiveness as radiosensitizers and characterized for their mechanism of action, particularly related to response to DNA damage staining and metabolism after irradiation.

Luis Flores Gomez

CT - Eastern Connecticut State University

Discipline: Natural and Physical Sciences

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Abstract Name: Identification of Novel Inhibitors Against Alzheimer’s Disease Using Multi-Task Neural Networks-Based QSAR

Alzheimer's disease (AD) is an irreversible, multifactorial neurological disorder with a complex and not fully understood pathophysiology. Numerous protein targets that contribute to the disease's progression have been identified. Recent research has focused on the discovery and development of multitarget-directed ligands

(MTDLs), which are capable of inhibiting multiple targets simultaneously. Traditional Quantitative Structure-Activity Relationship (QSAR) methods, based on Single-Task Learning (STL), often struggle due to insufficient compound activity data. In contrast, Multi-Task Learning (MTL)-based QSAR models overcome this limitation by simultaneously considering multiple similar biological targets, thus enhancing prediction accuracy through the shared information transfer across tasks. Particularly, the Instance-based MTL formulation utilizes a quantitative similarity measure between task pairs at the variable level. This is achieved by adding n extra attributes that represent similarity values to other targets, with n being the number of targets. In this study, our aim is to learn embedded vector representations of target protein sequences, leveraging the extensive amount of available unlabeled protein sequence data. We trained unsupervised doc2vec embedding models on 524,529 protein sequences from UniProt. These models were then used to infer encodings of target sequences for generating the n target similarity attributes. Our study utilized datasets from ChEMBL, which include annotations of bioactivity on 29 AD-related targets, encompassing a total of 48,322 molecules. We compared STL and MTL strategies, incorporating both Random Forest and Deep Neural Networks, to screen for effective MTDLs for AD.

Bintou Fofana

PA - Allegheny College

Discipline: Interdisciplinary Studies

Authors:
#1 Bintou Fofana

Abstract Name: 'Things Just Got Spicy' -- Podcasting, Political Engagement, and Gen Z

The growing popularity of podcasts among Gen Z prosumers (consumers + producers) has been exponential, even in the academic context, since the platform took off in 2004 (Rosell-Aguilar 2007; Seemiller and Grace 2017; McMahon 2021; Bratcher 2022). As a producer of my own political poetry-based Gen-Z podcast “Things Just Got Spicy,” I explore Gen Z’s media habits, particularly as they pertain to their political cynicism about failed institutions and the efforts by previous generations to resolve global problems. The question I ask is: How is Gen Z using political podcasting as both a pedagogical and activism tool, and how does this matter in our contemporary political culture, especially with upcoming elections? I argue that political fatigue has prompted Gen Z prosumers to create their own participatory cultures, selecting peer-curated sources of authentic and trustworthy information, seeking autonomy in learning and advocacy efforts, and using digital platforms for self-expression that are diverse and inclusive. As Gen-Z continues to move away from traditional media sources, research indicates they prefer environments that are more horizontally structured. This creates spaces where Gen Z-ers are not afraid to participate, and their participation is valued by their peers. I explore how podcasting can be used as a creative activism and pedagogical tool by and for Gen Z prosumers; who are more politically engaged than is the popular belief. Adapting the A.I.D.A (attention-interest-desire-action) consumer purchase model and using an auto-ethnographic approach, I address how, in the case of my own podcast by using student voices and experiences to discuss under-the-radar political, social and economic global issues, I have been able to move students from awareness to participatory action and active knowledge-seeking. As this podcast and other similar projects demonstrate, Gen Z participants show a nuanced understanding that political engagement encompasses a multitude of pathways.

Kristen Folk

VA - Virginia Polytechnic Institute & State U

Discipline: Interdisciplinary Studies

Authors:
#1 Kristen Folk
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#3 Claire Gleason

Abstract Name: Ice boots without water drainage support optimal hoof temperatures for the prevention and treatment of laminitis

Cryotherapy is often used to reduce inflammation in acute equine laminitis cases. Certain hoof temperatures have been suggested as effective in minimizing the inflammatory process; however, there is limited evidence on which methods commonly used in veterinary hospitals are best at achieving these temperatures. The objective is to determine how different methods of cryotherapy influence the rate and extent of cooling for the equine hoof wall. Clinically sound horses (n = 4) were exposed to three hoof cooling treatments and a control (no treatment application). Treatments included (1) ice surrounding the hoof in a 5 L fluid bag with water drainage holes, (2) ice surrounding the hoof in a bag without drainage holes, and (3) ice in a commercial wader-style boot. Hoof wall temperatures were collected via thermal imaging every 2 hours for 12 hours after treatment applications. Thermally imaged body temperatures and thermometer-based rectal temperatures, heat index, relative humidity, and ambient temperature were also recorded. Hoof temperatures responded to treatment and were also impacted by time, with hoof temperatures declining and remaining lower than when not exposed to treatment. The fluid bag without water drainage demonstrated the greatest rate and extent of cooling over a 12-hour period. Medial, dorsal, and lateral hoof wall surface temperature responses were similar to each other, reflecting consistent measurements across different aspects of the hoof. The wader boot showed similar trends to (1) the bag without drainage holes; however, it was not well tolerated by the horses, leading to early termination of data collection. This study demonstrates cryotherapy treatments that maintain an ice-water slurry around the hoof result in more optimal hoof temperatures for the prevention and treatment of laminitis. Further research is needed to uniformly evaluate other cryotherapy applications and determine increased specificity of temperature in which the application of cryotherapy is effective.

Calvin Fong

CA - California Polytechnic State University - San Luis Obispo

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Aerospace Engineering Systems Perspective Through Case Studies

Failure case studies are an excellent teaching tool for engineering students. Eight NASA failure investigation reports were analyzed for root cause and recommendations for improvements so that similar failures would not occur in the future. The recommendations call attention to the need for better informal and formal communication to create informed decision making and uncover errors in a timely manner. Analysis of the collection of historical real-world scenarios highlights a need for practical knowledge within a systems perspective. The use of case studies in engineering classes is a simple and practical way to bring the theme of failure into the discussion and learning environment. Research showed that case studies are a useful learning mechanism for studying real world failures. Failure case studies get students to think about the system from different perspectives. The NASA failure reports, in particular, are nicely laid out and useful for familiarizing students with engineering problem solving and solution approaches. Professors can present the particular case studies in class that come from NASA reports. By putting students into problem solving mode with a big

picture perspective, they figure out what solutions are possible. Although students might not understand the significance of a systems perspective from these failure reports, these skills will be appreciated over time. Students read and analyze the failure investigation board recommendations and then compare their own solutions to outcomes from the report. Incorporating case studies into projects has students putting their new systems skills to use with each other in the classroom before they enter the workforce. Early exposure to these reports makes students comfortable with failure. Getting engineers to think about recommendations from failure case studies can be achieved within the structure of the existing engineering education with a systems focus embedded in the coursework.

Nathan Fonseca

IL - Elmhurst University

Discipline: Social Sciences

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Abstract Name: How Disgust Response Predicts Aversion to Precision Fermentation

Precision fermentation is the process of using microbial hosts as “factories” to produce specific functional ingredients which are then used to create food that would typically require some level of input from an animal. This can create more sustainable means to harvest food that wouldn’t have a significant impact on the environment. However, the impact of a disgust response to this process needed to be studied to understand what can be done to make it more appealing. The present study tested the hypothesis that foods produced by precision fermentation would elicit an increased disgust response from participants. A survey was sent out using MTurk that consisted of several questionnaires and demographic questions to determine how likely people are to have an aversion to precision fermentation. The participants were then randomly assigned to a control group in which they were presented with a picture of a cheese pizza, were told that the cheese was made from cow’s milk, and were provided an explanation of the process of how cheese is produced. The experimental group was presented with the same picture but were told the cheese was created from precision fermentation and were presented with a description of the process. While participants seemed hesitant to try food made through precision fermentation, they ultimately appeared open to trying it at least once due to their curiosity. The average rating given by people to the precision fermentation option and the process that people are more familiar with was very similar with just a difference of a few points. If the benefits are emphasized while making it clear that this process won’t leave the consumer ill, people will want to learn more about the process and this beneficial method could become more widespread.

Carmen Ford

GA - Georgia Southern University

Discipline: Social Sciences

Authors:
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#4 Drew Appleby

Abstract Name: Syllabus Features and Students’ Perception of the Course and the Instructor

Classroom first impressions are important to students, and they should also be important to professors. In academia, these impressions are not just made on the first class day but also through the syllabi teachers present before lectures begin. Elements in the syllabus that may influence these impressions include tone/warmth and graphics. Some syllabus elements may determine whether students are even willing to remain enrolled in the course. Professors may motivate students by including syllabus and instructor snapshots with their syllabus. These snapshots are graphic-heavy, 1-page overviews that provide students with highlights about the course content and professor teaching the course. We investigated the effects these snapshots had on students' perception of the course and instructor. Study participants were representative of their Primarily White Institution (PWI); the majority of the individuals in this study were White, heterosexual, women from a large campus. The study measures included questions about students' perceptions of the course and instructor, how thoroughly they read the syllabus, the teacher's perceived care and competence, and demographics. Using an experimental design, randomly assigned participants viewed one of four versions of a psychology statistics syllabus with or without snapshots and completed a web-based survey. An instructor snapshot had a small, positive effect on students' overall perception of the perceived care and competence of the instructor. A syllabus snapshot had a small, positive effect on students' willingness to take the course. Additionally, White students and women had more positive perceptions of the instructor than students of color or men.

Jordan Fore

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Jordan Fore

Abstract Name: Exposure to 5 kHz and 10 kHz Ultrasound Disrupts Nuclear Transport of HeLa Cells

Ultrasound is a medical imaging technique that uses sound waves to create images of soft tissues and internal organs. Ultrasound used at low frequencies has beneficial effects on cells including increased proliferation and differentiation rates due to an increase in growth-factor-related-gene expression. However, exposure to ultrasound stimulation can have adverse effects on cells creating deformities in the Nuclear Pore Complex (NPC), rupturing of the Nuclear Envelope (NE), and triggering apoptosis. The NPC is vital for proliferation and survival, as it is the selective gateway by which molecules transit the NE. Transport proteins importin alpha and importin beta used for import, and exportin for export, must be in the right place to interact with the NPC and perform nuclear transport. Because ultrasound disturbs the NPC and NE, we asked if nuclear transport is also disturbed at the frequencies 2.5, 5.5, 10, and 20 kHz in HeLa cells. Cell viability was observed via MTT assays followed by immunofluorescence and image j software to visualize transporter localization. 2.5 kHz did not affect cell viability, whereas 5 kHz lowered cell viability by 25%, 10 kHz by 19%, and 20 kHz by 22%, therefore we focused on 5 and 10kHz. Exposure to 5 kHz had no impact on importin alpha and exportin expression in the nucleus, yet increased importin beta in the cytoplasm, which may indicate a decrease in nuclear transport. Conversely, 10 kHz caused a decrease in exportin expression in the nucleus, while causing an increase of importin alpha and beta in the nucleus, which reflects an upregulation of nuclear transport. These results may indicate why 5kHz had a greater impact than 10 kHz on cell viability. Our next steps are to investigate the NPC and NE to see if changes in these organelles after exposure to ultrasound are the cause of altered transport.

Sarah Fortin

CAN - Vancouver Island University

Discipline: Health and Human Services

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Kali Moreno
Sai Chinmayi Pulipaka

Abstract Name: An Exploration of Land-Based Wellness Practices in Recovery from Addiction: Learnings from Indigenous People on Vancouver Island

In 2016 addiction was declared a public health emergency, with British Columbia at the forefront of the crisis. In 2022, it was reported that fatal overdose was the leading cause of death for those ages 10 - 18 (BC Coroners Service, 2022). As Indigenous communities are experiencing disproportionately higher effects of this emergency, the need for culturally appropriate solutions is urgent (Norton et al., 2022). This has led to a growing interest in identifying and promoting practices that promote recovery and support Indigenous youth. Despite the immense need, Vancouver Island does not have many in-patient facilities for youth. This will change in the coming year, as a youth wellness center is planned as part of an initiative to expand services for Indigenous youth with a particular focus on land-based wellness. This research focused on identifying land-based practices that have helped in the recovery of Indigenous individuals with the belief that their experiences can provide valuable insight for new program development. Through a lens of appreciative inquiry, semi-structured interviews were conducted with Indigenous individuals in recovery from addiction on Vancouver Island about the land-based practices and services they found most helpful in maintaining their recovery and fostering holistic wellness. From these interviews, themes emerged that may inform the development of culturally appropriate recovery and wellness programming for Indigenous youth exploring recovery and sobriety. The results of this study show that Indigenous individuals' lived experience and knowledges provides valuable insights toward improving and enhancing the lives of those who follow. Their perspectives can inform community responses to the challenges of addiction that are grounded in local culture and knowledge.

Heath Foster

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Heath Foster

Abstract Name: Perception vs. Reality: How NFL Scouts, Fantasy Football Experts, and College Students Value NFL Players

Fantasy football, a virtual game tied to real players' performance, has become a significant influence in modern sports culture. It not only shapes fan engagement with the National Football League (NFL) but also affects player evaluations and league marketing strategies. Notably, the NFL, a multi-billion-dollar industry, and its revenue streams are now partially dependent on public perceptions of a player's fantasy value, which may differ greatly from their actual on-field value to a team. NFL players undergo evaluation by two distinct groups: fantasy football experts and NFL scouts and managers. Each has contrasting criteria for what makes a 'good' player. Fantasy football experts prioritize statistics, consistency, and maximizing fantasy points in the short run, emphasizing opportunities and touchdowns. In contrast, NFL scouts and managers heavily consider a player's physical attributes and long-term potential to contribute to a team's success. This study aims to fill a gap in previous research by comparing these distinct evaluation styles and analyzing the best NFL wide

receivers and running backs for each group over the past five seasons. The lists of players will be determined by a variety of advanced metrics closely aligned with each evaluation style. College-aged students familiar with the NFL and fantasy football will then rank these players in a focus group, helping determine if public perception aligns more with fantasy experts or NFL scouts. Previous research suggests participants will lean towards the former, offering valuable insights into the game's real-world impact. The results of this study can further influence the NFL's marketing strategies, player endorsements, and player acquisition processes. Additionally, this research can lay the groundwork for further exploration of how fan perceptions of players in different sports leagues contrast with their actual value to a team.

Sarah Foster

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
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Abstract Name: Microbiome Derived Metabolites and Their Potential Protective Benefits During Sepsis and Immobilization Induced Muscle Dysfunction

Background: The Covid-19 epidemic has uncovered major limitations in healthcare practices and presented major challenges to clinical nutrition support in the intensive care unit (ICU). Patients suffer from increased muscle breakdown, which exacerbates the body's ability to recover from the viral infection. The impact of the microbiome on enteral nutrition support for critically ill patients is not well understood. Research has focused on the pre-biotics (i.e. dietary fibers, simple/complex sugars, and amino acids/peptides/proteins) and pro-biotics (i.e. bacterial species of interest) improves patient outcomes, but other studies fail to find such benefits. Many bacterial derived metabolites (post-biotics) are absorbed into systemic circulation and taken up by peripheral tissue. Thus, the impact of the post-biotics are equally, if not more, important for the host compared to pre- and pro-biotics. We hypothesize that post-biotics, such as short chain fatty acids (SCFAs) and succinate, will contribute to attenuating the catabolic effects of sepsis and immobilization on peripheral tissue such as skeletal muscle.Methods & Results: Sepsis was induced in mice through intraperitoneal injection of anerobic bacteria mixture. Antibiotics and fluids began 12 hours post sepsis induction and continued BID for 3 days. Immobilization was achieved using 3D printed casts and taped onto the mouse hindlimb unilaterally. Muscle function was assessed on day 4 post sepsis or immobilization by measuring plantarflexion in vivo using isometric force measurements. Mitochondrial function was assessed using high resolution respirometry and reactive oxygen species production was measured using AmplexRed fluorescence. Short chain fatty acids and succinate are either provided with the fluids during resuscitation post sepsis or through drinking water ad lib.Conclusions: SFCAs and succinate may be required for protecting peripheral tissue during ICU-like conditions. Although more studies are required to confirm these findings in human patients, changing standard enteral and/or parenteral nutrition may help reduce ICU mortality.

Daniel Fournier

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Daniel Fournier

Abstract Name: Sleep Quality in Relation to Time Spent Outdoors Versus Time Spent on Screens Daily

Prior research has shown a strong correlation between exposure to blue light and a decrease in sleep quality. Exposure to ultraviolet light has been shown to decrease the effects of environmental stressors, which could increase sleep quality. The current study explores the effect of natural light versus artificial light in relation to sleep quality among college students. The researcher hypothesized that there would be a positive correlation between outdoor exposure and better sleep quality and an inverse association between blue light exposure and sleep quality. This study used the Questionnaire of Sleep and Psychological Functioning at Work (Zupanic et al., 2021) to examine sleep quality. The Screen Time Behavior Questionnaire was used to measure device utilization (Banderia et al., 2020). Outdoor exposure and recreational habits were measured with the Outdoor Play Questionnaire (Mullenbach et al., 2019). The sample included 104 full-time college students from a Christian university. A correlation and simple regression analysis were conducted to analyze the data. The findings revealed that hours of watching television significantly predicted poor sleep quality (b1 = .094, p =< .05. There was no relationship between outdoor exposure and recreational habits and sleep quality. These findings demonstrate a need for a decrease in screen usage. Further research must address the ways that outdoor activity may increase sleep quality among college students.

Alexandra Fowler

CO - University of Colorado at Boulder

Discipline: Natural and Physical Sciences

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Abstract Name: Air Pollutant Spatial Analysis and Interpretation of Oil Field Emission Data within South LA County

Petroleum oil drilling started in the 1890s within LA County. Many original well sites have continued into the modern day, but regulations for oil drilling have not been meaningly updated since the 1950s. As such, oil fields can be in proximity with vulnerable communities. Minimal research has been completed into the air quality impacts of oil drilling within urban environments in lower-income, BIPOC communities. The Los Angeles Voices on Oil, Community, and Environment Study (LAS VOCES) is a project aimed at this gap in research; the analysis of air quality data in comparison to general community health.Air quality information in the community is recorded using HAQ-Pods; these packages incorporate low-cost sensors to quantify various pollutants, including VOCs, ozone, CO, and NOX. The package's low cost and maneuverability allow for the deployment of a large network of pods to gather high spatial resolution data around four main areas in the community: an active oil well, an idle well, a deconstructed well, and a highway away from any oil site. Calibration of the low-cost sensor data is done through a "one hop" calibration method; each individual pod is calibrated to a "secondary standard" pod. The secondary standard pod is then deployed next to a reference instrument that is less susceptible to humidity and temperature changes. Calibration models are fit based on RMSE and R2. This allows for our low-cost sensor data to be comparable to reference-grade data.After calibration, variation in pollutant field concentrations across different areas in the community will be determined. The proposed poster will show different calibration model fits for the CO and ozone data and visual graphics to communicate the differences in air pollution across an urban oil extraction environment. This project shows the value in low-cost sensors for data gathering and pollutant spatial analysis.

Brandon Fowlin

NC - Elon University

Discipline: Social Sciences

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Abstract Name: Age differences in reactivation of neural representations in learning and retrieval of modified associations

Older adults have a specific deficit in forming associations which includes difficulty modifying existing associations. This may be due to age differences in reactivation of neural representations. Specifically, we hypothesize older adults do not effectively reinstate patterns of neural activity representing previously-encoded associations when encoding and retrieving new or updated associations. We tested this hypothesis in an fMRI experiment in which young and older adults memorized and recalled pairings of low-imageability words with pictures of faces, scenes, and objects. Each of the five scanner runs included three phases: 1) initial learning of pairs; 2) cued recall of initial pictures and learning of new pictures; and 3) cued recall of new pictures. Outside the scanner at post-test, participants identified the “new” picture for each word from a set of three, including the new picture for that word, the initial picture for that word, and an unstudied picture. Algorithms were trained to classify picture type from each trial using fMRI patterns collected during the initial encoding phase, and then tested on the patterns obtained during subsequent phases. For both age groups, the algorithm successfully classified neural patterns by picture type during the learning phases. For neural patterns collected during recall, classification was better for young than older adults, consistent with better reactivation of encoded information during recall. At post-test, older adults were significantly more likely than young adults to mis-identify the initial picture for each word. Critically, post-test performance was linked to reactivation of neural representations in the scanner. For both age groups, correctly identified “new” pictures at post-test were associated with greater reactivation of neural patterns for initial pictures during encoding of the new picture. The findings support the hypothesis that older adult memory may be improved by encouraging reactivation of prior associations when learning new or modified associations.

Caroline Fox

PA - Westminster College

Discipline: Natural and Physical Sciences

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Abstract Name: Paraben Exposure Results in Developmental Abnormalities in Zebrafish

Parabens are chemicals commonly found in mascaras, lip glosses, lotion, scrubs, and other cosmetics as a preservative. They enter the body through skin, and esterases are unable to break them down. Parabens have been found in fetal blood, indicating their ability to cross the uteroplacental barrier. They act as an endocrine disruptor, interfering with the nuclear receptors for androgens, estrogens, progesterone, and influencing enzymes that metabolize natural hormones. Using zebrafish (Danio rerio) embryos as my model organism, I sought to find if parabens influence fetal development. At 24 hpf, dechorionated embryos were exposed to different concentrations of butylparaben [6.25 μM, 12.5 μM. 25 μM], and propylparaben [6.25 μM, 12.5 μM, 25 μM, 50 μM.] Zebrafish were also placed into two controls, the E3 solution and E3 with 0.1% DMSO. The fish were observed 48, 72, and 96 hpf for developmental defects and measurements of the yolk sac, pericardial sac, total length, eye diameter, and heart rate were taken. They were removed from the solution and placed into E3 medium at 72 hpf. A significant enlargement of the pericardial sac and yolk sac, a spine curvature, and a decreased eye diameter was observed upon treatment, particularly in the higher concentrations of both chemicals. Heart visualization of the high concentration treatment groups revealed a stretching of the heart resulting from the pericardial edema. The survival rate was decreased among the higher treatment groups of both propyl and butylparaben solutions. By 5 dpf, all zebrafish from the highest concentrations of paraben solution in both chemicals died, and the fish in the 12.5 μM butylparaben group and 25 μM propylparaben group exhibited extreme edema throughout their body, indicating a disfunction of osmotic balance causing them to retain fluids due to a developmental defect caused by their previous paraben exposure.

Taylor Fox

MN - University of Minnesota - Rochester

Discipline: Social Sciences

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#6 James Winchip

Abstract Name: Comparing Views of Classroom Expression Between Majority and Minority Demographic Groups on a Small College Campus

Controversial conversations can be intellectually beneficial to students. However, instead of taking part in such conversations, college students are choosing to avoid these topics altogether. It is worth exploring the prevalence of this avoidance on small college campuses, and how it may look different for majority student groups versus minority student groups. This study specifically looked at students at the University of Minnesota Rochester campus where we compared the majority group, white females, to the minority group, all others. In particular, we are looking at student views related to a learning environment where students are exposed to all types of speech and viewpoints, even if it means allowing speech that is offensive or biased. To explore this topic, we examined student responses on the campus expression survey provided by Heterodox Academy. The majority student group reported preferring a learning environment with less limited classroom expression in comparison to all other demographic groups combined. Excerpts from qualitative student interviews offer support for these findings. These results might reflect an attitude that the majority group has in regards to less limited classroom expression. Our results suggest that classroom leaders and instructors may benefit from considering the differences in the majority and minority status of students when facilitating student discussion.

Katlyn Foy

AL - University of Alabama at Birmingham

Discipline: Social Sciences

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Abstract Name: The Effects of Dance Composition on Mental Health

While dance is shown to be a way of expression and an alternative physical activity, there is considerable evidence that suggests the “double play” of musical stimulation in the reward centers of the brain and the excitement of the somatosensory cortex from dance decrease cortisol and increase dopamine levels, therefore decreasing stress and depression related symptoms. In the study, a student was chosen to participate in a project that consisted of learning a dance every other week throughout a fourteen-week semester—a total of seven dances—and then perform and record the video to be sent in as proof of compliance. The student was asked to keep a journal throughout the project and write about how the choreography and musical duo made them feel at three separate points: when they first watched the dance, during the learning process, and after the final performance. The dances consisted of a variety of choreographers and alternated in overarching themes of joy and maladaptive emotions. The journal entries of the student showed a positive correlation between the emotional style of the choreography and internal emotion felt during and post-performance; a more joyful style dance or musical composition generated more joyous emotions throughout the process and post-performance. However, when performing compositions of emotional themes, the entries reinforced a more emotional mood from the performer, but in correlation to times of stress or more depressive states, the emotional connection to the movements and song choice had the opposite effect: a release of built-up stress and anxiety. These results demonstrate the effect that the style and musical composition of the dance can have on the mental state of the student, suggesting a possible use as a non-pharmacological treatment for neuropsychological disorders such as anxiety, depression, and other mood disorders experienced by students in high stress environments.

Emily Francis

NC - Western Carolina University

Discipline: Natural and Physical Sciences

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#3 Emily Francis

Abstract Name: Investigating the effects of urban noise on communication in birds: an experimental approach

Birds that are successful colonizers of urban areas exhibit increased tolerance to human disturbance. Disturbance from anthropogenic noise may be difficult to overcome because it includes frequencies that overlap with the frequency of birds’ acoustic signals in ways that impact communication. Populations of birds that live in noisy urban areas sing using higher minimum frequencies than those living in quieter areas. Higher minimum frequency may make songs more detectable in urban noise because they escape masking frequencies of urban noise. In this study, we experimentally test whether masking noise (frequencies that overlapped with song) had more impact on detection than non-masking noise (frequencies that did not overlap with song) in song sparrows (Melospiza melodia), a species that has been shown to use songs with higher minimum frequencies in response to urban noise. We played song embedded in masking noise and song embedded in non-masking noise to 25 territorial males and measured behavioral response of males. If

masking noise impacts detection, we should find that males will differ in their response to song played in masking versus non-masking noise. We found that males responded similarly to playbacks. Our results suggest that song played in masking versus non-masking noise were equally detectable. One possible explanation for our findings is that frequency shifting in song sparrows does not function to increase detection in urban noise, but instead functions to maintain the ability of conspecifics to discriminate between males based on song. Or if discrimination is less possible in masking noise, then frequency shifting may function to decrease the costs of singing in noise. Future studies should investigate the ability of receivers to discriminate among acoustic signals in urban noise.

Isabella Frank

PA - University of Pittsburgh

Discipline: Health and Human Services

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Abstract Name: Differences in sedentary behavior by shift type in female nurses engaged in rotating shifts: An exploratory, with-in person analysis

Purpose: To explore the associations between physical activity and sedentary behaviors in nurses working rotating shifts. Context: Lack of physical activity and increased sedentary time are primary concerns to health, causing issues like diabetes and cardiovascular disease. Previous research in this area has relied on between person comparisons. This study explored the with-in person differences, which controls for the variation among people, to elucidate further the role of shift type on health behaviors. Methods: This is a secondary, exploratory analysis of data from a larger study. Nurses engaged in rotating shifts (i.e., worked both day and night shifts) were recruited. Sociodemographic data and participants' work schedule (e.g., day shift, night shift, or day off) were collected. Participants wore a triaxial accelerometer on their left hip to objectively measure physical activity and sedentary behavior for 24 days. Paired T-tests were used to examine the within-person differences in mean moderate to vigorous physical active (MVPA) and sedentary time between day shift, night shift, and days off. Results: Participants (N = 10) were all white and female with a mean age of 31.6 years old (standard deviation [SD] 6.2, range 23-42). There was no statistical significance between shift types and MVPA. However, sedentary time was greater on night shift compared to day shift (687.2 [95.9] vs. 602.7 [39.4], P = .029) and on night shift compared to days off (678.5 [93.5] vs. 491.2 [153.2], P = .004). Additionally, sedentary time was greater on day shift compared to days off (597.1 [105.5] vs. 470 [144.6], P = .035). Conclusion: Nurses rotating shifts spent more time in sedentary behaviors on night shift than both day shift and days off. Interventions to reduce sedentary behavior and mitigate its negative health consequences, should be developed and tested.

Julia Frankis

MD - Salisbury University

Discipline: Natural and Physical Sciences

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#2 Katherine Miller

Abstract Name: Distribution of Sediment Containing Zinc, Copper, and Lead Trace Metals in the Lower

Susquehanna River

The nation's largest estuary, the Chesapeake Bay, is highly influenced by the Bay's largest sediment depositor: the Susquehanna River. The 444 mile river drains 27,500 square miles from land in New York, Pennsylvania, and Maryland. Due to the size of the watershed, land use, and regulations, the Susquehanna River ends up transporting much of the sediment that empties into the Chesapeake Bay. Within the sediment are often anthropogenic pollutants including trace metals such as zinc, copper, and lead. The Conowingo Dam was built in the lower Susquehanna River during the 1920's as a hydroelectric dam, but subsequently acted as a means to catch sediment. Given this, how does the dam impact the distribution of trace metals in sediments? Two sites upstream from the dam and four sites downstream were sampled in triplicate, sieved into three fractions, and digested using a 5:1 mix of nitric acid to 30% hydrogen peroxide. The concentration of the trace metals was evaluated using an atomic absorption spectrophotometer. In general, the base of the Conowingo Dam had the highest concentrations with the largest range of variability of trace metals found. There was variability in the trends seen between metals within the same site as well. Sites such as Havre de Grace contained concentrations of lead as high as 48.38 ppm, compared to the highest concentration of copper, 9.546 ppm. The results from the sieved fractions suggest that particle size has some influence on trace metal concentration. It was found that the highest concentration of metals was in the fractions containing sediment larger than 250 micrometers and the fraction containing sediment smaller than 63 micrometers.

Lily Franklin

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Bleu Franklin

Abstract Name: Jacqueline Casey in Design - Bleu Franklin

Jacqueline Casey has a simple yet familiar start to the art world as many other artists do. She parents wanting her to have a more stable job while she only wanted to make art. When she finally has the chance and freedom, she sets off to an art college in the hopes of becoming a fashion designer. She meets the person that will introduce her to her future job, Muriel Cooper, in college. They were the best of friends and ended up working at the Massachusetts Institute for Technology together for many years. She meets and marries her husband, Billy Casey, before Muriel takes off to learn more about design and art elsewhere. Ten years of work pays off when Jacqueline Casey gets the promotion to Design and media Director. This position enabled Casey to hired Ralph Coburn. They will work together during a five-month trip to Europe where they will intake other culture's designs and incorporate them into MIT designs. They learn from a Swiss girl and adopt the "Swiss" style. The style that they brought to MIT helped Casey and Coburn revolutionize their work and improve their designs. It is shown through Casey's work how she had improved through the years and became this pinacol of a modern, clean, straight to the point kind of design that many take inspiration from. She had set that path ablaze for many people to use and draw from in their own ways, making an art revolution.

Jazmyn Franklin

OK - University of Central Oklahoma

Discipline: Social Sciences

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Abstract Name: Identity Races, Game Faces, and Mental Spaces: An In-Depth Exploration of Intersectional Identities and Their Impact on the Mental Well-being of Black and African American Women in Athletics

The nationwide effort to prioritize mental health in college athletics must include a deeper understanding of how background, culture, and intersectionality predict and affect mental health outcomes. Research highlights significant mental health disparities between Black and non-black individuals. Mental Health America (2022) reported adult Black and African American Americans are more likely to have feelings of sadness, hopelessness, and worthlessness than adult whites and are more likely to attempt suicide. Alarmingly, while overall suicide rates decreased in 2019 and 2020, rates increased among Black Americans, particularly those aged 10 to 24, where suicide ranked as the third leading cause of death in 2020 (WISQARS, 2023).Given the alarming statistical data and predictive variables, indicating a greater susceptibility to mental health challenges in this demographic, it is crucial to prioritize the well-being of Black and African-American female collegiate athletes. Black women face unique challenges related to their identity and often adopt the "strong black woman" stereotype, which can have positive and negative effects. Student-athletes, are also grappling with rising mental health issues, making suicide attempts more likely, especially among women and student-athletes of color (NCAA, 2022, p. 9).This study explores the mental health experiences of six Black and African-American female athletes in the NCAA through an intersectional lens, considering the historical and contemporary impacts of systemic oppression. Collecting data will involve an IRB-approved comprehensive literature review, surveys, and interviews. Various mediums will present and showcase the real experiences of these athletes and highlight systemic oppression's generational impact.The anticipated contribution is to raise awareness of the multifaceted adversity Black and African-American female athletes face. By shedding light on their challenges, it aims to inspire collective efforts to remove barriers and create a more inclusive and supportive environment for all athletes, particularly those with diverse identities who have historically been marginalized.

Nayeli Frantz

MO - Missouri State University

Discipline: Social Sciences

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Abstract Name: Green Card, Greener Pastures: How a New Pathway to Citizenship Will Affect Undocumented Immigrants

Illegal immigration and the process of obtaining citizenship have been popular and contentious areas of discussion for many years. Many have attempted to rectify the system by proposing programs such as the DREAM Act and DACA, yet little has been accomplished in terms of how undocumented immigrants can obtain citizenship. The FRAIT Initiative aims to improve the immigration system by forgiving those who have paid taxes, approving more visas, adding more security checkpoints to the southern border, and quickening the process of obtaining residence status and citizenship as a whole. This paper will draw information from sources such as the American Immigration Council, the Institute of Taxation and Economic Policy, and the Migrant Policy Institute in order to explain the need for radical changes to the United States' immigration system. Keywords: immigration; immigration reform; undocumented immigrants; illegal immigration; FRAIT Act; DACA; DREAM Act; border control; ITIN

Nakaya Frazier

CA - University of California - Merced

Discipline: Health and Human Services

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#3 Susana Ramirez

Abstract Name: Exploring the Structural Root Causes of Food Insecurity Before, During, and After the COVID-19 Public Health Emergency Order

Background: Food insecurity rates skyrocketed during the COVID-19 pandemic, particularly affecting low-income, and communities of color. In response to the heightened food insecurity rates, the U.S. expanded various food assistance programs, however, these expansions ended in early 2023 with the lifting of the public health emergency order. We consider how the health inequities embedded within structural root causes may have shifted public discourse and policy response. Purpose: The aim of this study was to explore whether articles in the New York Times (NYT) discussed root causes of food insecurity and to describe the type of root causes discussed before, during, and after the COVID-19 pandemic emergency. Methods: We used the ProQuest U.S. Major Dailies database to identify articles covering food insecurity in the NYT, before (P1; February 2019-2020), during (P2; March 2020-December 2022), and after the ending of the pandemic emergency which officially ended in May 2023 (P3; January-September 2023). From the resulting N=8,171 articles (P1: 1,772; P2: 5,277; and P3: 1,122), we used a constructed week design and randomly selected N=1,354 articles for a final analytic sample representing 10 weeks in P1 (N=291), 27 in P2 (N=872), and 7 in P3 (N=191). We coded each article for the major causes of food insecurity; specific federal/state programs mentioned; and mention of special populations. Preliminary Findings: Few articles discussed that food insecurity stemmed from structural root causes. The most common types of root causes mentioned were past polices, systemic racism, and societal structures. In contrast, most articles mentioned that food insecurity was a result of inflation, budget cuts to food programs, and supply chain interruptions. Conclusion: The root causes of food insecurity were less commonly discussed in the media. We discuss implications of using news media to expand the understanding of the root causes of food insecurity.

Jonah Frazier

CA - University of California - Riverside

Discipline: Natural and Physical Sciences

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Abstract Name: The Interplay of Various Transcription-Related Proteins on Cell Identity

Proteins play a vital role in comprising our physical characteristics as well as maintaining bodily processes and other functions. They are constructed from the nucleic acid known as messenger RNA (mRNA), which in turn is constructed from DNA, the genetic information in each of our cells. This mRNA-from-DNA relationship is known as transcription. Cellular regulation of transcription, controlling the when and where of mRNA production, plays a critical role in differentiation, a dynamic process in which a cell with generic features develops specialized functions, such as immune cell functions. However, the exact relationship between transcription regulation and cellular differentiation is unknown. Histone chaperones are a diverse class of proteins that help regulate all DNA-mediated processes and are a good subject for study into this relationship. By targeting the DNA replication-associated histone chaperone CAF-1 and the transcription-associated SPT6, we used loss-of-function assays to investigate the relationship of these molecular processes

in maintaining the identity of granulocyte-macrophage progenitor cells (GMPs). GMPs are niched in the bone marrow and have the potential to differentiate into white blood cells, such as neutrophils. We report that depletion of histone chaperones SPT6 and CAF-1 alters the progenitor identity by allowing different transcription-related factors, such as the AP-1 transcription factor family, to drive alternative gene programs. To validate these findings, we are establishing a CRISPRi system in GMPs to transcriptionally silence these genes, which will allow us to confirm the functional importance of our transcription factor candidates. These findings could improve the understanding of hematopoiesis at large, as well as certain blood diseases like acute myeloid leukemia, where the diagnosis is based off of an abnormal accumulation of myeloid progenitors and harbors an exceptionally lethal prognosis.

Alana Freeman

GA - Georgia State University

Discipline: Health and Human Services

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Abstract Name: The Effectiveness of Vinegar as a Natural Household Antimicrobial

A growing number of people view commercial cleaning products as detrimental to the health of humans and pets because of the volatile organic compounds (VOCs) released during use, and the potential they have to worsen health conditions. Natural cleaning products, such as vinegar and baking soda, do not release VOCs. Whether those natural cleaning products can effectively remove microorganisms and if the quality of cleaning is lost when switching from harsh chemical disinfectant cleaning products to more natural products is explored in this study. This study was performed as an At-Home experiment and aimed to evaluate the effectiveness of a natural cleaner in removing microorganisms from a washcloth contaminated with mold. Three cotton washcloths were dampened with hot water and placed into a plastic container to develop mold for 7 days in a warm humid environment (garage). To test the cleansing properties of a natural cleanser, each washcloth was soaked for one hour in a solution of either household chlorine, vinegar, or water in a ratio of 1/4 cup cleaner to eight cups of water. Microbial growth characteristics from each solution were determined on TSA plates. The highest microbial reduction was achieved using the household chlorine solution in comparison to vinegar and water. The water solution without cleanser contained the most diverse microbial growth in color, form, elevation, and margin. Treatment with vinegar reduced the diversity of microbial growth but was less effective than using a household chlorine solution. Further analysis using various concentrations of “safer” natural cleansing products will be explored. Our findings from this research could provide further implications for using natural cleansers to reduce potential pathogenic microbes from sensitive items in the common household including foods, pet areas, and infant toys.

Ryan Freund

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
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Abstract Name: Handshake #1

(3d Visual Arts Display)Welded steel, cast aluminum, gun parts The weaponization of a deal; a cast aluminum handshake replaces the firing mechanisms of a shotgun. It explores the handshake as an inciting incident, a symbol of money, power, and the enforcement of peace. This work was produced with the tools and facilities of the Michigan State Sculpture Department, under the support and supervision of Jacqueline Sullivan-gould, Laura Cloud, and Walter Peebles. Some artists that both inspired me and provided context for this work are Nemo Gould, and Hugh Haydens work as Both artists use firearms in combination with other materials to make comentary about different societal trends.Handshake #1 responds to situations where a relationship or union between two parties becomes violent for another, a situation modeled tragically by the United States involvment in the distribution of arms to the Gaza Strip. the work responds to high dollar buisiness deals that often make money at the expence of third world countries, and the environment. handshake #1 points viewers towards the conclusion that mankind is complicit in a violent system.to make this work, a handshake was molded on two people, and then used to pour wax into. this wax was converted into aluminum using lost wax casting . Once aluminum, it was shaped to fit the profile of the firing portion of a shotgun, a barrel welded out of mild steel pipe was fitted, as well as the wood from a shotgun.In working on this piece I learned how to cast, drill, grind, weld, and fabricate with casted aluminum in combination with other found materials. this piece fits into my body of work as I often use my practice to question the violence I see in every day life, and aim to make my audience question it as well.

Charles Frey

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

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#6 Angela Bertsch

Abstract Name: Distance as a Barrier: A Statistical Analysis of Health Impacts from a Clinic Closure in Rural Wisconsin

Rural areas face unique healthcare challenges impacting their patients. One major driver of the disparity between urban and rural patient health outcomes is distance. This research seeks to answer how the closure of a clinic in rural Wisconsin affects nearby patients and how significant of a role distance plays. An abundance of research exists on the greater overall adversity and distinctive obstacles that rural healthcare faces. Rural patients have lower incomes, higher risk of chronic illnesses, more difficult access to healthcare, and are less likely to be insured. Internally, rural healthcare struggles to recruit and retain its workforce, accrues lower revenues, and receives fewer inpatients. Market factors are only worsening these trends with rural hospitals closing regularly. A defining aspect of rural healthcare and the more remote locations is increased distance. Findings of the impact of distance on healthcare outcomes differ greatly. Although literature is extensive on the topic of rural hospital closures, research on rural clinic closures is absent. This study seeks to fill that gap. The impact of a clinic closure on the patient population was evaluated on an observational study of 589 patients that were originally paneled to the closed clinic prior to the closure on December 31st, 2021. Data for those patients was also captured through the following year of 2022. Five health indicators were assessed based on patients' drive time before and after closure through paired samples Wilcoxon signed rank tests, ordinal logistic regression, and paired Mann Whitney U-tests dependent on data distribution and data type. Although the drive time median from 2021 to 2022 increased 135.30%, there were no significant effects found in health outcomes. With a temporally short dataset, this could change in the future. As such, this study or a similar study should be continued or revisited in the future.

David Frias

CA - California State University - Fullerton

Discipline: Interdisciplinary Studies

Authors:
#1 Emily Crowl
#2 David Frias
#3 Hannah Koza
#4 Timothy Kang
Hannah Koza
Timothy Kang

Abstract Name: Integrated Design and Development of a Sub-Orbital Launch and Recovery System

Orbital Labs aims to design and develop the Sub-Orbital Launch and Recovery (S.O.L.A.R.) system, a high-

altitude balloon mission with the intersection of three disciplines: firmware, electrical, and mechanical. Firmware topics focus on the Orbital Avionics Controller (OAC) firmware which is an embedded system adopting FreeRTOS for task-based architecture with Python scripts and git version control for development. Electrical topics focus on the development of a robust avionics hardware, integrating sensing capabilities, telemetry and power management solutions. Mechanical coverage invokes a lightweight aluminum chassis design with intricate trussing for rigidity and flexibility, a payload bay with elastic tethers for mechanical and electrical control of experiments, and a recovery system with parachute deployment mechanisms. The successful implementation of these technical components is essential for the mission's success in acquiring critical high altitude balloon research data.

Ashley Fricks-Gleason

CO - Regis University

Discipline:

Authors:
#1 Ashley Fricks-Gleason
#2 Jamey Maniscalco

Abstract Name: A modern CURE for a long-standing undergraduate neuroscience methods course

Our Neuroscience Methods course has long been the most anticipated and loved course in the Neuroscience major at Regis University, but the format was quickly becoming outdated and stale; a change was needed. We found ourselves facing two challenges: 1) our faculty and students were no longer fulfilled by conducting replication studies in this course, and 2) the number of students declaring the neuroscience major – and consequently, student interest in independent research – was outpacing capacity in faculty research labs. Our students desired more authentic research experiences and our faculty wanted to combine their teaching and research efforts more efficiently. We needed a CURE! Course-based undergraduate research experiences (CUREs) have been gaining popularity as a way to integrate research experiences into the undergraduate curriculum. In contrast to independent research in a faculty mentor's lab, CUREs provide a means to scale the experience of engaging in authentic research to a broader population of students. This increased accessibility was attractive to us as faculty because it allows us to provide a higher-quality educational experience to a wider swath of students, while also increasing our scholarly productivity. CUREs allow students to move away from traditional "cookbook" lab activities – or in our case, forgo replication experiments – and work on novel questions instead. This invigorates the course experience for students and provides "real world" research experience that better prepares students for graduate school and careers in the sciences. CUREs have been demonstrated to benefit both the students and the instructors and it's easy to see why they are growing in popularity; however, this transition was not without significant challenges. Here we discuss the hurdles we faced in reimagining this course as a CURE, share some of the solutions we developed, and invite conversation around ways to further improve this course moving forward.

Victoriyah Friend

GA - Georgia College and State University

Discipline: Humanities

Authors:
#1 Victoriyah Friend

Abstract Name: Abolitionist Rhetoric and the Campaign Song in 1860

Music has played a significant role in presidential politicking since the 1840 campaign of William Henry Harrison (Scott, 2017). This music was circulated in small, printed booklets called “songsters.” In the 19th century, campaign songs typically praised one candidate, or denigrated others, but sometimes lyrics expressed specific viewpoints or outlined aspects of the candidates’ policy platforms (Miles, 1990). The campaign of 1860 was no exception. There were four major candidates for this election: Abraham Lincoln (Republican party), John Breckinridge (Southern Democratic party), John Bell (Constitutional Union), and Stephen Douglas (Democratic Party). The candidates debated many topics, but the main issue at this time was slavery, and candidates turned to the power of song to sway public opinion. Songs for the Great Campaign of 1860 is a collection compiled for the campaign of Abraham Lincoln and his running mate, Hannibal Hamlin. This collection includes “Help! O Help!,” an abolitionist song composed during the period. Unlike the traditional campaign song, “Help! O Help” makes an emotional appeal by offering a poignant narrative of an enslaved mother. “Help! O Help!” tugs at the heartstrings of those who listen to it and exposes them to the grief and loss that enslaved individuals faced on a daily basis. While several scholars have turned a critical lens to campaign music, few have analyzed how songs in campaign songsters dialogue with other abolitionist texts. Drawing on anti-slavery rhetoric in newspapers, pamphlets, and personal narratives, this paper analyzes “Help! O Help!” against the backdrop of these texts, illustrating the vital role music played in the circulation of ideas in the campaign of 1860.

John Frye

WI - University of Wisconsin-Whitewater

Discipline:

Authors:
#1 John Frye
#2 Juk Bhattacharyya
Juk Bhattacharyya

Abstract Name: Integrating Undergraduate Research into Field-Based Science Courses

Communication, teamwork, and problem-solving skills are among the top five cognitive competencies sought after by employers. Participation in mentored undergraduate research can help students develop those three skills as they progress from structured, prescribed research projects to autonomous, independent ones. However, most mentored undergraduate research involves one faculty working with 2-3 students addressing research questions in the mentor’s field of expertise. This model only allows for a limited number of students who are not constrained by financial and/or family obligations to engage in extracurricular research. It also does not provide opportunities for cross-disciplinary communication and/or collaboration with students and mentors from unrelated disciplines to address real-world problems.In the Geography, Geology, and Environmental Science department at UW-Whitewater, we strive to broaden undergraduate research participation in several ways. Besides following the traditional model of mentored research, we infuse research components in our field-based courses to expose larger groups of students with a range of academic preparation to place-based research in context of a course. We have also developed a learning ecosystem model where students and mentors from unrelated disciplines work collaboratively with stakeholders from indigenous communities to address issues faced by those communities. Both of these approaches have successfully engaged students from diverse backgrounds in this high-impact educational practice.In this presentation we will share case studies of mentored research conducted in context of field-based courses and collaborative transdisciplinary research with indigenous communities, and discuss strategies for creating such undergraduate research models on other campuses.

Anna-Lynn Fryer

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Anna-Lynn Fryer
#2 Andrew Dierkes

Abstract Name: Family Clinical Healthcare Experience, Familial Support, and Coping Mechanisms Among Nursing Students: A Mixed Methods Study

Background: Nursing students report high levels of stress, and poor stress management can affect academic success. Families are a well-known source of social support among students. Shared experience may enhance social support, but it is unknown whether families with clinical healthcare experience provide stronger support and how this difference impacts perceived stress and coping mechanisms. Objectives: The objective of this work is to understand the role of family clinical healthcare experience in the stress and stress management of nursing students. Methods: This is a mixed methods study. We conducted a scoping review of the literature concerning stress and coping mechanisms among nursing students, searching PubMed for “nursing students”, “stress”, “social support”, “coping mechanisms”, and related terms. Next, we will survey and interview nursing students about stressors, coping mechanisms, and family work history. Results: Of 302 results, 19 articles met our inclusion criteria. These indicated that nursing students experience high stress, which is associated with maladaptive coping mechanisms. Students reporting poor social and faculty support tend to report more stress and maladaptive coping behaviors. Experiencing burnout while in school later increases turnover and intent to leave among new nurses. Whether or not students from families with clinical healthcare experience report less stress and less maladaptive behavior has not been studied. Discussion: Increasing the supply and retention of nurses is critical to overcoming staffing shortages. Our literature review indicates that stress is particularly high among nursing students and is an important factor in supply and retention. Stress, particularly poorly managed stress, increases attrition among nursing students and new-to-practice nurses, as this stress continues into their careers. Our next steps will explore whether or not shared clinical healthcare experience between students and their families changes the students’ experience of stress and stress management.

Thomas Fulkerson

CA - California State University - Fullerton

Discipline: Humanities

Authors:
#1 Thomas Fulkerson

Abstract Name: On Narrative as Epistemological Tool

The central focus of my research is the defense of narrative as an epistemological tool to be considered alongside rationality. I begin by defining my terms: by “rationality,” I mean the mental process by which conceptual and observational data are related to one another according to observable and demonstrable connections. By “narrative,” I mean the cognitive and linguistic process by which events, people, emotional content, and concepts are cohesively related. The two definitions are remarkably similar, although my definition of narrative deals with a broader, more encompassing process. In this respect, they are, as I put it, “epistemological siblings." Next, I contextualize my thesis within broader historical understandings of epistemology from various traditions: Greek conceptions provided by Aristotle, theological perspectives by St. Thomas Aquinas, the early modern philosophy of Immanuel Kant, and Zen Buddhist traditions. I then move on to contemporary work by literary critic Jonathan Gottschall, neuroscientist Michael Gazzaniga, philosopher M. Giulia Napolitano, and psychologist Jerome Bruner. Through their work, I defend my central

argument, showing that ways of knowing come just as much from the human brain's innate processes of narrative construction to create an understanding of the world around us, other people, and ourselves and that this method of knowledge-making is what is more commonly employed by most people. I conclude the paper by illustrating, through the work of Gottschall, as well as a brief look at the potential effects of artificial intelligence upon mass media, that this narrative epistemology has dangerous implications, as narratives can be misused in the hands of bad actors who wish to sway public opinion, political affairs, and social movements, thus necessitating a vigilance on the part of all citizens to engage with both epistemological tools, rationality and narrative, very wisely.

Chelsea Fuller

ND - University of North Dakota

Discipline: Engineering and Architecture

Authors:
#1 Chelsea Fuller
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#4 Jeffrey Pistorino
Paige Jones
Makenna Green

Abstract Name: Versatile Lower Limb Prosthesis for Dynamic Mobility

Most prosthetics on the market focus on either the biomechanics of walking or running. In comparison to walking, running involves greater speed, force, and range of motion. Overloading the musculoskeletal system can lead to injury, so it is important to accommodate the forces involved in different movements. Our goal is to develop a prosthetic that accommodates both walking and running. We began by researching walking and running leg prosthetics comparing their differences. This led us to design a prototype utilizing a collapsible pylon with a hinged ball joint knee and a pivoting foot blade that will be adjusted based on the activity. The hinged ball joint knee design allows for internal and external rotation. The pivoting foot blade connects the pylon through an adaptable ankle, and its design incorporates characteristics of the blades used for walking and running for heightened performance. Utilizing the iterative design process, we have developed a dynamic leg prosthetic and identified areas for future research on the pylon and the joints have dual purposes of connection and user functionality. Test results measuring the gait discrepancies caused by the prosthesis using motion capture, yield testing of prototypes, finite element simulation, and fit verification with commercial shoes will be presented. The effectiveness of the angle adjustment of the foot blade to increase functionality based on the activity, and the efficacy of the knee in conjunction with the adjustable pylon will also be demonstrated. Furthermore, we are creating a prosthetic that allows a user to carry out more exercises and standard activities more efficiently. Accomplished by designing an adjustable knee and ankle supported by a pylon that conforms based on the desired activity. Applying the biomechanics found in running and walking the prosthetic can increase access to healthier lifestyles by emulating the actions of a biological leg.

Gina Fuller

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Gina Fuller
#2 Jerzee Findlay

#3 Hali Hutchinson
#4 Akir Rowe
#5 Kingdom Wanjoku
#6 Katrina Twing
Jerzee Findlay

Abstract Name: Microbiome of PCB Contaminated Sediments

Polychlorinated Biphenyls (PCBs) are toxic chemicals which were popularly used in electrical manufacturing companies from the 1930s - 1970s and are known to cause significant health concerns for humans even today. These have also been termed “forever chemicals” due to their ability to bind to sediments and soils, which results in difficulties with removal or degradation in contaminated environments. One site of widespread PCB contamination is Pittsfield, Massachusetts, where improper disposal of industrial waste by a General Electric plant has led to chronically contaminated rivers and ponds, even decades later. The aim of this research project is to learn more about the microbial communities that coexist with these toxic forever chemicals, hoping to find evidence that they can degrade PCBs through metabolism. This specific study within the project focuses on microbial diversity of sediment samples collected from the contaminated Woods Pond, located downstream of the Pittsfield General Electric plant. Procedures performed were DNA extractions, PCR amplification, and 16S rRNA amplicon sequencing on an Oxford Nanopore MinION DNA Sequencer. Preliminary data suggest that the samples contain genera known to be associated with PCB degradation, such as Paenibacillus, Clostridium, Rhizobium, Sphingobacteria and Methyloversatilis. With this understanding, future efforts aim to evaluate the ability of these environmental bacteria to degrade PCBs.

Elanor Fuller

LA - Louisiana State University

Discipline: Natural and Physical Sciences

Authors:
#1 Elanor Fuller
#2 Diego Paredes-Burneo
#3 Laura Lagomarsino

Abstract Name: Domesticating Ayahuasca: Ethnobotany and Phylogeography of Psychotria viridis

Belonging to the angiosperm family Rubiaceae, Psychotria viridis is a shrub traditionally used as a primary component of the hallucinogenic brew ayahuasca due to its high concentration of the compound N-N, dimethyltryptamine (DMT). Production of ayahuasca requires P. viridis to be brewed in conjunction with an additional plant, often the vine Banisteriopsis caapi, containing monoamine oxidase inhibitors (MAOIs) that allow for the absorption of DMT when taken orally. The hallucinogenic properties of DMT are essential to the wide variety of functions of ayahuasca in its use by various Indigenous groups in parts of Latin America. Despite its significance, however, little is known of the genetic structure and diversity within P. viridis, its geographic origin(s), or the extent of its relationship with humans. This project intends to provide a comprehensive review of the botanical and cultural significance of this plant, and to subsequently gain insight into the species' genotypic variation and spatial distribution as they relate to human activity and ayahuasca use. To this end, genomic DNA was extracted from herbarium specimens of P. viridis sourced from across the range of past and present ayahuasca usage and sequenced via target sequence capture. These resulting data will be used for phylogenetic analysis to assess evolutionary relationships and genetic clustering within P. viridis, and the integration of geographic data will allow for phylogeographic analysis for the determination of potential geographic origins, dispersal patterns, and domestication events of this culturally important species.

Alyssa Fundal

CA - University of California - Riverside

Discipline: Natural and Physical Sciences

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#2 Ye Li

Abstract Name: Evaluating the Effectiveness of Social-Norm Based Messaging and Dynamic Feedback on Reducing Food Waste in University Dining Halls

Around one-third of all food produced in America is wasted, creating environmental, economic, and social ramifications. We seek to measure and reduce food waste and food waste behaviors in two all-you-can-eat dining halls at a large, public, Western university. Leveraging the potential for behavioral change in university populations, especially among young adults, we focus on all-you-can-eat dining halls, known for their higher propensity for generating food waste compared to a la carte dining facilities. Prior studies on social norm-based messaging in the context of food waste have often been limited by short sampling periods and failure to account for natural time variations in food waste levels. This study attempts to improve upon these limitations by performing a difference-in-difference analysis between two dining halls and sampling daily over a three-month period. This field study and survey model will implement a two week pre-intervention survey, six week intervention period, and four week post-intervention survey period (n=500). Our primary objective is to assess whether social norm-based posters displayed during the intervention period can effectively reduce food waste and influence self-reported food waste attitudes and behaviors among diners. The surveys will also utilize the Social Norm Espousal Scale (SNES) to explore whether social norm espousal moderates the effect of social norm displays on changes in food waste attitudes and self-reported behaviors.We anticipate a significant reduction in average food waste weights in the treatment dining hall compared to the control during the intervention period. This study contributes to the growing literature on food waste and hopes to advance the field's understanding of social-norm based messaging in the broader context of waste reduction. Furthermore, our findings will help advance the university towards campus-wide and state-wide sustainability goals.

Gabriella Funes

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Gabriella Funes
#2 Sara Johnson

Abstract Name: Time Devoted to Grooming in Response to Varroa Mites Within a Honeybee Hive Population

Grooming behavior is an important practice exercised by the honey bee (Apis mellifera) against varroa mites (Varroa destructor), one of the most destructive pests of the honey bee. Since time and energy devoted to grooming are unavailable for other essential tasks, it is predicted that the relationship between mite level and proportion of groomed mites will not be linear. At some level of mites, honey bees will not be able to further increase the proportion groomed and a quadradic model will be a better fit to the data. There is a significant relationship between the total number of mites in the colony and the proportion of mature daughter mites groomed (p=0.003) and adding a squared term improves the model as indicated by a higher r2 value. There is also a significant relationship between the total number of mites in the colony and the proportion of founder mother mites (p=0.034) but a linear model is the best fit to the data. It is predicted that the amount of time

spent grooming will increase with a higher count in varroa mite and although honeybees have a high plasticity for switching from task to task, there would be a clustered population of specialized allogrooming bees in the sample. Methods include using Dadant mite traps to conduct a monthly mite count and a stereomicroscope to count the number of trapped mites with body damage consistent with honeybee grooming and identify the lifestage of varroa mite. For behavioral observation, we established an ethogram of grooming behaviors and other hygienic behaviors to: a) evaluate if the time devoted to grooming increases with increasing infestation levels and b) determine if grooming time is spread across individuals or clustered to a subset of individuals.

Kaleb Funk

IL - University of Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Kaleb Funk
#2 Abbey Piatt Price
#3 Katie Kloska
#4 Aaron Esser-Kahn
Abbey Piatt Price

Abstract Name: Developing a Passive CO2 Capture Device Utilizing Photothermal Heating Effect

Current aqueous-amine carbon capture methods suffer from a limited efficiency due to the energy-intensive process of separating CO2 from capture solutions. This process requires substantial energy inputs to heat the solution and regenerate the solvent. Previous research has demonstrated that photothermal excitation of nanoparticles can initiate CO2 release without the typical energy requirements for heating the bulk solution. This phenomenon has the potential to significantly reduce the overall energy cost of carbon capture methods by increasing CO2 release efficiency using localized photothermal heating and solar energy. We propose utilizing this photothermal effect in a device capable of passively extracting CO2 from point sources and continuously regenerating the solvent through solar energy. We have demonstrated the efficacy of this system at a bench-scale by suspending carbon-black nanoparticles in capture solution and layering the suspension between a CO2 membrane a window. The efficiency of this process is strongly influenced by the composition and thickness of the membranes, the surface area to volume ratio (A/V) of the solvent-air interface, and solvent composition. While the device can run continuously, we suggest that day to night cycling of the light source can optimize CO2 loading and release. By utilizing localized photothermal heating and solar energy, this device has the potential to enhance CO2 release efficiency and reduce energy costs for carbon capture.

Maximillian Furimsky

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Max Furimsky
#2 John Robertson

Abstract Name: Assessing gill pigmentation over time in Atlantic sturgeon and paddlefish

Paddlefish and Atlantic sturgeon are part of the order Acipenseriformes which includes all sturgeon species,

the American paddlefish, and the now-extinct Chinese paddlefish; all of which are basal ray-finned fish. Both species live in rivers in the eastern United States, but can survive in salt or brackish water as well. Gill pigmentation in paddlefish and Atlantic sturgeon is a topic that has not been looked at much in previous studies and it is unknown whether or not it serves a purpose in these fish species. However, it has been looked at in freshwater and marine stickleback species which show that salinity might be a factor influencing gill pigmentation of certain fish species. The primary aim of this study was to quantify gill pigmentation during the early development of paddlefish and Atlantic sturgeon using the bullhead catfish as a control. Based on unpublished results from student studies, it was expected that gill pigmentation in the two primary organisms will increase over time. This study involved sampling juvenile paddlefish and Atlantic sturgeon from various facilities across the United States and euthanizing them with a lethal dose of anesthetic. The gill arches were removed with scissors high-definition images were taken of the gill arches and were uploaded to two online programs (Image Color Summarizer and ImageJ) which quantified the amount of pigmentation in each gill arch and the results were organized into bar graphs. The gill arches were also viewed under a light microscope where the localization of pigment cells was determined. Gill pigmentation in both of the primary organisms did increase over time but it was not significant. This study will hopefully lead to other studies that determine whether or not gill pigmentation serves a purpose in Acipenseriformes or studies that look at other species of sturgeon.

Alexandra Furney

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

Authors:
#1 Alexandra Furney

Abstract Name: Effect of Hypoxia on the Structure of HIF1A mRNA 5′ Untranslated Region

The HIF1A gene is a transcriptional activator that regulates cellular responses to hypoxia by inducing transcription in many other genes, and plays an essential role in embryonic vascularization, tumor angiogenesis, and ischemic diseases. Overexpressed HIF1A gene has been found to be linked to many forms of carcinoma, breast, ovarian, and lung cancer. The gene is reported to exhibit internal ribosome entry site (IRES) activity. IRES activity uses regulatory structures located in the 5′ untranslated region of the mRNA allowing cap-independent translation. In the case of the HIF1A mRNA, IRES activity must be specifically activated under hypoxic stress. The mechanism of this process is unclear. To address this, we are interested in measuring changes in the structure and interactions of the regulatory region subjected to chemically-induced hypoxia. We have applied SHAPE-MaP to investigate the secondary structure of the regulatory region of the HIF1A mRNA in human cell lines to better understand the mechanisms of stress-induced initiation. We compare SHAPE data collected using gene-specific targeting of the HIF1A mRNA under (a) cell-free, (b) in-cell normoxic, and (c) in-cell hypoxic conditions. Our cell-free structure model reveals a highly structured 5′ UTR with multiple short hairpins motifs. Next, we closely compare live cell SHAPE data identifying regions that are affected by hypoxia. In addition to changes in SHAPE reactivity, we have detected changing patterns of protein interactions within the 5′ UTR under the varying conditions. Future directions include utilizing RNP-MaP, a UV-crosslinking strategy to examine specific protein-motif interactions affecting hypoxic translation, along with DMS-MaP to directly evaluate base-pairing with more specificity. Lastly, we identify orthogonal strategies to validate the HIF1A mRNA structure and interactions.

Meggy Gabadadze

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Meggy Gabadadze

Abstract Name: Quantum Uncertainty: Surprising Implications for Ethics

The idea that matter may not exist without observation (or that matter may come into existence at the time of observation) has puzzled physicists since the theoretical foundations of modern quantum theory were first established in the 1920s. These developments have led to an incipient “turn” in these sciences toward alternative non-materialist explanations of reality -- many of which bear some striking resemblances to Platonist and/or Neoplatonist “idealist” theories.Such hypotheses, though controversial, have entered into the “mainstream” of discourse. Considerable variety of views that have developed. Some physicists and mathematicians have adopted “hard” idealist views. Other physicists and mathematicians have adopted what might be classified as “soft” idealist views which posit that ideal entities exist and may coexist with some sort of physical entities, even if humans are incapable of precisely apprehending the physical.In this paper, I do not take any position in the mathematical and scientific debates between materialists and idealists. What I do is explore some of the implications of this movement toward idealism (in mathematics and science) for the philosophical study of ethics. Specifically, I focus on the potential implications to the following three schools of ethical thought: moral relativism, error theory and ethical realism. I will argue that the problems that are posed by quantum theory to the “objectivity” of certain types of scientific claims within the physical sciences (e.g. the measurement and observer problems) have implications for philosophical ethics that are quite the opposite of what many may initially suspect. I argue that certain idealistic implications that can be inferred from quantum theory would be fatal for nihilistic ethical theories such as moral relativism and error theory. Furthermore, I argue that certain idealistic implications that can potentially be inferred from quantum theory could lend support for “realist” conceptions of ethics.

Samvel Gaboyan

CA - University of California - San Diego

Discipline: Health and Human Services

Authors:
#1 Samvel Gaboyan
#2 Robert Harrison

Abstract Name: Disparities in Access to Home Air Conditioning in the Greater Los Angeles Region

Background: The greater Los Angeles region comprises a wide range of demographics and has a hot climate. In this study, we sought to examine how access to home air conditioning (AC) is distributed across census tracts within the California Energy Commission’s Climate Zone 8 region and whether there are demographic-related disparities in AC penetration. We hope that a better understanding of this distribution may give guidance to policy makers. Methods: Demographic data and AC penetration data of residents from census tracts in Climate Zone 8 were gathered from the American Community Survey 2013-2017 five-year estimates and an AC classification model (Chen et al. 2020), respectively. The demographic variables include race/ethnicity, income, immigration status, occupation, age, and number of persons per household. Using generalized linear models, the association between demographics and census tracts with high AC penetration (above population mean) was assessed. Results: The prevalence ratio (PR) of census tracts having higher AC penetration was 0.005 times [95% CI: 0.0004-0.052] lower for each additional percent of non-Hispanic, Black residents and 0.236 times [95% CI: 0.126-0.441] lower for each additional percent of Hispanic residents. The percentage of census tracts with a median household income in the third quartile (PR: 1.819 [95% CI: 1.182-2.799]) were associated with higher AC penetration. Conclusion: The key takeaway is that race/ethnicity and income are the only statistically significant predictors of AC penetration. Census tracts in

the Greater Los Angeles region with more Black or Hispanic residents and lower household income were less likely to be air-conditioned.

Suma Gadde

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Suma Gadde
#2 Charlies Xie
#3 Christian Harmon
#4 Smith Giri
#5 Grant Williams
#6 Dean Fang
#7 Jonathan McConathy

Abstract Name: Implementation and validation of a semi-automated workflow for body composition measurement in a clinical image viewing platform

Quantification of muscle mass and adipose tissue can inform prognosis and aid treatment planning for cancer patients. Important barriers to routine measurement of body composition includes the need for specialized software and limited implementation in FDA-cleared platforms used for routine clinical imaging review and reporting. To address this need, we have developed and validated a semi-automated workflow in a commercially available, FDA-cleared multimodal image viewing and analysis platform. We developed a 2D segmentation for body composition (2D-SBC) workflow using MIM Encore to define and display regions of interests (ROIs) on a single axial slice at the L3 level for subcutaneous adipose tissue (SAT), visceral adipose tissue (VAT), and skeletal muscle (SM). These data points are used to calculate a skeletal muscle index (SMI) based on previously established methods. The user draws the appropriate ROIs with workflow-defined constraints and refinement steps to improve speed and accuracy. Results were compared with the established software package Slice-O-Matic in a total of 100 patients who underwent CT of the abdomen and pelvis for oncologic indications. The time required to analyze each study was similar with our workflow and with Slice-O-Matic. There was strong agreement for SM, VAT, and SAT areas and for classification of sarcopenia based on an established SMI cutoff (Kappa statistic 0.88). Of the 100 patients, only 6 had discrepant sarcopenia classification with SMIs close to the cutoff value, averaging less than 1.0 cm2/m2 above or below the cutoff. Our workflow has comparable accuracy and efficiency compared to a well-established method used routinely for research. This workflow is implemented in a clinical image viewing system, is easily shared between users across institutions, does not require specialized training, and can be readily modified for specific applications, making this technique available to a wider range of users.

Jose Gadea

CA - Pasadena City College

Discipline: Natural and Physical Sciences

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#1 Jose Gadea
#2 Russell Swift

Abstract Name: Synthesis of Magnetic Particles and Investigating its Toxicity in Breast Cancer Cells

Students were given demonstrations and hands-on experience with multiple techniques in the nanomedicine lab at the University of North Texas. This included printing with two different bio-printers: the Lumen X, which uses digital light processing (DSP), and INKREDIBLE+, which uses extrusion printing, and students learned about the different advantages of each. Some potential uses of bioprinters can be used for the artificial restoration of tissues or scaffolds for cell culture. Students also observed and assisted with creating polymer nanofibers using electrospinning, and multi-layered iron oxide magnetic nanoparticles using a wet chemical approach, and were able to observe their results during a live demonstration of scanning electron microscopy (SEM) using their created samples. Electrospinning generates scaffolds using desired solutions that serve purposes including wound healing or tissue engineering. Magnetic nanoparticles provide a less invasive drug delivery method. Students also performed multiple steps of the cell culturing process, including cell thawing, passaging, and freezing, and also learned about the importance and reasoning behind all these to produce healthy, viable cell lines for experimentation. They also helped to prepare 96-well plates to perform multiple cell assays including MTT assay, LIVE/DEAD assay, and F-actin/DAPI staining, and then observed the results of these using fluorescence microscopy and cell counting.

Alexandra Gaeth

NE - University of Nebraska at Omaha

Discipline: Social Sciences

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#2 Lisa Scherer

Abstract Name: Character Strengths In Children's Literature: Narrative Theme Versus Vocabulary

Positive psychologists have identified 24 character strengths that every human posseses to a certain degree. Each of the character strengths falls within one of six broad virtue categories: wisdom, courage, humanity, justice, temperance, and transcendence. Research on positive psychology intervention has suggested that people who are aware of their strengths, regularly use their strengths, and engage in gratitude and reflection of their strengths have increased happiness and overall well-being, compared to those who do not. Recent studies that have examined the impact of character strengths and individual wellbeing have focused primarily on adult and adolescent populations, not children. Some studies have examined various techniques for developing strengths in adolescents through positive education programs or through scholarly meetings, courses, and intervention exercises. Although these studies provide valuable insight, they lack information on how to appropriately assess or develop character strengths in children. UNO's Positive Psychology, Arts, and Humanities (PPAH) Lab is investigating whether reading literature that embodies the 24 strengths increases children’s knowledge and use of strengths and their overall well-being. This study aims to investigate what criteria is needed to establish the validity of character strengths in children’s books, before the literature can be used as a tool to enhance character strengths in children. For this study, undergraduate and graduate student participants read six children’s book scripts (one book per virtue) from one of the following two conditions: narrative theme or vocabulary. Participants then answer comprehension questions and categorize each book into 1 of the 24 character strengths. Based on findings from the PPAH Lab's preliminary studies, I hypothesize that participants in the vocabulary condition will categorize more books in the correct character strength than the narrative theme condition. Findings from this study will inform future research and provide a framework for selecting literature to enhance character strengths in children.

sebastian Galarza

CA - Orange Coast College

Discipline: Business and Entrepreneurship

Authors:
#1 Sebastian Galarza
#2 Erin Gratz
#3 Gokcen Coskuner-Balli

Abstract Name: Financial Inclusion in Latin America: Factors for Continuing Development

Over 50% of the Latin American population is unbanked, making financial inclusion a key factor for society's development. Since 2017, the financial system has been growing, including an additional 11% of the population annually. Therefore, this research will be focused on: What are the most critical factors that have helped financial inclusion increase in Latin American adults in the past five years? To answer this question this study analyzed the key factors that have contributed to the increase in financial inclusion among Latinos adults over the past five years. For this mixed-methods study, I interviewed 10 participants in Latin America. Qualitative data was gathered from the interview transcripts and analyzed thematically. Four World Bank data sets - internet access/bank account holders, GDP per capita/ bank account holders, GDP per capita/ ebanking, Covid-19 / digital payment - were analyzed using exponential regression modeling in python. Findings revealed that technological and social factors have had a significant impact. The preference of Latinos for food delivery services has motivated them to use fintech services. Blockchain has enabled financial inclusion in rural areas by allowing people to access banking services through their mobiles. Key factors include the transparency of fintech over traditional banks, financial products such as checking and saving accounts in the bank account, and fewer annual/transaction fees. Technology is critical to bring people into the financial system having outcomes such as access to education, housing, and transportation.Key Words: Financial Inclusion, Fintech, Latin America, Inequality

Ariana Galindo

FL - Florida Atlantic University

Discipline: Mathematics and Computer Science

Authors:
#1 Ariana Galindo
#2 Jinwoo Jang

Abstract Name: Unveiling Spatial Patterns: Data Mining Insights from Enhanced 3D Building Datasets for Informed Urban Planning

Large-scale urban building data, such as OSM Buildings, have practical significance for urban planning strategies, architectural design, and environmental impact assessments. A holistic perspective on the built environment enables data-informed decision-making, laying the groundwork for improved urban development, risk management, and resource allocation. However, to truly benefit from big urban building data, it is critically important to develop scalable algorithms that can reveal insightful patterns of building infrastructure at a regional scale and provide summarized building information for city planners and operators.This research aims to mine the spatial distribution of buildings with similar building information, establishing a robust foundation for data-informed urban planning and risk management. The objectives of this research are threefold: 1) to enhance the completeness and accuracy of 3D building representations, 2) to identify latent patterns within the dataset, and 3) to contribute valuable insights to the field of spatial data analysis. This research addresses the intricate challenges posed by fragmented polygons within 3D building datasets, recognizing their impediment to precise data pattern mining. The necessity for cohesive and accurate building representations is particularly pronounced in domains where spatial information is pivotal for decision-making.Our methodology includes a multi-step process, initiating with the merging of intersecting polygons and defining new attributes. These additional attributes enrich the dataset, providing a

comprehensive representation of buildings. Subsequently, k-means clustering analysis is applied to the building attributes our algorithm generated and finds hidden spatial patterns of building data. Rigorous data cleaning and normalization procedures are performed to enhance the reliability of the clustering outcomes. The clustering analysis results unveil distinct patterns within the dataset, shedding light on inherent structures and variations. Visual representations through geospatial mapping offer a clear and intuitive presentation of identified patterns. Specific clusters and trends are found and provide valuable insights for further interpretation and application.

Taryn Galindo

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Taryn Galindo

Abstract Name: The Relationship Between Companion Animals and Emotional Regulation

In recent years, there has been an increase in companion animals (trained ESAs and pets) in higher education settings (Foster, 2022). Universities are implementing group animal therapy before exams with the goal of helping lower students' stress (Kivlen, 2022). Although there are many benefits to companion animals in university settings, there are minimal studies to help defend the emotional and physical benefits of college students owning a companion animal. The present study aims to determine the relationship between owning a companion animal (a pet, emotional support animal, or a trained service animal) and one's ability to regulate their emotions. The researcher hypothesized that having a companion animal would increase one's emotional regulation. In this study, pet attachment was measured with the Pet Attachment Questionnaire (Staats et al., 1996). Emotional Regulation of Sadness and Worry was measured with the Positive Emotional Self-regulation Questionnaire (López-Valle et al., 2018). The sample included 136 full-time college students from a Christian university. A t-test and a simple regression analysis were conducted to analyze the data. The findings in this research revealed that perceived pet attachment predicted emotional regulation of sadness (b1 = 0.237, p < .05). The more reported pet attachment was associated with higher levels of emotional regulation of sadness in college students. In addition, there was a statistically significant difference in emotional regulation between males and females (t = -2.61, p < .05). Female students (M = 3.44, SD = 0.41) showed higher levels of pet attachment than male college students (M = 3.08, SD = 0.67). The findings emphasize the need for society and university institutions to recognize that emotional regulation in college students is impacted by pet attachment.

Jessica Gallardo

TX - St. Edward's University

Discipline: Social Sciences

Authors:
#1 Jessica Gallardo

Abstract Name: Germany Versus the United States: Comparative Analysis of the Allocation Strategies and Leveraging of Foreign Financial Assistance

This study analyzes how donor governments, such as the United States and Germany, have historically leveraged foreign financial assistance by strategically allocating foreign aid. Foreign aid has a track record of

having been praised for lending a helping hand to underdeveloped countries and their citizens. However, various international aid case studies demonstrate how, historically and currently, foreign aid has been detrimental to the development and growth of foreign governments. Notably, this research focused directly on a case study comparison between how military aid and developmental aid are leveraged and/or allocated in the United States and Germany. Using a cross-analysis strategy between academic literature and quantitative data from NATO, the Organization of Economic Cooperation Development (OECD), and Foreign Assistance.gov, this research analyzed the underlying intentions of foreign aid donations. As a result, it was concluded that the United States allocates aid with national security interests in mind; however, Germany does not. In fact, the United States in 2022 solely accounted for almost 70% of the total NATO fund, funding more than NATO Europe and Canada combined, while Germany only made up 5.27%. Germany has traditionally only allocated development aid due to its collectivist culture and has typically restrained from donating military aid. Nevertheless, given the current Russian attack, Germany has recently made history by reversing an old foreign aid policy and granting military aid to Ukraine.

Benjamin Gallimore

VA - George Mason University

Discipline: Social Sciences

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#1 Benjamin Gallimore
#2 Adam Winsler

Abstract Name: Ethnicity and Income Effects on Change Over Time in Primary Exceptionality for Elementary-School Students

An accurate “primary exceptionality” to drive IEPs is critical for students to receive appropriate special-education services in schools. Change over time in a student’s primary exceptionality/disability category (i.e., mobility) suggests that a student may have initially received a misdiagnosis. Although prior studies show race and income disparities in disability status (disproportionality for certain groups/categories at one time-point), few studies have examined mobility in exceptionality category over time, and none have examined how race or income impact longitudinal mobility of disability categories. My psychology honor’s thesis examines how ethnicity and poverty-status impact mobility in student primary exceptionality status from Kindergarten through 5th grade, using existing longitudinal data from a large (n ~ 38,000), ethnically diverse sample (~58% Latine, 30% Black, 12% White/Other).I use data from the Miami School Readiness Project, which followed predominantly low-income children in various pre-K programs throughout elementary school. I focus on the ~7,000 students identified with a disability during elementary school. Ethnicity (Latine, Black, White/other), poverty-status (free/reduced-price lunch receipt), and primary exceptionality status, each grade, were gathered through de-identified school records. My questions are: 1) What is the overall mobility rate in primary exceptionality from kindergarten through 5th grade? 2) How does mobility vary by initial category (i.e., ASD, LD etc…), 3) Does mobility vary as a function of ethnicity or poverty-status?Based on prior research, I expect there to be considerable mobility over time across disability categories, with higher mobility in more subjective initial categories, such as emotional disability. I expect minoritized students and those in poverty to show more mobility in categories over time, which, if found, would have equity and policy implications. I am currently cleaning the data and finalizing variables. The Chi-square, ANOVA, and multiple regression analyses in SPSS will be complete in time for the conference.

Alejandra Galvan

IL - Elmhurst University

Discipline: Social Sciences

Authors:
#1 Alejandra Galvan
#2 Sinha Janjua
#3 Teri Walker

Abstract Name: Quilting as a Means of Fostering Political Communication

There are many ways in which people politically communicate. Conventional ways have been public speaking, collecting petitions, or attending public meetings; however, more direct approaches have included rallies, protests, and strikes. Before women were legally allowed to participate in U.S. politics, many communicated their political views and opinions through quilting – an unconventional yet indirect approach. Today, all genders – though the majority continue to be women – use quilts as a method of expressing their thoughts about political and social issues. Furthermore, these quilts can now reach a larger audience through social media. The goal of our research was to answer the question: How do political messaging quilts posted on social media platforms contribute to understanding or engaging people in politics and social issues? The purpose of this study is to recognize quilts as political messages and as effective forms of promoting activism on social media. This research examined 48 political quilts on TikTok, Instagram, Twitter, and Reddit over the span of three weeks. Results indicated that the majority of quilters were female, there was a wider interest in LGBTQIA+ issues, and that these posts promoted various forms of activism from its audience; hence, dictating that political quilts posted on social media were catalysts for activism. The attention the political quilts received on social media platforms was significant because it is a form of political communication that has not previously received much recognition by other activists. Regardless, quilting should be acknowledged as a form of activism. The textile medium is not as direct as a protest, but the passion it manifests is as deep as any activist's.

Haley Galvis

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
#1 Stephen King

Abstract Name: Examining the Efficacy of Music Therapy on the Upper Extremity of Post-stroke Patients: A Systematic Review and Meta-analysis

Stroke is the second most common cause of death worldwide, caused by an interruption of blood flow to the brain, which results in necrotic cell death. This pathological cascade has ramifications in neurological motor, sensory, and behavior deficits. There has been some recent research using a therapeutic application of music as a vehicle to improve motor function of the upper extremity of post-stroke patients. Music-supported therapy is a newer class of music therapy that works to improve motor function through a standardized program of keyboard and drum exercises, and it is continuing to be integrated into the field of rehabilitation. This study aims to search three areas of music therapy, such as music-supported therapy, technological applications, and musical sonification, to examine a positive effect of music therapy on the upper extremity, thus supporting its use for the treatment of stroke-induced motor dysfunction. To conduct a meta-analysis of trials examining the effect of music therapy to rehabilitate the upper extremity of post-stroke patients, comprehensive literature searches of PubMed, CINAHL, MEDLINE, Music Index, Cochrane, and Web of Science from their inception to November 2023 were performed. Instruments, such as the 9 Hole Peg Test (9HPT), the Box and Block Test (BBT), and the Wolf Motor Function Test (WMFT), were used to evaluate the results of the intervention, and the studies classified in each category were investigated and underwent sub-analyses using a standard mean difference in the change from baseline and the 95% confidence interval

(CI) for analysis. This study also aims to advocate for the further research and integration of integrative therapies in medicine.

Carter Gamble

NC - North Carolina State University

Discipline: Interdisciplinary Studies

Authors:
#1 Carter Gamble
#2 Sandra Stangeland-Molo
#3 Jacqueline Cole

Abstract Name: Validation of a bone-on-chip microdevice to mimic the bone-vascular microenvironment.

Bone-on-chip devices enable controlled study of the cellular microenvironment in response to various stimuli. Previous systems did not incorporate both vasculature and mineralized bone, which are necessary to mimic bone-vascular interactions important for bone metabolism. Our bone-on-chip platform addresses this gap. We previously used computational fluid dynamics in COMSOL Multiphysics® to optimize chamber heights and flow rates for device functionality. The objective of this study was to validate these computational results in physical devices. Devices were fabricated by shaping polydimethylsiloxane (PDMS) in 3D-printed resin molds for bone and endothelial cell chambers, layering and separating them with a polycarbonate membrane, and manually bonding using plasma treatment. To validate flow characteristics, 10-μm fluorescent beads were perfused through the assembled device chambers, and using fluorescence imaging, bead velocity was calculated as the bead trail length divided by exposure time. Shear stress along the walls of the device chambers were derived using true device geometry and pipe flow equations. Results were compared with predicted values from computational models for varying flow rates of 100-1200 μL/min. Predicted average velocities ranged from 0.011965 to 0.14337 m/s, and shear stresses ranged from 0.785 to 9.524 dynes/cm2. Across this same flow rate range, experimental average velocities ranged from 0.010526 to 0.116005 m/s, and shear stresses ranged from 0.75 to 9.07 dynes/cm2. Compared to predicted values, these preliminary device testing data were within 19% error for average velocity and 5% error for shear stress for all tested flow rates. Experimental discrepancies likely resulted primarily from limitations in fabrication of exact chamber heights and measurement of velocity in a single plane. These data show that our device functions within reasonable expectation and support the accuracy of our COMSOL model. Next steps include further device validation using dextran diffusion and inclusion of endothelial cells in the device.

Saumya Gangwal

NC - North Carolina State University

Discipline: Mathematics and Computer Science

Authors:
#1 Saumya Gangwal

Abstract Name: Data Goggles: A Research and Development Tool

A collaborative project with SAS’s Research and Development (R&D) department aimed to tackle the challenge posed by the absence of an internal tool for streamlined data access and analysis. This deficiency significantly impacted team productivity and hindered the efficient utilization of datasets. The project adopted a methodical approach, delving into a comprehensive examination of data-related issues and

formulating targeted solutions. Specific programs were implemented to optimize software performance across various computing environments, ensuring a smooth and efficient deployment process. The development of Data Goggles, a specialized tool, entailed carefully aligning its features, interface, and functionality with the intricacies of the R&D workflow.To enhance usability, an interface was crafted via the JavaScript library, React. Leveraging Docker Hub, a repository of pre-built software components, played a crucial role in simplifying the setup and usage of Data Goggles. The integration of Kubernetes as a data manager for the website ensured scalability and operational efficiency across diverse computing infrastructures. The methodological framework incorporated rigorous testing and continuous refinement to guarantee precision in addressing the identified challenges. The project's successful conclusion involved the automation of the entire process through Jenkins, an open source automation server, thereby enhancing accessibility for all SAS employees. This research-focused initiative made a substantial contribution, providing R&D teams with a robust resource to expedite data retrieval and analysis processes.In summary, this project not only demonstrated the impact of innovative methodologies in addressing real-world challenges, but also emphasized the critical role of methodological rigor in developing technology solutions within the organizational context of SAS. The integration of established tools, frameworks, and a research-oriented approach collectively underscored the project's commitment to delivering tangible improvements in data management for SAS's R&D department and holds potential for broader applications in similar contexts.

Taegen Gann

TN - Trevecca Nazarene University

Discipline: Humanities

Authors:
#1 Taegen Gann

Abstract Name: The Origins of Southern Appalachian Folk Medicine and Its Survival In The Post-World War II Cultural And Religious Climate

The purpose of this research is to track the development of Southern Appalachian Folk Medicine (SAFM) from the colonization of the Southeastern United States into the modern day by analyzing the interactions between the three major contributors to the Southern Folk medicinal system which include European, African, and Indigenous cultures and practices. To better understand how and why the SAFM system came to be, this research looked at the materia medica (the materials used for medical treatments) as well as the beliefs that informed people's use of the materia medica. It also looks at the effects of the Christian Church on folk medicinal systems on European practices and on African and Indigenous practices as they were combined to form SAFM. The final piece of this research looked for evidence of the survival of Folk medicine systems after World War II. Original interviews were conducted with a family from Appalachia to understand what kinds of Folk Medicine are still used. The findings of these interviews corroborated trends present in research conducted from 1970 to 1990. They demonstrated a steady decrease in the use of Appalachian Folk medicine. Folk medicine is defined as the “vernacular knowledge about the cause, prevention, and treatment of illness used by a particular social group.” In Southern Appalachia, this vernacular knowledge is the offspring of centuries of cultural syncretism between European, African, and Indigenous traditions. By examining the influence of European, African, and Indigenous Folk practices on the Southern Appalachian region, it is evident that the magico-religious and naturalistic beliefs that informed the Southern Appalachian experience are a complex web of borrowed, bought, and stolen practices that, over time, built the Folk materia medica and Folk astrological system, which culminated into SAFM and which survived the United States’ major cultural and religious shifts post-World War II.

Brenna Gannon

NY - Brooklyn College

Discipline: Interdisciplinary Studies

Authors:
#1 Brenna Gannon

Abstract Name: Alternative Ways of Being; Music, Disability, and Adaptive Technology

Disability is a part of the everyday for many of us, and our rights should be considered with regards to research and the innovations and inventions that involve us. Human rights include disability rights, and we have a right to accommodations that allow us the same freedoms as abled individuals. For instance, the right to create - inclusive of the right to make music - is a human right. Thus, the advent of new technologies that allow us to make music is a necessary development. Individuals with mobility disabilities now have the capacity to be involved in the music-making process, rendering them more publicly autonomous. This visibility undermines the stigma that disabled individuals are unable to make their own decisions. To illustrate the promise of adaptive music technology and the obstacles that still remain, I study Pauline Oliveros, a musician and humanitarian, and the Adaptive Use Musical Instrument, which she helped to create in 2006. I situate the AUMI within the broader history of adaptive technologies in music, supplemented by conventional research as well as interviews with people close to the creation of AUMI. This research demonstrates the capacity of adaptive music technology, along with the open-mindedness of its users, to transform a space into a creative community in which those of us with disabilities can have equity, where we can receive the accommodations we need and want, and to compose music - as is our right.

Spalding Garakani

CA - Cuesta College

Discipline: Mathematics and Computer Science

Authors:
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#2 Luis Flores
Luis Flores

Abstract Name: Integrating Socio-Behavioral Factors into Monkeypox Modeling: A Novel Framework for Informed Disease Mitigation

Monkeypox (MPX), a zoonotic ailment similar to smallpox that originates from Central and West Africa, is a global health threat of growing concern. The increased incidence of MPX in recent years, instigated by a halt in smallpox immunizations and an upsurge in vulnerable host populations, necessitates a nuanced understanding of its transmission dynamics to create proactive measures for averting the ominous trajectory many countries are currently navigating. Current Susceptible-Vaccinated-Exposed-Infectious-Recovered (SVEIR) models, a mathematical means to address public health crises, often overlook critical socio-behavioral factors such as the impact of misinformation on vaccination rates. To address said gap, this research aims to introduce a comprehensive array of novel features that will enhance the representational capacity of epidemiological simulations and provide a more holistic perspective on MPX propagation within a population. An advanced iteration of the SVEIR model captures the multi-faceted relationships between parameters governing perceived infection risk, misinformation factors, behavioral changes, disease-induced mortality, immunity waning, and the effectiveness of educational campaigns. This model further integrates categories for mild and asymptomatic cases, seasonal variation of disease spread, and vaccine efficacy awareness. Crucially, the model also utilizes game theory by establishing a Nash equilibrium to distinguish between informed and uninformed individuals, offering a strategic dimension to vaccination decision-making processes. The inclusion of these components in the extended system of ordinary differential equations

(ODEs) allows for a broader range of real-world scenarios, potentially allowing the developed framework to become a versatile template for addressing other infectious diseases. Via parameter adjustments, the model can be applied to diseases such as influenza, measles, and Ebola. Overall, the refined model could serve as a valuable tool for researchers and policymakers to gain insights into and design targeted strategies for disease mitigation and control.

Alex Garces

UT - Utah State University

Discipline: Social Sciences

Authors:
#1 Alex Garces

Abstract Name: A Content Analysis of How Immigration is Framed and Discussed in Media

This research is a content analysis of media portrayal of immigrants through an examination of news articles discussing the Biden Administration's Temporary Protected Status (TPS) policy for Venezuelans. The study addresses two primary questions: 1) What different categories are highlighted in media outlets in response to President Biden's TPS policy for 472,000 Venezuelans? 2) How are immigrants being framed, and what negative issues arise from poor coverage?Analyzing thirty news articles from diverse sources, the study reveals major takeaways. Limited comprehensive reporting emerges as a significant concern, with only 10% of articles fully covering the immigration policy, leaving substantial information gaps. Incomplete coverage of reasons for migration is noted, with only around half of the articles providing insights into the motivations behind Venezuelans leaving their home country. Diverse perspectives on the bill's passage and an underreported extension of TPS for Venezuelans further characterize the media landscape.The conclusions underscore the omission of humanity in articles discussing immigration, contributing to a skewed perception. Comprehensive reporting is found to be insufficient, and as consumers of news, there is a rightful expectation for a complete view of events. The dangerous consequence of omitting vital information is the creation and perpetuation of negative stereotypes toward immigrants.

Kathia Garcia

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Kathia Garcia

Abstract Name: Is Mexican Art Mexican?

Discovering the origins of Mexican art can be difficult as not all Mexican art is directly derived from Mexico. The Spanish conquest resulted in a genocide of Mesoamericans who were forced to comply to the Spanish religion and customs. The Spanish burned their belongings and made Mesoamerican art extremely difficult to find. Today the impact of the Spanish conquest continues to linger throughout Mexico, it is present in architecture, the iconography of the Lady of Guadalupe, and the incorporation of Spanish tile in design.

Valeria Garcia

CA - California State University - Long Beach

Discipline: Engineering and Architecture

Authors:
#1 Valeria Garcia

Abstract Name: Developing a 3D collagen model of cardiac fibrosis

According to the CDC, every 34 seconds someone dies from a cardiovascular-related disease, making it the number one cause of death in the country. Cardiac fibrosis, which typically appears after heart injury, is characterized by the stiffening of contractile fibroblast tissues caused by the excessive production of extracellular matrix. The purpose of this project is to create a 3D model of cardiac fibrosis that can be used to study the progression and its characteristics. With the use of collagen type VI (Col VI) and CCN1, proteins that play a key role in wound healing, and a mixture of both, we investigated whether the results would differ from the control group. Our 3D model consists of seeding 3T3 fibroblast cells within our collagen type I hydrogel, in a 96-well plate that is cultured for 5 days in the incubator. On day 5, we start our immunostaining process where the samples were stained with Alexa-phalloidin for F- actin, α-SMA for alpha-smooth muscle, and DAPI for nuclei. Finally, we use a fluorescent microscope for our imaging analysis. According to our data, the 3D model containing collagen type VI increased fibroblast proliferation. On the other hand, the model containing CCN1 showed a decreased fibroblast proliferation. With the data, we hope to develop an ideal 3D model of cardiac fibrosis that can be used to test scaffolds and other therapeutic drugs with the purpose of improving cardiac functionality and regenerate tissue.

Kathia Garcia

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Kathia Garcia

Abstract Name: Surrealism: A Change in Reality

Known for its dreamlike and aerie compositions, Surrealism allowed artists to express their subconscious realities allowing for different avenues to be explored within the world of graphic design. With The freeness of surrealism, it curated eye-catching art that was later implemented into graphic design. Keywords: Surrealism, Surrealism in graphic design

Paulene Kyla Garcia

CA - University of the Pacific

Discipline: Natural and Physical Sciences

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Abstract Name: CHEMICAL VS. GENOMIC: DOES TAXONOMY REALLY TELL ALL?

Fungi are naturally found in all environments with over 600 species interacting daily with humans (Casadevall, American Society for Microbiology, 2017). Fungal natural products are a rich source of antimicrobial anticancer drugs (Jakubczyk, Molecules, 2020). The Carlson Library has isolated 108 unique aquatic fungal species based on observations on collection location, morphology, growth rate, and areas of spore coverage used to distinguish strains. We aim to characterize fungal species based on chemical identity and 18s rRNA sequencing to build a phylogenetic tree to understand the diversity captured by current isolation and culturing methods. Fungi are initially plated on Potato Dextrose Agarose (PDA) media plates and grown until they sporulate 7-10 days (Ezeonuegbu, Sci Rep, 2022). They are then cultured into liquid media and grown on a rotary shaker 110 rpm. Fungi were pelleted, DNA WAS extracted for PCR, and submitted for Sanger sequencing of the 18s rRNA region using standard primers ITS1 and ITS4. Representative strains from each phylogenetic branch will be grown for chemical characterization. Ethyl acetate is added to the flask to cover the media and hyphae. The ethyl acetate is then filtered and dried in vacuuo. All extracts will be profiled by High Performance Liquid Chromatography (HPLC) and Liquid Chromatography Mass Spectroscopy (LCMS). The chemical fingerprints will be analyzed using the mPACT metabolomics platform to identify “chemical families” (Samples, 2023). Previously unknown metabolites, as identified by comparing to databases, will be prioritized for further characterization. This will determine if genetic or chemical families will be more robust for strain prioritization.

Elvin Garcia

CA - Cerritos College

Discipline: Natural and Physical Sciences

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#1 Elvin Garcia
#2 Michael L. Hayes

Abstract Name: Investigating U-to-C RNA editing by synthetic DTW:KP3 designer protein in vitro conditions

RNA editing is a post-transcriptional process that can convert, insert, or delete nucleotides. C-to-U and A-to-I base editing is utilized by most eukaryotes to alter DNA and RNA sequences. Recent developments have applied base editing as a tool to correct DNA gene mutations that have been linked to genetic diseases. Unlike the well-characterized irreversible C-to-U base editing mechanisms, U-to-C base editing lacks an established biochemical mechanism for the proposed animation of uracil and a simple reverse of the C-to-U mechanism would be disfavored. Recently, researchers have reported U-to-C base editing of RNA from three synthetic proteins expressed in bacteria. These proteins utilize a synthetic PPR tract that provides specificity for a C-terminal domain called DYW:KP based on consensus sequences originating from the nuclear genome of ferns and hornworts. One of these proteins DYW:KP3 was selected for examining catalysis in vitro. DYW:KP3 was expressed in bacteria, purified, and mixed with putative substrate RNA to determine the presence of C-to-U or U-to-C activity. Sanger sequencing of RT-PCR products revealed DYW:KP3 did not exhibit any base editing activity in vitro when given C templates or U templates. No activity was observed in these reactions, which leads us to conclude the protein may not have folded in a conformation conducive to catalyzing base editing.

Victoria Garcia

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Victoria Garcia
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Trina Nguyen

Abstract Name: Exploring Honey's Antimicrobial Efficacy as a Therapeutic Approach to Inhibit Cutibacterium acnes Growth

Honey has been shown to treat skin wounds and infections due to its antimicrobial and antioxidant properties. The bioactivity potential of honey helps regulate the growth of bacteria and aid in skin homeostasis due to its antimicrobial effects attributed to high sugar content, low pH, and hydrogen peroxide. Honey has shown no microbial resistance and is a promising solution for maintaining a healthy skin microbiome because it can inhibit bacterial growth of S.aureus, stimulate collagen production, exfoliate, hydrate, and cleanse the skin. In a previous study, we examined more than 100 local Texas honey samples for their antimicrobial and antioxidant properties by the well-diffusion method, XTT, hydrogen peroxide activity, total phenolic and flavonoid contents, and DPPH. We identified some honeys with greater antioxidant potential, presented greater antimicrobial capacity comparable with current medical-grade honeys. Although several studies have analyzed honey's antimicrobial efficiency against numerous gram-positive and gram-negative bacteria, the effect on Cutibacterium acnes remains unknown. C. acnes is an anaerobic gram-positive bacterial strain that invades the sebaceous follicles of the skin microbe and creates acne. This study analyzed the antimicrobial capacity of local Texas honey against C. acnes in terms of bactericidal and bacteriostatic activity. We classified honey color according to the Pfund scale using a Spectrophotometer and then used the Well Diffusion method to determine the zone of inhibition of the honey samples with greater antioxidant potential. Results indicated darker honey (amber, dark amber) had the largest zone of inhibition and, therefore, greater antimicrobial capacity than lighter honey. The results indicate that honey can be used as a medical-grade therapeutic approach to treat acne. The honey samples identified as having superior antimicrobial capacity against C. acnes can be further studied to determine their application in human clinical trials and expand the chemistry of honey by formulating creams, ointments, and gels

Melanie Garcia

WI - Alverno College

Discipline: Natural and Physical Sciences

Authors:
#1 Melanie Garcia
#2 Alex Blom

Abstract Name: Analysis of Amino Acid Content in Nutritional Supplements

When looking to increase muscle mass through strength training, one of the main recommendations is to begin taking protein supplements. Protein helps muscles torn during exercise to recover faster, leading to an increase in lean muscle mass. There are few previous studies on the content of protein powder supplements as

they are not regulated by the Food and Drug Administration (FDA). This study was conducted to identify and quantify amino acids in three different protein powders. To quantify the amount of protein in each supplement, the powders were digested into their individual amino acids. After digestion, amino acids were analyzed by using High Performance Liquid Chromatography (HPLC). Online derivatization using phthaldialdehyde (OPA) was performed on an Agilent 1100 HPLC and gradient separation was performed using phosphate buffer and acetonitrile. Emission data was collected at 450 nm with excitation at 338 nm. From the data collected, it was shown that the Body Fortress brand had 6.3g of amino acids, Shaklee had 0.49g and Vega had 2.14g. There could be limitations in the data due to the hydrolysis method. For future work, alternative methods for protein hydrolysis could be explored.

Melawhy Garcia

CA - California State University - Long Beach

Discipline:

Authors:
#1 Melawhy Garcia
#2 Lilia Espinoza
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Abstract Name: Leveraging Interdisciplinary Nutritional Knowledge (LINK) Scholars Program: Preparing Underrepresented Students for the Food and Human Sciences Workforce

Addressing the high rates of chronic disease among Hispanics/Latinos requires effective, culturally tailored programming and staff who practice cultural humility. The current profiles of public health professionals and registered dietitians point to the need to increase the number of underrepresented students trained to serve the growing Latino population. The Leveraging Interdisciplinary Nutritional Knowledge (LINK) Program is a collaboration among five Hispanic-Serving Institutions to establish an academic pipeline linking three community college partners to California State University (CSU) Fullerton and CSU Long Beach. The LINK Scholars Program is one component whose purpose is to promote the first-year success of 26 underrepresented students in food and human sciences by providing them with a 12-month fellowship to better prepare them to enter the workforce and/or pursue advanced degrees. At the CSUs, undergraduate transfer and first-year graduate students are screened and selected as LINK Scholars. LINK Scholars participate in: 1) a one-week summer orientation and training on Latino chronic disease prevention; 2) bimonthly learning communities focused on nutrition-related research and professional development; 3) a series focused on leadership skills development; 4) one semester of faculty-mentored research; and 5) a summer externship for experiential learning in a professional setting. Student academic performance and training outcomes were assessed using baseline and post-program surveys. A total of six undergraduates and eight graduates have completed the program, and eight undergraduates and eight graduates are currently enrolled. Among those who completed baseline and post-program surveys, all LINK Scholars were in good academic standing and self-reported increased knowledge in research skills and ability (87%), culturally and linguistically relevant interventions (80%), and chronic diseases among Latinos (70%). All LINK Scholars plan to pursue graduate school. Interdisciplinary training, mentorship, and financial support programs show promise in preparing the future food and human sciences workforce. Student success stories will be presented.

Armando Garcia

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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Mariamawit Tadesse
Carlos Parsons

Abstract Name: Wild Fire Detection System

Wildfires are catastrophic events that have become increasingly frequent destroying property and lives. Wildfire detection at its simplest is forest rangers watching the landscape from observation towers. However, modern detection techniques include satellite imaging, infrared (IR) imaging, and electronic sensor networks. Ongoing research has shown, that by incorporating a hybrid system of both sensor networking and IR imaging, a cost-effective model for wildfire detection can be produced. Previous work has shown that an embedded system built on this technology results in detection of thermal signatures between 40-50 feet with datalogging and transmittance of humidity, temperature, and gas/smoke detection via radio frequency [1]. The work presented here, is an extension of the technology used in transmitting the data from sensor to sensor. The initial system used the ARM Cortex-A72 processor found on inexpensive development boards such as the Raspberry Pi microprocessor. The work presented here is based on a smaller, more power efficient, RP2040 processor based on the ARM Cortex-M0+ core found on the Raspberry Pi Pico microcontroller and the LoRa RYLR896 Antenna Transceiver Module from REYAX

Axel Garcia

TX - Laredo College

Discipline: Natural and Physical Sciences

Authors:
#1 Axel Garcia
#2 Daniela Castro
#3 Qingguo Meng

Abstract Name: A Comparison Of Nutritional Analysis Of Different Generations

Many think that obesity is a recent issue due to increased rates being reported in the US but obesity has been a prevalent issue for a long time and has even been declared an epidemic in the United States in 1999. Every person’s body is different and each individual may have some underlying health disease that requires them to be on a specific diet or a “personalized nutrition” plan. In this research, we hope to better understand the nutrition needed by an individual to remain healthy and not be considered under or overweight. A daily food log was completed by the participants (generations x and generations z) for a week in which they wrote down everything they consumed in as much detail as possible. Once data was collected it was analyzed using the Diet Analysis Plus Software to get an estimate of participants' daily food intake and break it down into nutritional information. However there was no difference in our data, this could be due to many factors such as sample size response bias and limitation with the software used. Overall, it was noted that generation Z did consume more protein compared to generation X. This could be because of the new diets that generation Z are following or the traditional eating habits of generation X. In general more research should be done with a bigger sample size to determine if there really is a difference in eating habits.

Mineishka Garcia

PA - Albright College

Discipline: Social Sciences

Authors:
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#2 Chelsey Nievez
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Abstract Name: How Immigration Status and Skin Tone Effects Perceived Leadership

This study aimed to investigate the effects of perceived leadership styles based on immigration status, skin tone, and gender. A diverse sample of 66 participants, aged 18-22, were recruited from Albright College. Participants were exposed to manipulated images of faces representing immigrants and non-immigrants with varying skin tones. They rated the leadership styles of the individuals shown in the images using a Likert scale. Results indicated that immigration status influenced the perception of leadership styles, with immigrants being perceived as having a higher leadership style compared to non-immigrants. However, skin tone did not have a significant main effect on perceived leadership styles. Additionally, gender of the image shown interacted with immigration status, with female non-immigrants being perceived as having a higher leadership style. The results indicated significant biases in perceived leadership. Non-immigrants (M= 150.48, SD= 28.04) scored higher than immigrants (M=118.60, SD= 24.40), F(1, 65)= 248.67, p<.001, η= 0.793. While there was no main effect for skin tone, a significant interaction between skin tone and immigration status was observed, F(1,65)= 5.20, p = .026, η= 0.074. In terms of gender, females (M=138.30, SD= 24.52) scored slightly higher than males (M=132.93, SD= 27.97), F(1,65)= 6.30, p=0.014, η= 0.089. A significant interaction between immigration status and gender was also noted, F(1, 60)= 296.62, p<.001, η= 0.832.These findings reveal a notable bias against immigrants in leadership perception, aligning with existing literature on workplace stereotypes. The lack of significant differences based on skin tone was unexpected, considering the prevalent issues of colorism and racism, and might be attributed to the methodology. These implications are significant for organizational diversity and inclusion, highlighting the need to address biases, particularly concerning immigration status.

Emilse Garcia Ayala

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
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#2 John Duque
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John Duque
Kimmy Kee-Rose

Abstract Name: Exploring Cultural Variations in Emotion and Neurocognitive Processes among Dark Personalities

The dark personalities consist of socially aversive traits of Machiavellianism, narcissism, and psychopathy. These traits have been found to aid in career success and handling crisis, but they are also linked to impaired emotional awareness and a lack of empathy. Additionally, Machiavellianism and psychopathy are associated with poorer self-control, whereas narcissism and psychopathy are linked to impulsivity. Little is known about the relationships between dark personality traits and culture identification. This study compares 54 (31Hispanic/Latino and 23 Caucasian) university students with traits of psychopathy and Machiavellianism

(P/M) versus 42 (24 Hispanic/Latino and 18 Caucasian) students with traits of Narcissism (Narc) on aspects of emotional processes (emotional awareness and empathy) and neurocognition (self-control and inhibition). Participants' personality traits were assessed using the Short Dark Triad questionnaire. Additionally, participants' emotional awareness was assessed using the Toronto Alexithymia Scale, whereas empathy was measured using the Empathy Quotient. Neurocognitive functioning was measured using the Tangney Self-Control Scale and Stop-it Inhibition Test. A series of 2 (Culture Group) x 2 (Dark Personalities) Analyses of Variance revealed a trend-level significant Group by Personalities interaction in emotional awareness, ($F(1, 48)=3.921$, $p=.054$ $\eta^2=0.08$). Hispanic/Latino students tended to exhibit lower levels of emotional awareness compared to their Caucasian counterparts with P/M traits, while Caucasian students tended to exhibit lower levels of emotional awareness compared to their Hispanic/Latino counterparts with Narc traits. No significant Group by Personalities interactions were found for empathy ($F(1, 48)=2.012$ p=n.s., $\eta^2=0.039$), self-control ($F=(1, 48)=0.270$, p=n.s., $\eta^2=0.003$), or response inhibition ($F(1, 48)=2.398$, p=n.s., $\eta^2=0.025$). These preliminary findings could potentially expand our understanding of the specific roles of emotional processing and neurocognition in individuals with dark personality traits of different cultural backgrounds.

Luis Garcia Chavez

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Luis R Garcia Chavez

Abstract Name: The Fight for Housing, Transportation, and Climate Change: CEQA and CALGreen Report

California Green Building Standards Code (CALGreen), the nation's first set of green housing codes, and the California Environmental Quality Act (CEQA) have been cited as possible impediments to the development of housing and transportation due their implementation of additional regulations that could slow development. Thus, this paper aims to explore how green regulations affect the development of public transit and housing in California. Through a comparative, large n-study, this paper investigates the impacts of 1) 2010 CALGreen on the state's housing development, and 2) CEQA and its SB 743 expansion, on the development of public transportation. I study the relationship of housing, CALGreen, transportation and CEQA/SB 743 by comparing the change rate of housing/change rate of population & change rate rideship/change rate of population between California and Texas and two time intervals. I extracted data from the US Census and the American Community Survey (ACS). Through a comparative, large n-study, results showed a tentative conclusion that neither policy has an effect on the change rate of Housing Units/Change Rate per capita. This is one of the first studies that explores the relationship between CEQA/CALGreen and public transportation/housing and hopefully invites further research and educate policymakers in the state.

Daniela Garcia Tellez

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Daniela Garcia Tellez
#2 Betsy Martinez-Vaz

Abstract Name: Isolation and Characterization of Guanide Degrading Bacteria from Municipal Wastewater

Biguanides are important compounds because they are widely used in agriculture and medicine. Metformin (1,1-dimethylbiguanide) is the most prescribed Type II Diabetes drug worldwide. The widespread use of biguanides has led to detection of these compounds at high levels in rivers and coastal waters. Many of these chemicals, including metformin and guanylurea, are considered emerging water pollutants. The goal of the research was to investigate the microbial degradation of two compounds structurally similar to metformin: biguanide and cyanoguanidine. We hypothesized that because biguanides and similar chemicals are abundant in wastewater, sludge-derived microbial cultures can serve as a source to isolate microorganisms capable of metabolizing these pollutants. The experimental approach consisted of establishing enrichment cultures using three separate kinds of sludge (RAS, TAS, and PAS) and microbial media with biguanide or cyanoguanidine as the sole nitrogen source for growth. Aliquots of enrichment culture were taken after 72 hours of incubation, serially diluted, and plated on minimum media containing biguanide or cyanoguanidine to isolate bacteria that utilized these chemicals as a nitrogen source. HPLC analysis was used to monitor and quantify the disappearance of these compounds in response to microbial growth. The HPLC analysis results revealed degradation of biguanide and cyanoguanidine by activated sludge consortia. Four bacteria strains capable of utilizing biguanide and cyanoguanidine as sole nitrogen sources for growth, were isolated characterized by Gram staining and 16S rRNA PCR. The results showed these organisms were Gram negative and closely related to strains belonging to the genus Klebsiella. Future work will focus on genome analysis to identify candidate genes encoding biguanide and cyanoguanidine degrading enzymes

Melissa Garnes

AL - Auburn University

Discipline: Health and Human Services

Authors:
#1 Melissa Garnes
#2 Erin Cooper
#3 Mallory Lucier-Greer

Abstract Name: Mental health among service members who experienced military sexual trauma: Exploring the roles of individual characteristics and social supports

Military sexual trauma (MST) refers to sexual assault or harassment that occurs during one's military service and can threaten service member well-being and readiness. Though MST may be underreported due to fears of retaliation, prevalence estimates suggest that 15-40% of women and 1-4% of men have experienced MST on post-9/11 deployments and that women and racial minorities are at a greater risk of MST than men or white Service members. Using a social-ecological lens, data from the Army STARRS All Army Study were used to conduct within group analyses of 114 service members who had experienced sexual assault on deployment to understand how individual factors (sex and race) and social factors (mental health support and unit cohesion) contribute to current mental health symptoms (anxiety and depression). Analyses of variance (ANOVAs) results suggest that there were no differences in depressive or anxiety symptoms among MST survivors based on their sex or race (individual factors), but those with greater mental health support and unit cohesion reported fewer depressive and anxiety symptoms compared to those who reported less mental health support and less unit cohesion (social factors). Using multiple linear regression, this study also explored additive associations between mental health support and unit cohesion, two malleable and protective factors, on mental health symptoms. Having received greater mental health support and higher unit cohesion were both uniquely linked to lower depressive and anxiety symptoms. Overall, results suggest that protective, social factors may be more salient in understanding the current mental health symptoms of service members who experienced sexual assault while deployed compared to individual level factors. In addition to MST prevention efforts, stakeholders may consider implementing policies and interventions focused on promoting mental health help-seeking and unit cohesion to mitigate risks to mental health due to deployment MST.

Ky Gaskill

CA - California State University - Fullerton

Discipline: Visual and Performing Arts

Authors:
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#2 Amanda Rose Villarreal

Abstract Name: Boundaries for Beyond Abuse: Utilizing Intimacy Choreography Practices to Support & Fill Gaps in VIRTUS Training

Intimacy Choreography supports the aims of one of the Catholic Church's sexual abuse prevention programs: VIRTUS. The tools of intimacy choreography education company Theatrical Intimacy Education and VIRTUS both aim to establish and uphold boundaries - but in different capacities. Intimacy Choreography provides boundary-setting tools to help performers in scenarios of low stakes (defined as legally acceptable) risk such as exploring creative options in the rehearsal space, while VIRTUS provides tools to prevent and respond to high stakes (defined as legally unacceptable) risk. This presentation compares the tools of each area, and posits how Intimacy Choreography's consent-based practices are a good fit for Catholic diocesan schools' theatre programs that utilize VIRTUS training.

Margaret Gaspers

MN - St. Olaf College

Discipline: Health and Human Services

Authors:
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#2 Kylie Reardon
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#4 Jennifer Holbein
Kylie Reardon
Eh Per

Abstract Name: The Effects of Implicit Sequence Learning on Cognitive and Sensorimotor Function in Older Adults

As we age, cognitive sequencing faces changes with degeneration of neurotransmitter systems and brain matter atrophy. Systems including visual perception, working memory, complex learning, learning rate, learning magnitude, and serial reaction time face degeneration. Purpose: To investigate motor based versus judgment based tasks and the cognitive and sensorimotor relationship for older adults to implicitly chain together events. Methods: Community dwelling older adults (N=20; aged 64.9 ± 6.8) were recruited to participate in neuromuscular and cognitive testing. Participants completed eight perturbation treadmill sessions incorporating various stability challenges consisting of trunk stability, step stability, and continuous slip and trip simulations. Testers distract the participant with conversation adding the element of dual tasking during testing. Additionally, the first and last sessions included a balance and functional assessments. Prior to cognitive testing, participants filled out baseline assessments: Initial Screening and Standard neuropsychological assessments. Following the pre-assessments, participants were given a series of visual and auditory stimulus events through a computer screen to assess implicit sequence learning. Subjects were cued to respond to the events using computer keys, mouse and buttons and their reaction time was recorded. Results: It is hypothesized that perturbation training revealed neuromuscular adaptations to tripping and slipping, improving reactive control of stability and a faster ability to react to sudden pushes off balance.

Cognitive testing revealed a shorter response time and faster rate of pattern recognition as the trials continued indicating implicit learning. Discussion: The results of this study indicate that there is decreased reaction and response time that contributes to the decreased fall risk. Our findings contribute to the growing body of knowledge on healthy aging, showing age preservation in learning deterministic sequences. This leaves open the possibility that motor and judgment based tasks are supported by independent mechanisms.

Kristen Gatchalian

FL - The University of Tampa

Discipline: Social Sciences

Authors:
#1 Kristen Gatchalian

Abstract Name: The Cross Race-Effect and Political Messages Affecting Memory Accuracy

The cross-race effect (CRE) is an individual's tendency to recognize faces within their own race more accurately than faces outside of their race. Sporer (2001) suggests that the CRE is caused by an ingroup and outgroup effect, such that we process ingroup faces better. However, this is not true for some ingroups such as university affiliation but may occur for ingroups that are more contentious at times such as political groups. The emotional enhancement of memory effect (Kensinger, 2009) states that an emotional stimulus is more likely to be recalled. In this study, we expect the CRE to be stronger as participants recall faces associated with their own political ingroup and outgroups that may illicit an emotional response. Sixty-four college-aged White participants (Female = 54, Male = 10) were grouped by political ideology based on their ratings of left leaning and right leaning messages. They were shown 36 faces, 12 from each race (Asian, Black, and White). Faces were paired with left, right, or neutral leaning political messages. Participants' memory was tested by showing the 36 studied faces intermixed with 36 new faces in a standard recognition accuracy test. A repeated-measures ANOVA revealed significant interaction between the race of faces studied, political leaning of the message, and the participant's political affiliation. The size of the CRE differed based on race of face, such that the CRE was largest between White and Asian faces. More interestingly, the CRE was smallest, and essentially mitigated, when right leaning messages were paired with Black faces, but largest when paired with Asian faces. Moreover, participants who leaned left remembered Black faces better than those who leaned right, possibly due to how similar they thought their social and political concerns were to Black-Americans.

Natalia Gatdula

CA - California State University - Long Beach

Discipline:

Authors:
#1 Natalia Gatdula
#2 Melawhy Garcia

Abstract Name: Research Training and Mentoring to Cultivate the Next Generation of Public Health Professionals to Address Latino Health Disparities

Background: With Hispanics/Latinos soon to be the majority in California, there is a need for specialized training among public health professionals to serve Latinos impacted by the alarming rates of chronic conditions. To mitigate this gap in expertise, a 10-week training and mentorship program was developed to expand knowledge, provide professional development, and hands-on research experience. Methods: The 10-week ANDALE Latino Research Training Program aimed to recruit 50 underrepresented undergraduate students from various health-related disciplines. Four cohorts of scholars of received specialized research training in Latino-specific nutrition and health promotion, community based participatory research, intervention development, and culturally and linguistically effective strategies for sustained and positive health outcomes through a one-week training followed by nine weeks of hands-on research with a faculty mentor. Scholars also received faculty mentorship and professional development opportunities. Participants

completed a baseline survey, a post-survey at the end of the 10-week program, a one-semester post-survey after participation, and a one-year post participation survey to assess changes in knowledge, skills, abilities, sense of belonging, and preparedness to enter the workforce or graduate studies. Paired t-test and ANOVA test were used to assess changes over time. Results: Fifty-three undergraduate students participated in the ANDALE Program with the last cohort completing the program October 2023. The presentation will expand on the program training topics, student/faculty matching process, and lessons learned from the last 3 years. Student success outcomes such as overall GPA, academic standing, and graduation will be discussed, in addition to changes in research knowledge, skills, abilities, sense of belonging, and preparedness to enter the workforce or graduate studies. Conclusion: Short-term research programs that provide experiential learning through hands-on research and faculty mentorship positively impacted students' cognitive, personal, and professional development and preparation to enter the workforce or apply and succeed in graduate or professional school.

Charles Gates

OK - Langston University

Discipline: Natural and Physical Sciences

Authors:
#1 Charles Gates

Abstract Name: Annexin A2 Expression in Prostate Cancer Cells

Metastasis is a major cause of morbidity in prostate cancer patients; the primary mortality is metastasis of bone tissue. Despite substantial efforts to understand prostate cancer metastasis, the mechanisms involved in preparing the metastatic niche for colonizing the prostate cancer cells are still unknown. Therefore, there is an urgency to identify essential regulators of bone metastasis in prostate cancer for therapeutic targets. Annexin A2 is a calcium-dependent phospholipid-binding protein overexpressed in prostate cancer's poorly differentiated high-grade adenocarcinomas. Phosphorylation of AnxA2 at tyrosine-23 creates an important event for the localization of AnxA2 to the cell surface. It provides a binding site for tissue plasminogen activators at the cell surface and converts plasminogen into plasmin, which plays an essential role in the invasion and metastasis of cancer. However, the cell surface expression of AnxA2 in prostate cancer is unknown. Therefore, in the present study, we demonstrated the cell surface expression of AnxA2 in prostate cancer cells to delineate the mechanism of bone metastasis. Prostate cancer cell lines, PC3, and DU145 were grown. Immunoblotting was used to detect the expression of pAnxA2-Y23 and AnxA2 proteins in cells. Our results demonstrated that the expression of pAnxA2-Y23 is very high in prostate cancer cells (PC3 and DU145 cells) compared to normal prostate epithelial cells. However, the expression of total AnxA2 in both prostate normal and cancer cell lines is comparable. Results suggest that the cell surface expression of AnxA2 is high in prostate cancer cells due to increased phosphorylation of AnxA2 at tyrosine 23.

Sneha Gatuku

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
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#5 Alasdair Cohen

Abstract Name: Sewershed Surveillance of ARGs in Central Appalachia: Building a Monitoring Framework for Rural Systems

Unregulated antibiotic use and resulting antibiotic waste streams can lead to the dissemination of antibiotic resistant bacteria (ARB) and antibiotic resistance (ARGs) into the environment, especially where wastewater treatment infrastructure is not present and/or underdeveloped. However, wastewater-based surveillance (WBS) is a promising methodology for monitoring health outcomes and mitigating negative impacts from potential future, novel epidemics. The difference in regional trends in measured antibiotic concentrations compared to public sales data indicates that WBS can be useful in detecting ARGs and antibiotic resistant-bacteria that can't be diagnosed as effectively and promptly with clinical surveillance. For this study, phenotypic and genotypic analysis of ARGs and ARB was conducted in a rural sewershed with a population size of ~2,500. Samples were collected at regular intervals at five wastewater sampling points (WWTP influent, WWTP effluent, a manhole downstream of a residential living facility, a manhole downstream of septic effluent, and a manhole downstream of a veterinary hospital) and two surface water sampling points (one downstream and one downstream of the WWTP effluent discharge). We cultured for total and cefotaxime-resistant E.coli and quantified concentrations of two ARGs (intl1 and blaCTX-M-1) using ddPCR. Preliminary results show the percentage of cefotaxime-resistant E.coli compared to total culturable E.coli was highest at WWTP effluent (at 4.97%) compared to 0%-0.9% across other sites. However, concentrations of blaCTX-M-1 in log (gene copies per mil) were highest at the WWTP influent (at 3.38 Log (CFU/100mL)).

Li Gause

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Li Gause

Abstract Name: Dracula: Adaptations and Modern Perceptions

Dracula is a 1897 novel written by Bram Stoker, and it has become ubiquitous in modern culture. Dracula is a story with interesting characters, a sense of urgency that drives the plot forward, and more comedy than one would expect. There are so many adaptations of this classic novel that little emphasis is placed on the original. Many people who have not read Dracula, but have seen an adaptation seem to believe they understand the plot of the book, or that there is no need to read the novel. This will be an examination of several adaptations of Dracula, a study of how Dracula is perceived in the modern day, and an attempt to unite different adaptations with modern perceptions of the novel. Survey results will be used to gauge modern perceptions of Dracula, and different film and book analysis techniques will be used to understand Dracula and its adaptations. Most literature on Dracula focuses on one particular adaptation, but this will focus on the core elements of the original novel. This will then focus on which of those elements have been carried over to contemporary perceptions of Dracula. Instead of examining one particular story this is an examination of how being adapted dozens of times has changed the core of what Dracula is. Dracula is a novel that has been drastically changed from its original context through over a century of adaptations. It is important to examine where these changes came from, and how drastically these changes affect modern perceptions of the novel.

Saumya Gautam

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Saumya Gautam

Abstract Name: Using Prompt Engineering in Generative AI to Improve Database Design

Prompt engineering is crucial for maximizing the potential of generative AI in complex technical tasks such as database design. Various prompt formats and structures can lead to differing effectiveness for specific tasks. This research aims to refine prompt design and evaluation methods, exploring and comparing strategies to improve AI-generated output quality. Furthermore, this study investigates the versatility of prompt engineering in tailoring outputs for schema coherence, data model accuracy, and adaptability to various database requirements. By analyzing case studies and experiments, the study demonstrates how well-crafted prompts shape database structure generation, highlighting the critical role of tailored prompt design in producing high-quality, domain-specific outputs. The research advances generative AI technologies by examining various prompt formulation approaches and assessing their impact on output quality.

Madeline Gautreaux

OH - Capital University

Discipline: Social Sciences

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#2 Lilli Dobbins
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Abstract Name: Student Definitions of College Student Success

Understanding students' definitions of success in college is just as important as understanding institutional perspectives about student success in college. Most colleges and universities measure student success via variables such as GPA, retention, and persistence to graduation. Students, however, might have a more personal definition of success in college, such as the development of social networks or the ability to enact social justice. The purpose of this research is to gauge how students define success in college. Students were surveyed about their definition of success in college and were asked to identify which potential success indicators were important to them. As a partial replication and extension of the work of Langout et al. (2022), some survey items were drawn from the Borderlands survey. To further understand student definitions of success in college, focus groups were conducted. While data are still being collected, results will indicate how well student definitions of success in college correspond with institutional definitions of student success. This research can help colleges and universities develop a more holistic definition of student success that better reflects needs and goals of different college student populations.

Giavonna Gaw

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
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#3 Adam Ohana
#4 Antonio Izzo

Abstract Name: Impact of Liming on Denitrifying Genes in Soil Microbial Communities

This study aims to understand some of the dynamics surrounding the denitrifying soil microbial community in a truffle orchard. Burwell Farms in North Carolina cultivates Tuber borchii and has orchards at multiple stages of development: 1.5 years old (Young), 3.5 years old (Middle), and 7.5 years old (Old). Part of their cultivation process involves the application of liming to raise the soil pH - steps that benefit the target fungus. Past research in soil systems supports the idea that liming builds the denitrifying bacterial community over time. This study took advantage of the multiple stages of orchard age to run a chrono-sequence study to see how the denitrifying capabilities of the bacterial community changed as the orchard ages and soil pH increases.Soil samples were collected from plots of different ages: Young, Middle and Old. The sample's DNA was subjected to quantitative- PCR focusing on the nitrite reductase gene nirK to assess denitrifying gene abundance. While the trend showed a decrease in denitrifying organisms as the orchard ages, results reveal that liming has not significantly impacted denitrifying genes in this time span. Subsequent experiments via cloning and capillary DNA sequencing confirm that the nirK gene being analyzed is of bacterial origin. These findings provide insights into the role of microorganisms in shaping the nitrogen cycle and contribute essential knowledge for the success of the farm by understanding the intricate relationship between soil pH and denitrifying microbial populations.

Sarah Gawlik

TX - University of Houston

Discipline: Social Sciences

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#1 Sarah Gawlik
#2 Sarah Wood

Abstract Name: The Role of Source Credibility on Persuasion Towards Conservation Farming

One source of pollution in the Red Cedar Watershed is runoff from surrounding agricultural land. Implementation of best management practices (BMPs) would promote soil integrity and decrease the runoff polluting the watershed. Encouraging the adoption of BMPs is challenging since factors outside of the argument itself can affect persuasiveness. One such factor is source credibility. Understanding who local farmers find most credible can aid in crafting the most persuasive arguments about adopting BMPs. A survey was mailed to a random sample of 300 farmers in Dunn and Barron County. Additionally, a digital version of the survey was distributed at a local farmer's market. The survey assessed the perceived familiarity, trustworthiness, knowledge, and persuasiveness of various groups that might approach farmers about adopting BMPs. Survey results found that respondents rated groups more closely linked to the local community more favorably. Within those local groups, neighbors/other farmers and county conservation services were rated as the most credible. Additionally, there was a statistically significant relationship between respondents who rated farmer-led councils as trustworthy and knowledgeable and reporting using more BMPs. This may suggest that farmer-led councils are another influential local group. This information indicates that persuasive arguments in favor of BMPs should focus on ties to the local community and groups like peer farmers, farmer-led councils, and county conservation services are integral in opening these dialogues.

Carlos Gaye

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Carlos Gaye

Abstract Name: Determining the Expression Pattern of BRINP2 during Migratory Neural Crest Cell Development in Chicken Embryos

Neural crest cells (NCCs) are unique stem cell types found only in vertebrate embryos. NCCs migrate and differentiate into different cell types to form structures such as craniofacial bones, the peripheral nervous system, and more. Genetic regulatory networks control the migration, differentiation, and formation of NCCs. Dr. Bridget Jacques-Fricke and colleagues identified 674 genes that are potential regulators of NCC development. My research focuses on one of these candidate regulators:Bone morphogenetic protein/retinoic acid-inducible neural-specific proteins (BRINP2). BRINP2 is a part of the Membrane Attack Complex/Perforin (MACPF) superfamily. While the MACPF domain is traditionally associated with immune function, some MACPF family members have a role in forming adhesions in migrating cells. Although BRINP2 is part of the MACPF superfamily, its specific role in adhesion and molecular function in cell migration is unknown. To determine which genes are potential regulators of NCC development, we must understand the expression pattern of our targeted genes. By performing in situ hybridization, we found BRINP2 to be expressed in premigratory and a subset of migratory NCCs in chick embryos. Future research could focus on molecular functional analysis of BRINP2 by performing a loss of function analysis in premigratory and migratory NCCs to determine the effect of BRINP2 on NCCs development. Abnormalities in NCC development can lead to various congenital disorders such as cleft lip and palate, neuroblastoma, and more. Understanding the mechanisms underlying NCC development is crucial for gaining insights into developmental disorders and exploring potential therapies.

Nathalia Gaytan

CA - University of California - Merced

Discipline: Natural and Physical Sciences

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#3 Namkha Nguyen

Abstract Name: Engineering Fluorescent Reporter Strains To Generate High-Throughput Detection of White-Opaque Switching in Candida albicans

Candida albicans, a diploid polymorphic fungus, has evolved a unique heritable epigenetic program that enables reversible phenotypic switching between two cell types, referred to as “white” and “opaque”. These cell types are established and maintained by distinct transcriptional programs that lead to differences in metabolic preferences, mating competencies, cellular morphologies, responses to environmental signals, interactions with the host’s innate immune system, and expression of approximately 20% of genes in the genome. Traditionally, these programs are studied by generating gene knockouts and assessing their effects on phenotypic switching. These switch analyses measure the percentage of cells within individual white or opaque colonies that have switched phenotypes relative to the original progenitor cell. However, this classic assay is laborious, inefficient, susceptible to “jackpot” effects and user-user variability, and has a limited dynamic range. We will use CRISPR to engineer a fluorescence-based cell-type reporter strain that will enable discrimination between white and opaque phenotypes using flow cytometry. The reporter strain will undergo two different transcriptional fusions of fluorescent reporters, mScarlett and mNeonGreen, placed

under the control of highly expressed white and opaque specific promoters respectively. Once developed each colony will be passed through an automated flow cytometer for determination of cell-type identity with populations of cells recovered from single white and opaque colonies. Effective reporter strains will subsequently be subjected to traditional colony counting-based white-to-opaque and opaque-to-white switching assays to confirm that the wild-type switching frequencies are unaffected by our reporter constructs. The resulting switch reporter strain will be used to develop a high-throughput assay that will enable accurate quantitation of switching frequencies with individual colonies grown on agar medium.

Roxy Geballe

NC - Elon University

Discipline: Health and Human Services

Authors:
#1 Roxy Geballe
#2 Matthew Wittstein

Abstract Name: Investigating the Physical and Psychological Effects of Learning Piano in Arthritis and Attention Deficit Hyperactivity Disorder Populations

The purpose of this study is to understand if a piano-playing intervention may result in positive psychological experiences or improved physical function in an arthritic or ADHD population, potentially leading to new treatment techniques for other physical and neurodiverse populations. The first part of the study is complete and includes participants with arthritis. With an age range of 20 to 87, five participants had limited previous piano experience and an average self-rating piano skill of less than one out of ten. They engaged in one-on-one piano lessons three times a week, for six weeks. Their psychological well-being was assessed through quality of life questionnaires, while their physical ability was measured through range of motion, grip strength, and pinch strength. Findings did not suggest any significant improvements after the piano sessions ended, but various flexion, extension, and perceived skill measurements neared statistical significance. Further research is encouraged with larger sample sizes. The second part of the study is ongoing and includes individuals with attention deficit hyperactivity disorder (ADHD). Because ADHD exhibits a different manifestation of physical and mental abilities, pre- and post-intervention assessments of this population include gait and postural control using a dual-task paradigm. The Stroop (matching colors and words) and Serial Seven Test (counting backward by seven) were used to increase the cognitive demands during balance (both tests) and gait (Serial Seven only). For balance, ellipse area (overall sway), sample entropy (sway regularity), and DFA alpha (sway randomness) will be calculated from 30 seconds of quiet stance on a Bertec force plate using custom Matlab scripts. Gait, velocity, step length, stride length, and cadence are calculated using a GaitRITE overground walkway. Following piano instruction, assessments will be analyzed for any physical or psychological improvements. Results from both parts of the study will be presented at the conference.

Lily Gebhart

CA - Occidental College

Discipline: Mathematics and Computer Science

Authors:
#1 Lily Gebhart
#2 John Kolassa

Abstract Name: Adjustments for Kurtosis and Continuity on the Prentice Test

The test of Prentice is a non-parametric statistical test for the two-way analysis of variance using ranks. The null distribution of this test is typically approximated using the Chi-square distribution. However, the exact null distribution deviates from the Chi-square approximation in certain cases commonly found in applications of the test concerning the tail probabilities of the distribution, motivating adjustments to the approximation. This work presents adjustments to this null distribution correcting for continuity, multivariate skewness, and multivariate kurtosis with improvements on previous approximations for the majority of cases. The effects of alternative scoring methods as non-polynomial functions of rank sums are also presented as a broader application of the approximation.

Blythe Geiman

IA - Iowa State University

Discipline: Health and Human Services

Authors:
#1 Blythe Geiman
#2 Autumn Tiedens
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Abstract Name: The Effects of Singing on Gait Variability during Complex Walking in Persons with Parkinson's Disease

Gait and balance impairment are major symptoms of Parkinson’s Disease (PD) and can significantly impact functional mobility and quality of life in persons with PD. The benefits of PD medication for gait and balance impairment are in question. As an alternative, external cuing, such as singing, has shown benefits for simple walking tasks in persons with PD. However, complex walking tasks pose the greatest challenge for persons with PD, and there is limited research on how singing affects the performance of complex walking tasks in persons with PD. This study aims to determine the effects of singing on gait variability during complex walking in persons with PD. Given that singing improved simple walking tasks, we hypothesized that singing would also improve complex walking in persons with PD. Participants performed a series of walking tasks over approximately 30 feet in length: 1) over ground walking at their preferred pace, 2) over ground walking while singing, 3) serpentine walking at their preferred pace, and 4) serpentine walking while singing. The song sung was Row, Row, Row Your Boat. APDM Opals (apdm.com) were used to collect spatiotemporal measures; two placed on the top of the feet, two on the wrists, and one on the lumbar spine. The coefficient of variation will be obtained for each spatiotemporal outcome measure and entered into a 2x3 repeated measures Analysis of Variance to determine differences between conditions (singing vs. no singing) and between groups (healthy young adults, healthy older adults and PD) for over ground and serpentine walking. Posthoc analyses will be completed with Tukey’s Honest Significant Difference test. We expect singing to improve gait variability in both over ground and serpentine walking. This study may provide evidence for an adjuvant therapeutic technique to improve complex walking and mobility in persons with PD.

Peter Gemborys

VA - Hampden-Sydney College

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Characterization of MDH1/2/3 Protein Regulation Using Phosphomimetics

The Malate Dehydrogenase (MDH) gene is responsible for catalyzing the oxidation of oxaloacetate and malate. The reaction is important in cellular metabolism; more specifically, it is significant in the Citric Acid cycle to produce NADH molecules for the Electron Transport Chain. The budding yeast Saccharomyces cerevisiae encodes three isozymes of the yeast MDH protein, which differ according to their location in a cell: Cytosolic (MDH1), Mitochondrial (MDH2), and Peroxisomal (MDH3). These isozymes are components of the malate–aspartate NADH shuttle, which are novel metabolic longevity-regulators. Overexpression of the malate–aspartate NADH shuttle components may initiate calorie-restricted life-span extension due to a cell's increased metabolic fitness. The S. cerevisiae MDH proteins were used since their key sites and cellular metabolism are strongly conserved to that of human MDH proteins. By understanding the characterization of the S. cerevisiae MDH proteins in calorie-restricted life-span extension, it might be possible to induce life-span extension using human MDH proteins. The MDH protein regulation mechanisms were analyzed using phosphorylation to substitute an amino acid with a negatively-charged amino acid called a phospho-mimic. We performed site-directed mutagenesis to generate the putative phosphorylation sites. Current work focuses on these mutants and their effect on isozyme function.

Sydney Gemeinhardt

LA - Baton Rouge Community College

Discipline: Natural and Physical Sciences

Authors:
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Cameron Motsenbocker

Abstract Name: Defining the Preferred Substrates of Louisiana Freshwater Sponge Species

The Louisiana Freshwater Sponge Project investigates what substrates contribute to the growth and development of different freshwater sponge species. Freshwater sponges are understudied, environmental health indicators. These organisms are filter feeds that assist in cleaning freshwater ecosystems. To further understand the driving factors of freshwater sponges, the Louisiana Freshwater Sponge Project has prioritized the identification and tracking the species richness of these organisms. Previous studies show that freshwater sponge survival is dependent on water quality and availability of substrates. However, the literature provides little research on the preferred substrates that contribute to sponge growth and development. This study analyzed the substrate specificity of 1106 collected sponge samples from 232 water systems in Louisiana. During sampling, sponges were photographed attached to their substrates. In the lab, the sponges were identified using sponge morphology and/or DNA sequencing of COX-1 gene. Substrates were classified as logs, rocks, tree roots, trash, plant roots, bricks. Using Excel, substrates were documented for fourteen species in Louisiana. The analysis of this collection of data has found rocks and logs being the most abundant substrate. However, some species are limited to root systems and logs. This information contributes to the environmental parameters that support sponge growth.

Georgia Gempler

NH - University of New Hampshire

Discipline: Interdisciplinary Studies

Authors:
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Emily Komerska

Abstract Name: The Effect of Contrast on Motion Induced Blindness and Perceptual Filling-In

In visual perception research, two phenomena are of great interest. Motion induced blindness (MIB) is the phenomenon where a motion mask causes a distinct target in the visual field to perceptively disappear, and perceptual filling-in (PFI) is where the visual stimulus of a target doesn't match the area surrounding it, and surrounding movement causes the target to disappear into its surround. The common mechanism hypothesis is the widely theorized idea that the neural mechanisms causal to these two phenomena are the same. Contradictory conclusions in literature regarding the effects of low contrast luminance between the target and its background in MIB and PFI stimuli has left room for clarification on whether effects of contrast support the common mechanism hypothesis (Bonneh et al., 2001; Hsu et al., 2004). In this study, the impact of contrast luminance between a target and its background, with four contrast levels (two low-contrast and two high-contrast levels), is examined using software-based stimulus. Three variables were measured: fading duration, time to the first disappearance, and total number of disappearances. Results thus far, based on five sets of trials for each contrast level from individual participants, show that the number of times a participant indicates a target appears and disappears is significantly different between low-contrast luminance values (-40% and 40% contrast) for MIB. PFI shows no significant differences between any of the variables, which contrasts with results from MIB; differences between results for MIB and PFI do not support the common mechanism hypothesis. Further data collection and analysis is actively being conducted and shows promising results, which may or may not reflect the similarity in the pattern of effect seen thus far between the two phenomena and will be able to shed light on the validity of the common mechanism hypothesis.

Megan Gentry

UT - Utah State University

Discipline: Health and Human Services

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#3 Scott Crapo

Abstract Name: Adolescent Parental, Peer, and Romantic Relationships as a Predictor of Romantic Identity Development

In the field of study regarding adolescent development Erik Erikson proposed the importance of developing identity through social relationships. The process for developing identity in this stage has received a great deal of theoretical and empirical attention since Erikson first proposed his ideas. However, the field still lacks a deeper understanding of what patterns across relationships with parents, peers, and romantic partners affect the development of romantic identity in adolescence. The goal of this study is to gain a better understanding of how supportive relationships with parents, peers, and romantic partners in adolescence affect that development. We will review existing knowledge on the influence of relationships on adolescent development. Then will perform a latent profile analysis on extant data gathered from high school students in Utah to correlate perceived support and disclosure in parental, peer, and romantic relationships of adolescents with their current engagement in romantic experiences. This will aim to answer the question "how does the pattern across parental, peer, and romantic relationships affect the development of romantic identity in

adolescence?". We will measure the effect from interest in, effort towards, and confidence in romantic relationships. We will be able to analyze the results to better understand the influence of various patterns across these relationships on an adolescent's development of romantic identity.

Abigail George

NY - SUNY Geneseo

Discipline: Social Sciences

Authors:
#1 Abigail George

Abstract Name: The Intersection of Race, Mental Health, and Incarceration Among Black Americans

Research has indicated that being a member of a racial minority group with mental health challenges is associated with disproportionate experiences with the criminal justice system, especially for Black individuals compared to White individuals (Flores et al., 2023). Moreover, research indicates that experiences with the criminal justice system, including incarceration, can significantly increase the risk for mental health challenges for both Black men (Assari et al., 2018; Turney et al., 2013) and women (Kilpatrick et al., 2021). This paper will explore four pivotal topics related to race, mental health, and incarceration, with a specific emphasis on the experiences of Black individuals. The first issue delves into how an individual's race/ethnicity and other interpersonal factors impact the early life patterns of adolescents' involvement with the criminal legal system (Boen et al., 2022), as well as the interaction between race/ethnicity and mental illness concerning the incarceration of youth and their likelihood of confinement (White, 2016). The second issue explores how mental health affects the experiences faced by Black inmates during their incarceration, including disparities in mental health referrals and diagnosis (Fatos et al., 2015) and instances of correctional staff-involved violence (Grosholz et al., 2023). The third issue examines potential mental health outcomes associated with incarceration for Black individuals. Specifically, this section focuses on research identifying factors that explain the increased mental health consequences experienced by both Black men (Addison et al., 2022; Assari et al., 2018; Turney et al., 2013) and women (Kilpatrick et al., 2021). Finally, alternative solutions are explored to encourage therapeutic justice within the Juvenile and Criminal Justice Systems (Cusack et al., 2013) and to implement improved mental health programs to address the needs of Black individuals and other racial minority groups (Vinson et al., 2021).

Shayne O Georges

NY - Adelphi University

Discipline: Social Sciences

Authors:
#1 Shayne O Georges

Abstract Name: Stress and Mental Health

Stressful Life Events (SLEs) are defined as undesirable and/or unplanned events that generally induce a sense of anxiety and/or have other negative mental health consequences. Research that was previously done on the topic investigated Adverse Childhood Experiences (ACEs) and how they affected behavior in adulthood. However, not only did these studies utilize questionnaires that contained vulgar and extreme scenarios of child abuse, they also failed to account for the affect that current stressors may have on an individual, which have the potential to alter the results of the study. The results could be mistaken as a product of child abuse

when they could instead be caused by stressors in the present. The purpose of the following study was to assess how both self-rated stress levels and SLEs are associated with the current mental health status of emerging adults (aged 18-29), and to examine whether coping styles and resiliency may moderate these associations. It is hypothesized that stressful life experiences have the potential to build resiliency and improve the ability to cope with nerve-wracking experiences. The surveys were distributed to 18-29 year olds on Adelphi University's campus, a sample that consisted of both students and staff members. The survey items tested whether SLEs moderate the association between current stress levels and mental health. The predicted outcome of the study was that participants who report a higher frequency in experienced stress will also report being more prepared to cope with current or future stressful life experiences. These results would suggest that resilience to mental health issues and coping ability are moderated by the frequency and severity of SLEs.

Melanie Gerbitz

WI - University of Wisconsin-Whitewater

Discipline: Humanities

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#1 Melanie Gerbitz

Abstract Name: Statistical Analyses of Student Responses to Current Geoscience Research

This project aims to showcase geoscience career attainability by exposing students to present-day geoscientists, the least diverse field in the STEM discipline. To address this gap statistically, students will be exposed to these scientists' research revealing students' degree of relatability to more diversely identifiable scientists in the context of the classroom. Future curriculum can then cater to those preferences by centering curriculum around more applicable research for the classroom setting.Students in Dr. Juk Bhattacharyya's Geology 100 course were prompted with questions regarding minority scientists' research: (1) how the research benefits society through its communication; (2) what students found most interesting about the research; and (3) how the research can be applied to the student's personal life and career.Previously, student responses were analyzed by separating each of the responses into categories. This allowed calculation of how many students preferred specific elements of the research. Responses to Dr. Karin Goldberg's research which were collected from students enrolled in Geology 100, were analyzed differently by sorting each response into multiple categories to more comprehensively reflect the student's entire response to Goldberg's research. This prohibits portraying the data as a percentage of exactly how many students prefer each specific aspect of the scientist's research but allows a more comprehensive analysis of trends between responses. For example, possible consistency in responses falling into several of the same categories can be seen. Furthermore, the categories have been grouped into like topics such as those containing specific scientific language, those pertaining to the interest level/entertainment quality of the research, those pertaining to the presentation of the research across different mediums, et cetera. By grouping responses into several categories within these topics, data can be drawn about whether responses applied to the same topic multiple times or included elements from many different topics.

Allie German

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Allie German

Abstract Name: Creating a questionnaire to account for contextual differences in replication

Research into solutions to the replication problems in psychology has been primarily focused on perfecting direct replications (Brandt et al., 2014) or proposing possible changes within the scientific research culture (Klein, 2022). While some research addresses the influence of the broader sociocultural context on replication (Ramscar et al., 2015; Van Bavel et al., 2016; Greenfield, 2017), little research looks into how to take contexts in account when conducting replications. In order to account for the difference in contexts from the original and the replication, I propose creating a voluntary questionnaire to be administered to participants concurrently with all psychological studies. This questionnaire will attempt to identify contextual variables that might influence the results of the study—for example, differences in culture from the original sample or linguistic shifts. Furthermore, I propose that all replications include a direct replication and that all participants fill out the same questionnaire as the participants in the original. Regardless of whether the results of the replication match those of the original, responses from the questionnaire ought to be analyzed for discrepancies between the original and the replication. In the event that the results do not replicate, researchers ought to conduct conceptual replications that take into account the discrepancies. Finally, I propose that responses from the questionnaire ought to be compiled to develop a model that predicts when, due to contextual factors, a study could be expected to fail to replicate.

Tsebaot Getachew

MN - University of Minnesota - Crookston

Discipline: Natural and Physical Sciences

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#2 Delainey Lancaster
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#4 Erin Turman
Delainey Lancaster

Abstract Name: Isolation and characterization of potential antimicrobial pigment from a wetland microorganism with unique properties

Antibiotic resistance is a growing worldwide crisis with the need to develop new antibiotics. To this end, we used the Tiny Earth model to identify, isolate, and identify potentially new sources of antibiotics from soil samples from the wetlands of Minnesota. The Tiny Earth project is a student-sourcing antibiotic discovery community dedicated to discovering potential new antimicrobials. This project was made possible through funding provided by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). In Fall 2021, University of Minnesota crookston students collected a sample from wetlands of northern minnesota. The soil samples were further analyzed using standard techniques to identify the presence of potential antibiotic producing microorganisms. The following were used as ESKAPE safe relative pathogens: Enterococcus raffinosus, Staphylococcus aureus, Escherichia coli, Acinetobacter baylyi, Pseudomonas putida, and Klebsiella aerogenes. The streak plate method and Gram staining were used to obtain pure cultures. The pure isolates were then again tested against the same pathogen for antimicrobial activity. Chemical extraction involved growing the isolate on agar plates and using ethyl acetate to extract substances to be tested against the ESKAPE safe relative pathogens. Through this process, we identified a bacterial strain that exhibited development of a red color/pigment only after storage in the refrigerator, accompanied by an observed increase in inhibitory activity against the safe relative pathogen. This phenomenon has not been reported in the literature. Further characterization of this strain and the pigment will be presented.

Gemechu Geway

MN - University of Minnesota - Rochester

Discipline: Health and Human Services

Authors:
#1 Gemechu Geway
#2 Larry Prokop
#3 Asmaa Ferdjallah

Abstract Name: Sickle cell disease severity and outcomes in Anuak patients: A scoping review

Southeast Minnesota is home to a significant population of Anuak individuals who seek care within the Mayo Clinic Health Systems. The city of Austin, MN, is home to a population numbering around 450 Anuak individuals who are seen at the Mayo Clinic Austin location as well as the Rochester main campus of Mayo Clinic. In total, more than 3000 Anuak individuals live in Minnesota in what is considered to be the largest Anuak population outside of East Africa. For pediatric patients with Sickle Cell disease (SCD), 75% are Anuak. The majority of these patients have severe sickle cell disease with chronic anemia, frequent pain crises, cardiac ventricular enlargement, acute chest pain, and multiple hospital admissions. A scoping review utilizing the following databases was conducted: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, and Daily, Ovid EMBASE, Ovid Cochrane Central Register of Controlled Trials, Ovid Cochrane Database of Systematic Reviews, and Scopus. Only two studies met established criteria. Unfortunately, both sources of literature were dated and not consistent with current trends. Despite communicating with colleagues in Ethiopia, there is no accurate or robust data about the incidence or prevalence of SCD among the Anuak people. The local Anuak diaspora in Southeast Minnesota likely represents the best current data in this patient population. There is a need for further research and data on SCD outcomes in this special population.

Gemechu Geway

MN - University of Minnesota - Rochester

Discipline: Health and Human Services

Authors:
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#3 Adam Salmi

Abstract Name: Sickle Cell Patient Education Materials

Sickle cell disease (SCD) is a genetic disorder that affects the shape and function of red blood cells. People with SCD may experience various complications, such as anemia, jaundice, splenomegaly, and stroke. These complications can affect their physical, mental, and social well-being. Therefore, patients and families need to understand the causes, symptoms, and treatments of SCD and how to prevent and manage crises. This patient education resource aims to help patients and families learn about SCD using plain language, visual aids, and analogous. It covers the following topics: problems, solutions, 3D sickle cell model, understanding SCD, Sickle Cell Trait (SCT), blood flow blockage, and genetic patterns. The resource offers strategies and tools to enhance the quality of life for SCD patients. This resource provides a solution in the form of a 3D Sickle Cell Patient Education Model. This model is a tangible and detailed representation of how SCD affects the blood vessels and red blood cells in various body parts. The model compares normal and sickled red blood cells and demonstrates how they can cause blockage, inflammation, and reduced oxygen and nutrient delivery. The model explains the role of hemoglobin and the genetic inheritance of SCD. It can assist patients

and their families comprehend the disease process and the significance of adhering to the treatment plan. Moreover, the model can aid the SCD communities and healthcare industries in raising awareness and advocating for better education about the disease. By utilizing these resources, patients, families, healthcare providers, and the sickle cell community can better manage and support the impact of SCD on patients' health and lives.

Pragya Ghanate

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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#5 Anna Sorace

Abstract Name: Quantifying tumor microenvironment changes following HER2 inhibition with tucatinib IHC in HER2+ breast cancer

Human epidermal growth receptor 2 (HER2) is a membrane-bound protein that is overexpressed in 25 percent of breast cancer. Tumor microenvironment changes can be imaged through positron emission tomography (PET) imaging, which uses radiotracers to visualize molecular processes. Immunohistochemistry (IHC) is the clinical gold standard for validating biological alterations in tumor. IHC of biological markers like hypoxia, proliferation, and HER2 proteins can be used to verify imaging. The goal is to use PET imaging and IHC to visualize and quantify the effects of tucatinib within the HER2+ breast cancer tumor microenvironment. HER2+ BCM-3472 (PDX) and BT474 (cell line) were engrafted 3 weeks and 4-6 weeks prior to treatment in NSG and nude mice, respectively. Tucatinib therapy began on day 0. For [18F]-FLT and [18F]-FMISO PET imaging, imaging was conducted on days 0, 3, and 7. For [89Zr]-Pertuzumab PET imaging, imaging was conducted on days 0, 7, and 14. On the final day, tumors were excised for IHC, which used HIF-1a, Ki-67, HER2 and phospho-HER2 antibodies. Nonparametric T test was used for statistical analysis. For FLT-PET, control BT474 tumors had an SUV of 0.55, and tucatinib treated BT474 tumors had one of .288 (p<0.05). For FMISO-PET, control BT474 tumors had an SUV of 1.4, and tucatinib treated BT474 tumors had one of 1.1 (p<0.05). For [89Zr]-Pertuzumab-PET, control BT474 tumors had an SUV of 19.1, and tucatinib treated BT474 tumors had one of 11.9 (p<0.05). Qualitative analysis showed differences in IHC staining; quantitative analysis is ongoing. The PET imaging and IHC show that tucatinib can modify hypoxia, proliferation, and HER2 expression in HER2+ tumors. Tucatinib’s ability to pass though the blood-brain-barrier and modify the tumor microenvironment makes it a candidate for combinatorial therapy.

Karmina Ghobrial

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Rebecca Seipelt-Thiemann

Abstract Name: Exploring Coffee Silverskin Extract's Effects on Age-Related Gene DVE-1/SATB1 During UV- Induced Oxidative Stress

Aging is the gradual and progressive loss of function in the majority of living organisms, ultimately resulting in death. While many aging models have been proposed, no single model can explain aging fully, as both genes and the environment play roles. C. elegans, the small nematode, is a model organism often used in studying lifespan and aging. Based on an earlier study that used a RNAi screen to identify C. elegans genes affecting lifespan and were implicated in human aging, DVE-1 repression decreased lifespan. In addition to genes, such as DVE-1, environmental stressors such as oxidative stress accelerate aging. When there is an imbalance of reactive oxygen species (ROS) and antioxidants, the excess ROS chemically attacks cellular molecules causing dysfunction. Antioxidants chemically interact with ROS, making them inert. Increased ROS can be produced through exposure to ultraviolet (UV) radiation. Since increased ROS can lead to diseases such as cancer, dermatitis, and psoriasis, antioxidants increase health benefits and decrease age-related risks. A natural product that contains antioxidant compounds is coffee silverskin (CS), the outer layer of coffee beans that comes off when roasted. Its high antioxidant capacity, which is of unknown character, has the potential to preserve health and increase longevity. The purpose of this study is to investigate the molecular effects of CS treatment, alone and after UV-induced oxidative stress, on the levels and alternative splicing of age-related gene, DVE-1. We expect that CS treatment will increase levels of DVE-1 RNA and/or alternative splicing, as measured by quantitative reverse transcription polymerase chain reaction (qRT-PCR) and endpoint PCR, to produce functional proteins compared to untreated and UV-treated nematodes. This study is significant in the context of averting age-related diseases and extending a healthy lifespan, utilizing nematodes as a model for human research.

Elaf Ghoneim

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
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#3 Linda Van Eldik

Abstract Name: Exploring the Mechanisms of Action of MW151, a Novel Anti- Inflammatory Drug Candidate for Alzheimer's Disease

The dysregulation of inflammation within the brain, known as neuroinflammation, plays a pivotal role in the development and progression of various neurodegenerative disorders, notably Alzheimer's Disease (AD). A promising avenue in combating this inflammation lies in MW151, a small molecule drug designed to selectively suppress abnormal inflammatory responses. Despite its potential, the precise molecular mechanisms through which MW151 operates remain elusive. In the context of AD, microglia cells serve as the central immune players within the brain and represent the epicenter of dysregulated inflammation. Recent studies have hinted at a fascinating prospect: the potential involvement of cellular metabolism modulation in reigning in these inflammatory responses. While the interplay between cellular metabolism and immune response has been extensively studied in cancer biology and immunology, its exploration within the realm of dementia research is still in its nascent stages. Our current project delves into this intriguing possibility by investigating the hypothesis that MW151 exercises its anti-inflammatory effects by hindering induced glycolysis, a phenomenon observed in myeloid cells as a response to inflammatory activation. This exploration of the connection between cellular metabolic pathways and neuroinflammatory responses could shed light on novel therapeutic strategies for AD and related neurodegenerative conditions. To unravel the biological targets and mechanisms underlying the action of MW151, our research employs a comprehensive approach encompassing cell culture techniques and multi-omic analyses. These assays aim to uncover the intricate network of biological interactions affected by MW151, offering crucial insights into its mechanism of action and potential targets for therapeutic intervention.

Rohan Ghoshal

NY - City University of New York - Hunter College

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Role of Cholecystokinin in Regulating the Motivational Properties of Nicotine

Nicotine addiction through habitual tobacco use is a leading cause of premature death in the United States. Circulating cholecystokinin (CCK) levels are elevated in tobacco smokers relative to non-smokers, particularly after food consumption, yet the consequences of this effect on nicotine intake are unknown. Recent data generated in our lab suggest that circulating CCK levels are similarly elevated in mice injected with nicotine. CCK is known to act on vagal sensory neurons that express CCK receptors (CCKR+ neurons) to modulate food consumption. Here, we report an important role for vagal CCKR+ neurons in regulating the motivational properties of nicotine. First, we injected a toxin (CCK-saporin) that selectively lesions CCKR+ neurons into the vagus nerve (nodose ganglia) of mice. The lesioned and intact control mice were prepared with chronic indwelling jugular catheters and permitted to self-administer nicotine. We found that CCKR+-lesioned mice self-administered greater quantities of nicotine compared to control mice. This effect was most apparent when higher (aversive) doses of nicotine were available for consumption, suggesting that CCKR+ neurons regulate aversive sensory responses to nicotine that limit its consumption. Next, we investigated the mechanism by which nicotine elevated circulating CCK levels. Since previous experiments from our lab have shown that nicotine activates bitter taste receptors (T2R), and T2R-expressing enteroendocrine cells in the gut release CCK, we injected T2R-knockout mice with nicotine and assayed CCK plasma concentrations using an enzyme immunoassay. T2R-knockout mice showed similarly elevated nicotine-induced postprandial CCK plasma levels as wildtype controls, suggesting that this effect is not mediated by direct activation of T2R+ enteroendocrine cells by nicotine. These studies show that peripheral CCKRs regulate nicotine intake due in part to actions on vagal sensory afferents. This novel “bottom-up” regulation of nicotine intake by the nodose ganglia may prove useful for the development of novel addiction therapies.

Gurbani Ghuman

IN - Indiana University Purdue University Indianapolis

Discipline: Social Sciences

Authors:
#1 Gurbani Ghuman
#2 Sri Parvatha
#3 Will Clark
#4 Jill Fodstad
Sri Parvatha

Abstract Name: Characterizing Parent Perceptions of Indiana-based Pediatric Mental Health Services for Autism Spectrum Disorder

For parents, local Community Mental Health Centers (CMHC) provide a low-cost, easy to access option

where their child can receive high-quality outpatient, school-based, and family-based therapeutic services to improve their functioning and reduce mental health symptom severity. CMHC's therapists are skilled at implementing time-limited standard pediatric therapeutic protocols yet struggle to care for children with more complex symptom presentations where advanced training in and use of diagnosis-specific therapeutic techniques are a necessity. Autism Spectrum Disorder (ASD) is one complex behavioral health condition CMHC therapists report feeling less competent caring for, citing limited financial resources and lack of specialized training. CMHC therapist perceptions on caring ASD children has been investigated; however, less is known as to how parents whose ASD child receives CMHC services perceives care. To characterize parent satisfaction, a quantitative online Qualtrics survey will be disseminated to Indiana-based online parent communities. Fifty parents whose ASD child has received therapeutic care at an Indiana-based CMHC will provide anonymous feedback on services. Parents will provide information on their ASD child's symptoms or concerns for which they sought care for at their local CMHC, and type of services received. Parents will answer questions on perceived effectiveness of the services and the therapist(s), perceived overall satisfaction, and perceived drawbacks or barriers. Descriptive analyses will categorize parent perceptions, and the three most common parent concerns for the CMHC care their child received will be identified. Outcomes of this study will inform future research to improve the quality of community-based care ASD children receive at Indiana-based CMHCs.

Gurbani Ghuman

IN - Indiana University Purdue University Indianapolis

Discipline: Health and Human Services

Authors:
#1 Gurbani Ghuman
#2 Sri Parvatha
#3 Jill Fodstad
Sri Parvatha

Abstract Name: Characterizing Parent Perceptions of Indiana-based Pediatric Mental Health Services for Autism Spectrum Disorder

For parents, local Community Mental Health Centers (CMHC) provide a low-cost, easy to access option where their child can receive high-quality outpatient, school-based, and family-based therapeutic services to improve their functioning and reduce mental health symptom severity. CMHC's therapists are skilled at implementing time-limited standard pediatric therapeutic protocols yet struggle to care for children with more complex symptom presentations where advanced training in and use of diagnosis-specific therapeutic techniques are a necessity. Autism Spectrum Disorder (ASD) is one complex behavioral health condition CMHC therapists report feeling less competent caring for, citing limited financial resources and lack of specialized training. CMHC therapist perceptions on caring ASD children has been investigated; however, less is known as to how parents whose ASD child receives CMHC services perceives care. To characterize parent satisfaction, a quantitative online Qualtrics survey will be disseminated to Indiana-based online parent communities. Fifty parents whose ASD child has received therapeutic care at an Indiana-based CMHC will provide anonymous feedback on services. Parents will provide information on their ASD child's symptoms or concerns for which they sought care for at their local CMHC, and type of services received. Parents will answer questions on perceived effectiveness of the services and the therapist(s), perceived overall satisfaction, and perceived drawbacks or barriers. Descriptive analyses will categorize parent perceptions, and the three most common parent concerns for the CMHC care their child received will be identified. Outcomes of this study will inform future research to improve the quality of community-based care ASD children receive at Indiana-based CMHCs.

Sebastian Giarratana

FL - The University of Tampa

Discipline: Social Sciences

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#2 Erin Koterba

Abstract Name: Hey Look Ma, I Made It! College, Emerging Adulthood Development, & Quality Of Parental Relationships.

Emerging Adulthood (EA) is a distinct life stage typically spanning ages 18 to 29 and is characterized by identity exploration, self-focus, instability, a sense of possibilities, and feeling in-between. During this critical period, parent-child relationships assume a pivotal role in shaping the identity and providing guidance and support to emerging adults. The warmth within the familial unit serves as a secure foundation for exploration and personal growth, while an individual's self-concept plays a crucial role in decision-making and psychological well-being. In this study, we aimed to investigate the connections between familial warmth, the development of emerging adults, and their self-concept. Additionally, we explored how the physical distance between emerging adults and their parental home influences the quality of family relationships. Our study involved 192 emerging adults, aged 18 to 22, enrolled in a mid-sized Southeastern college. The participants completed an online questionnaire consisting of four key instruments: The Inventory of Parent and Peer Attachment, The Inventory of the Dimensions of Emerging Adulthood, The Self-Concept Self Report Scale, and The Family Warmth and Supportiveness Measure. These instruments collectively assessed their relationships with parents, various dimensions of EA, self-concept, and perceptions of familial warmth and supportiveness. Our findings revealed that emerging adults who reported stronger trust, communication, and familial warmth also exhibited healthier self-concepts. Conversely, lower levels of alienation from parental support were associated with more positive self-concept development. Trust and communication with parents had a positive influence on multiple dimensions of emerging adulthood. Warm and supportive families fostered identity exploration, experimentation, self-focus, other-focus, and the feeling of being in-between among emerging adults. Notably, the proximity of emerging adults to their parental home was found to potentially influence trust and communication, with possible implications for self-concept development and the dimensions of Emerging Adulthood.

Nathan Gibbs

OH - Capital University

Discipline: Natural and Physical Sciences

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#2 John Mersfelder

Abstract Name: PCR Analysis for Detection of Tetracycline Resistance Genes in Gram-Negative Soil Bacteria

Since the development of the first antibiotic in the early 20th century, antibiotic resistance has become one of the greatest challenges faced by clinicians and public health experts in modern history. Demand for antibiotics in treating bacterial infections has severely outpaced new drug development, making it harder to combat the same pathogens year after year. Previous research has shown a cyclical relationship of gene transfer between human and environmental microbiomes. Several clinically significant antibiotic resistance genes (ARGs) are believed to have originated from soil bacteria, and the presence of livestock in an environment is associated with higher levels of resistance in local soil bacteria. Further investigation into

these dynamics will be a critical step in finding solutions to this crisis. This study is focused on resistance to the antibiotic tetracycline in Gram-negative bacteria from 37 soil samples taken from the Sangre de Cristo Mountains of New Mexico. Tetracycline is a broad-spectrum antibiotic with well documented resistance mechanisms in both clinical and environmental bacteria, making it ideal for use as a model for studying resistome interactions between human and soil microbiomes. Past work on these samples has shown a positive correlation between the amount of human foot traffic and levels of tetracycline resistance in soil bacteria from the sampled areas. This study is focused on using polymerase chain reaction (PCR) and gel electrophoresis to determine the presence (or lack thereof) of five key tetracycline resistance genes (tet(A), tet(B), tet(D), tet(E), tet(G)) in the soil microbiome. Bacteria will be cultured from each sample, and DNA will be extracted. DNA samples will be incubated alongside primers specific to each of the five genes, and amplified samples will undergo gel electrophoresis for comparison with positive controls to determine whether the genes are present in each sample.

Sean Gibbs

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Sean Gibbs
#2 Shimaa Kteeba
#3 Laodong Guo

Abstract Name: Characterization of dissolved organic matter of Disposable Face Masks during photochemical weathering in Freshwater environments

The astounding surge in the use of disposable face masks has exacerbated the adverse consequences associated with their improper disposal, posting a significant threat to the environment. Despite growing concerns, there remains a lack of comprehensive understanding of the biological and chemical reactivities of disposable face masks (FMs) and their ultimate fate in aquatic ecosystems. In this study, we investigated the photochemical reactivity of KN95 FMs (5-ply) and their degradation products. The FMs were split into five layers, consisting of outer and inner layers of non-woven fabric (1st and 5th, hydrophobic), a layer of hot air cotton (2nd, hydrophilic) and two layers of melt-blown fabric (3rd and 4th, hydrophobic), for photochemical degradation. Time-series samples were collected for optical and chemical characterization of dissolved organic matter (DOM), including dissolved organic carbon (DOC), chromophoric and fluorescence DOM (CDOM and FDOM), and surface properties. All layers show significant extent of degradation, with DOC exhibiting exponentially increase following UV-irradiation exposure, and notably the 2nd layer released the highest DOC. Similarly, the 2nd layer released more CDOM during photodegradation, with the sequence 2nd ly>1st ly>5th ly>4th ly≥3rd ly. The fluorescence intensities of FMs-released DOM consistently increased during the photochemical degradation of KN95, demonstrating a continuous DOM production from each layer. The results from fluorescence EEMs are consistent with those observed for both DOC and CDOM. In terms of the quality of FMs-released DOM, there was a concurrent decrease in both aromaticity (SUVA254) and apparent DOM-molecular weight (based on S275-295) under UV-irradiation, suggesting simultaneous DOM production and degradation. Disposable face masks are a fundamental part of the collaborative effort to safeguard public health, particularly during pandemics. Further studies are needed to quantify the environmental impacts of degradation products of FMs.

Kortnie Gibson

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Kortnie Gibson

Abstract Name: Images of the Second World War: Themes of Frugality Within the Home Front War Poster

This presentation explores the impactful role of war posters during World War II, specifically those directed toward the home front with a focus in themes of frugality. Recognizing the unprecedented scale of the war, the governments on both sides of the conflict employed visual propaganda to influence public behavior and opinion. The home front posters targeted civilians with a crucial message: the need for frugality to conserve resources for the war effort. As the massive war effort strained essential resources, promoting the conservation of materials became integral components of the government's strategy. The presentation analyzes posters illustrating concepts of reducing, reusing, and recycling, victory gardens and canning, and purchasing war bonds, all of which portray civilian contributions as vital to the broader war strategy. The presentation also highlights the uniqueness of home front poster design, contrasting them with posters aimed at the war front and posters released during World War I, and explores the impact of the home front poster. While the poster's direct effects were transient, the poster provides valuable insights into government influence, consumer behavior, and the powerful nature art.

Claire Gibson

AZ - Northern Arizona University

Discipline: Natural and Physical Sciences

Authors:
#1 Claire Gibson

Abstract Name: Picturing a Geologist: Accessibility and Inclusivity in the Geosciences at Northern Arizona University

Geoscience remains one of the least diverse fields in STEM, and there has been an increase in research documenting hostile working environments reported by many scholars, including academics with disabilities, BIPOC, LGBTQ+ individuals, and those in religious minorities (Berhe et al., 2022). There are several accessibility issues with field-based learning at my university. For individuals with disabilities or injuries, barriers to field-based learning include inaccessible and uneven terrain to outcrops of rock. Other barriers present themselves in the form of expensive gear necessary for a field trip, and time commitment away from work, family, and friends. In addition, a sense of belonging is necessary for effective field-based work, and it is not common for all students to be respected, feel safe, or relevant. The issue includes the larger narrative that "Myths are stories that have taken on historical and cultural dimensions; they are narratives that have become part of the fabric of our lives" (Smith 2017). The image, or myth, of a geologist that many people hold in their mind, is narrow: often a male in outdoor clothes, who is able-bodied. My project is an audio piece disseminating information about the barriers that NAU students and faculty face in geoscience and about the work currently being done to remediate these barriers. The audio piece will be a compilation of interviews with faculty, staff, and students of the geosciences while also including relevant storytelling of what field-based learning is like for students. A written storytelling piece will also accompany the audio piece so different audiences can interact with the information. There are implications and consequences of following the status quo without engaging in conversation, and therefore starting a conversation about accessibility in the geosciences at my university can be a catalyst for change.

Claire Gibson

AZ - Northern Arizona University

Discipline: Natural and Physical Sciences

Authors:
#1 Claire Gibson

Abstract Name: State of Accessibility in the Geosciences at Northern Arizona University

Geoscience remains one of the least diverse fields in STEM, and there has been an increase in research documenting hostile working environments reported by many scholars, including academics with disabilities, BIPOC, LGBTQ+ individuals, and those in religious minorities. In addition, there are several accessibility issues with field-based learning specifically at NAU. For individuals with disabilities or injuries, barriers to field-based learning can look like inaccessible and uneven terrain to outcrops of rock. Other barriers present themselves in the form of needing expensive gear for a field trip, higher course fees for field-based classes, and time commitment. Physicality, finances, and time are all barriers to field accessibility. My project is an audio piece disseminating information about the barriers that NAU students face to making geoscience more accessible and about the work currently being done to remediate these barriers. The audio piece will be created through the compilation and documentation of interviews with faculty, staff, and students of the geosciences at NAU, while also including relevant sounds of what field-based learning is like for students. A written storytelling piece will also accompany the audio piece so different audiences can interact with the information.

Kassandra Gibson

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Kassandra Gibson

Abstract Name: Bauhaus Maestro: Herbert Bayer’s Global Design Impact

Herbert Bayer, a Bauhaus master, left an indelible mark on modernist design spanning Germany and America. His multidisciplinary, stripped-down work epitomizes the Bauhaus philosophies of form follows function. Bayer’s pivotal time as a Bauhaus student, under masters such as Wassily Kandinsky and László Moholy-Nagy, led to his creation of the Universal typeface. His role as the first master of a typographic workshop at the Bauhaus accelerated his career as a designer. He emphasized functionality and simplicity in his work. Controversially, Bayer worked with the Third Reich, which he calls his advertising purgatory. After Emigrating to the United States, he largely worked with the Museum of Modern Art, and the Container Corporation of America. Through his work with the Museum of Modern Art, he created dynamic exhibitions. His most important work with the Container Corporation of America was the World Geo-Graphic Atlas: A Composite of Man’s Environment. This work exemplifies his commitment to merging art, technology, and information. It also showcased his belief in designs' ability to be educational and allow complex information to be accessible to the average person. He then worked with the Aspen Institute with his former employer at the CCA. There, he designed an environment that showcased his commitment to Bauhaus principles of total design. He created a unified experience through architecture, murals, and sculptures. His late-life work continued to explore a harmonious fusion of geometric form, function, and nature through softer lines. Bayer’s life has left an enduring impact on the evolution of graphic design. His legacy extends beyond graphic design prowess. His ability to blend form, function, and aesthetics continues to inspire designers today.

Lily Gibson

ND - University of North Dakota

Discipline: Natural and Physical Sciences

Authors:
#1 Lily Gibson
#2 Brian Darby
#3 Kaylee Kempel
#4 Lee Qualley
#5 Abigail Rehbein
#6 Rebecca Simmons

Abstract Name: The Effect of Pollinator-Plant-Pollinator Interactions on the Gut Microbiomes of Pollinators

Pollinators are an essential component in natural systems and impact public health and nutrition. We are interested in how the pollinator gut microbiome is affected by location and landscape biodiversity in the Northern Great Plains. Specifically, we seek to find how gut microbiota are shared and connected via their interactions with host plants by analyzing how the microbiomes of these species overlap with one another. We predict that pollinators that interact with the same host plants will have similar gut microbiomes. We also predict that pollinators with many host plant associations will have more indirect interactions with other pollinator species, leading them to have more overlapping microbiota associations and an overall more diverse microbiome. Using Illumina sequencing, we compared the bacterial and floral composition of hymenopteran and dipteran guts and bee pollen baskets. Our results indicate that these species share selected bacterial strains that are likely encountered on shared host plants in natural habitats.These results will shed light into the interactions and associations of pollinators in the Northern Great Plains region and how these interactions have the potential to spread bacteria among pollinator communities. Understanding these associations within the microbiome of pollinators and their host plants will allow understanding of links between plant and pollinator health. Information about indirect pollinator interactions has the potential to manage the spread of harmful bacterial species and disease. With this knowledge, managers can take steps to protect the involved pollinators in natural and agricultural habitats. Areas of future research include exploring pollinator plant preferences based on bacterial communities.

Dylan Gilbert

WA - Central Washington University

Discipline: Interdisciplinary Studies

Authors:
#1 Dylan Gilbert
#2 Adalyn Watkins
Adalyn Watkins

Abstract Name: Fostering Student Empowerment and Community Engagement: The Impact of Student-Led SWAP Programs on Underrepresented College Student Success

This research project investigated the transformative potential of interdisciplinary, student-led Students With A Purpose (SWAP) programs in higher education. The central research question revolves around understanding the impact of SWAP programs on underrepresented college students. The study explored their effectiveness in fostering social consciousness, leadership, and entrepreneurship skills among participants. The research addressed a critical aspect of student engagement and empowerment. By focusing on SWAP programs, the study makes a contribution to the area of inquiry by shedding light on SWAP's role in

empowering underrepresented students. The research methodology involved a comparative study between Valdosta State University and Central Washington University SWAP chapters. A comprehensive literature review was conducted, emphasizing the SWAP model, and employed surveys, interviews, and document analysis to evaluate the achievements and strategies of these chapters. The outcomes showcase the substantial social, personal, and academic benefits experienced by SWAP program participants, which enhanced their critical thinking abilities and community engagement. These findings provide effective strategies that can serve as models for other universities interested in similar initiatives. Real success stories and insights into the impact of SWAP programs on underrepresented student retention will be presented. Given the decline in undergraduate student retention due to socioeconomic, cultural, and systemic barriers, this study underscores the necessity of engaging underrepresented student populations in higher education. It highlights the significant role of extracurricular experiential learning projects, like the SWAP programs, in bolstering student commitment to their campuses and local communities. The research illuminates how SWAP programs serve not only as a catalyst for academic engagement but also as a critical tool in empowering underrepresented students, thereby enhancing their retention and success in higher education. The research aligns with the conference theme by exemplifying how student-led initiatives can actively engage minds and empower students to become socially conscious leaders.

Sydney Gilbert

NC - Elon University

Discipline: Health and Human Services

Authors:
#1 Sydney Gilbert
#2 Cynthia Fair

Abstract Name: The Inclusivity of Transgender and Gender Non-Conforming Students in North Carolina Universities' Sexual Assault Resources

Sexual assault (SA) is a significant problem on college campuses with 2.2 to 14.8 percent of college students reporting experiences of SA. The rates of SA are highest among those who identify as transgender (20.9%), even when compared to other sexual and gender minorities (6.4%-15.7%). There is a gap in the SA care of the transgender and gender non-conforming (TGNC) population, and little research has looked at the inclusivity of TGNC students within university resources. This study focuses on the level of inclusiveness portrayed in North Carolina universities' online SA resources. A random sample of 50 different North Carolina universities was selected using the Integrated Postsecondary Education Data System (IPEDS) 2020-2021 data. Each school's publicly available website content pertaining to SA was analyzed for gender inclusivity by giving each website a score based on various inclusivity indicators, including on SA definitions, TGNC-specific resources, gender neutrality, nondiscrimination, understanding of gender/gender identity, and accessibility. Each university received an inclusivity score (IS) out of 32 to allow comparison across institutions (M=16.7; SD=7.8). The three lowest-scoring schools (IS=2) were all religiously affiliated, suggesting that religious affiliation could be associated with inclusivity. Whether a school is an HBCU was not statistically significant (P=0.8122), but school size (P=0.0209), private/public status (P=0.0030), and religious affiliation (P=0.0003) were found to be statistically significant in predicting total inclusivity score, suggesting that large, public, nonreligious schools are more likely to be inclusive. This study will prove useful for research into the development of an interconnected TGNC-affirming community support system on college campuses by identifying common gaps in inclusivity and characteristics of inclusive schools.

Anna Gilstrap

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
#1 Anna Gilstrap
#2 Peter Shen

Abstract Name: Rapid Isolation of Protein Complexes from Cellular Lysates

One of the most important requirements in many protein biochemistry experiments is the ability to isolate and purify proteins of interest. Traditional methods typically aim to generate large quantities of proteins; however, such methods typically rely on long, multi-day experiments and are only effective for well-behaved proteins. Co-immunoprecipitation (co-IP) is one common tool to purify protein samples and can give insight into protein-protein interactions. Co-IPs performed from cell lysates can also recover native post-translational modifications and binding partners compared to traditional methods. However, current co-IP methods are time-consuming, require extensive amounts of starting material, and may contain significant amounts of non-specific contamination. I have refined a novel approach termed “micro-IP” that enables micro-scale purifications of native protein complexes from cell lysates that require less than one gram of starting material. Micro-IP utilizes neodymium magnets to immobilize magnetic resin beads coated with specific antibodies. The beads are flowed through thin tubing and become clustered by the neodymium trap. Cell lysate is then flowed through the tubing and over the resin, which captures target proteins through interactions with the antibodies coated on the resin. This results in a 4-fold decrease in time, and a 5-fold decrease in the amount of sample needed, and yields are purer than standard co-IP methods. These improvements can therefore pave the way for faster, cheaper, and cleaner protein purification. This method may be used to discover new biochemical interactions, mechanisms, and pathways.

Madeline Giner

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Madeline Giner
#2 Soo Chan Lee

Abstract Name: Inhibiting the growth of a human pathogenic fungus Cryptococcus neoformans via genetic alteration

Cryptococcus neoformans is a yeast fungus that is found throughout the globe. C. neoformans poses little threat to healthy humans, however, it is an opportunistic pathogen for immunocompromised people. The immunocompromised population in underdeveloped countries is susceptible to cryptococcosis caused by the fungus, which can lead to cryptococcal meningitis. Calcineurin, an enzyme, plays an essential role in thermo-tolerance and virulence in C. neoformans, and it negatively regulates the expression of the BYC1 and BYC4 genes. Our goal was to elucidate how the BYC1 and BYC4 genes of calcineurin are involved in the growth of C. neoformans at the human body temperature (37oC). We hypothesized that the yeast would become hypersensitive to the overexpression of these genes and show low growth at 37oC due to decreased thermo-tolerance, mimicking the thermos-sensitivity caused by calcineurin inhibitors. Methods included insertions of BYC1 and BYC4 overexpression constructs into the genome of wildtype C. neoformans strain via electroporation. Resulting strains were screened using spot-assays to visualize growth at 30oC (control) and 37oC, then images were taken. Any mutant(s) expressing thermos-sensitivity was then tested in an intranasal-infected murine animal study to determine survival and colony forming units (CFUs) in the brain and lungs. In conclusion, four BYC1 transformed strains exhibited reduced growth at 37oC compared to the wildtype strain, confirming four BYC1 overexpression mutants. The mutant exhibiting the most thermos-sensitivity was used for murine study along with the wildtype. The mice infected with the mutant had a significant

increase in survival compared to the wildtype. There was a significant decrease in the CFUs of mice lungs infected with the mutant compared to those infected with the wildtype. This project can lead to the research of potential antifungal treatments that overexpress the BYC1 gene, negatively impacting C. neoformans cells and not patients' cells.

Samantha Giordano-Mooga

AL - University of Alabama at Birmingham

Discipline:

Authors:
#1 Samantha Giordano-Mooga

Abstract Name: A Research Mentor Is NOT your Friend—But Your Lab Group Can Become Your Chosen Family

Many undergraduate students (UGs) choose to conduct research, not due to a genuine love of research, but because they have heard it is one of the check boxes needed for the professional school of their choice. While these students still contribute to the productivity of the research team, motivating them to become invested in the research process can be challenging. As an UG research mentor in the School of Health Professions Biomedical Sciences Program, my goal is for students to develop true research inquiry and critical thinking, which is essential for future evidence-based practitioners. Motivating students through exciting research findings, or the idea of publishing a paper or presenting at a conference is not always effective in creating dedicated pre-health researchers. Unconventional methods, which have little to do with research have been the most effective way of engaging students in research and having lasting impacts on their futures. As the principal investigator of the G-Moo (Giordano-Mooga) Research Group, an entirely undergraduate research group, I prioritize community building as much as writing my next paper. As a G-Moo researcher, UGs have UG research mentors, monthly birthday celebrations at lab meeting, a mentor with a student-first mentality, career counseling, and a listening ear. Throughout my seven years as a UG research mentor, I have mentored 51 UGs, have had five "legacies" (younger siblings) join my lab, attended 3 weddings, had students visit me after my children were born, and keep in contact with countless students. As a researcher, I have had 7 students attend graduate school, published 6 papers with UG authors, and 15 students present at national meetings. While we often say your mentor isn't your friend—I want to change the narrative—your research group can be a part of your chosen family and create successful dedicated UG researchers.

Latham Girona

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Latham Girona
#2 Charlene Farmer
#3 Micah Simmons
#4 Rita Cowell

Abstract Name: Elucidating the Effect TFE3 Modulation has on Microglia

The median age is increasingly rising within our world and, as a result, so are age-related diseases, like neurodegenerative diseases. Some of the prevalent neurodegenerative diseases can have neuroinflammation

caused by activation of local glial populations such as microglia, the resident macrophages of the brain. TFE3 is a transcription factor which regulates lysosomal gene transcription in response to inflammation in cell culture models; however, the effects of TFE3 modulation on microglia have not yet been elucidated in vivo.Using Tfe3 wildtype (WT) and Tfe3 knockout (KO) mice models, RNA sequencing was performed to obtain the differential expression of genes in the Hippocampal region. Interestingly, the sequencing data showed alterations in oligodendrocyte and microglia genes. We then used DropViz to show the expression profiles of Tfe3 in microglia and neurons in the hippocampal and frontal cortex regions. The profiles show that Tfe3 is more highly expressed in microglia when compared to neurons. To study the effect Tfe3 alteration has on microglia numbers and morphology, we are using Tfe3 WT and KO mice models and extracting their brains around 4–5 weeks of age. To mark microglia for quantification, we will perform immunofluorescence on Tfe3 WT and KO mice models using the microglial marker Iba-1. A confocal microscope will be used to collect z-stack images of the mouse cortex and midbrain, and the number of microglia and their morphological characteristics will be assessed using Imaris software.These results will test whether TFE3 is required for the normal maintenance of microglial number and structure in the brain. Future experiments will explore how TFE3 is required for the brain's responses to inflammation, with relevance for neurodegeneration.

Robert Givens

CA - California State University - Fullerton

Discipline: Business and Entrepreneurship

Authors:
#1 Robert Givens

Abstract Name: The Effect Injuries Have on Team Performance in the NFL

This research investigates the relationship between injuries and win probability in the National Football League (NFL) using regression analysis. The study employs panel data covering game results and injuries for 32 NFL teams across all seasons from 2016 to 2019. The primary independent variable measure the amount of injuries listed by a team before their weekly match. The regression models, both with and without controls, consistently show a negative association between injuries and win probability, signifying that teams with more injuries are on an average less likely to win a game. The modest magnitudes of the coefficients and the limited explanatory power of the models caution against definitive causal interpretations. Our findings align with existing literature emphasizing the adverse impact of injuries on team success but reveal nuances that warrant further exploration. The policy implications suggest a need for investment in injury prevention strategies, and future research could delve into qualitative aspects of injuries and team-specific management strategies to deepen our understanding of the complexities shaping NFL outcomes.

Caitlin Glanville

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Caitlin Glanville

Abstract Name: The Evolution of Street Art: From Rebellion to Cultural Expression

Delve into the profound evolution of street art, shifting from an act of rebellion to a legitimate and celebrated

art form that mirrors cultural shifts and societal values, historical development of graffiti and street art, emphasizing their emergence in the 20th century, the transition from vandalism to urban art, the role of graffiti as a form of urban resistance, and the controversies surrounding these art forms. Urban art, including graffiti, murals, and installations, explored as a dynamic and inclusive medium breaking down barriers between traditional art spaces and the public sphere. Unfold the emergence of graffiti in 20th-century New York City, its evolution within the hip-hop movement, and the subsequent convergence with countercultural movements like punk and feminist art. The 21st century witnessed a transformation in public perception, with renowned artists like Banksy blurring the lines between street and mainstream art. The essay touches upon street art's controversy, addressing legal and ethical dilemmas, property values, and neighborhood aesthetics. Public art initiatives and mural programs are highlighted for their role in mitigating controversies and promoting street art, providing legal outlets and fostering community engagement. The impact of technology, including digital tools, social media, and augmented reality, on street art is discussed, illustrating their influence on artists' creative process and global reach. The essay concludes by emphasizing the enduring significance of street art, calling for a balanced approach to regulation that allows the coexistence of artistic freedom and public responsibility. Street art is portrayed as a testament to the evolution of art, culture, and society, constantly pushing boundaries and challenging norms.

Sean Gleason

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Sean Gleason

Abstract Name: Feeling vs Thinking: Stout Student’s Conspiratorial Attitudes and Trust in Government

The prevalence of political conspiracy theories has been growing in the American political sphere in the past century. From the belief in the government having covert roles in tragedies like the assassination of John F. Kennedy and the terrorist attacks on September 11th, 2001, to Democrats putting microchips in the Covid-19 vaccine, conspiracy theories that are linked to politics and the government are increasing in visibility. These beliefs encourage extremist beliefs and anti-democratic behavior, the opposite of what a country like the United States is built on. Previous research has also shown that when institutions lack trust, this can do more than just weaken the citizens’ relationship with these institutions, but it also weakens the citizens’ trust in their friends, family, and strangers. Thus, the relationship between trust in institutions and political conspiracy theories is an important topic of study. In this project, I ask how prevalent are beliefs in political conspiracies among college students, and how does the number of conspiracy theories they believe in affect their trust in government at all levels? Leveraging a unique survey of 1400 students at the University of Wisconsin-Stout and six in-depth interviews, answers as to why and how these beliefs come about, where they come from, and how they affect trust and faith in government were sought. Results indicate that the average student believes in 2 conspiracy theories, and that there is a negative relationship between the number of conspiracy theories believed in and trust in government, with consistent results across all levels of government bodies and agencies. These results were robust, with extensive controls for the effects of partisanship, mental stress, and number of years at the university. These findings highlight the potential need to address the spread of misinformation and conspiracy theories since trust in democratic institutions is so important.

Ashley Glover

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
#1 Ashley Glover
#2 Hannah Downing
#3 Kathryn Saatman

Abstract Name: Investigating Mossy Fiber Bouton Alterations after Traumatic Brain Injury

Traumatic brain injury (TBI) is a significant public health concern, often resulting in long-term cognitive and motor impairments. Synaptic connections of granule cell neurons within the hippocampal dentate gyrus after TBI is poorly understood. The mossy fiber pathway plays a crucial role in the hippocampal circuitry, serving as a connection between the granule cell neurons (GCNs) in the dentate gyrus (DG) and the CA3 pyramidal neurons. This pathway has long been recognized for its significance in memory formation and information processing within the hippocampus. To evaluate how TBI alters mossy fiber bouton (MFB) numbers and surface volume in the CA3 region of the hippocampus, reporter mice were used to label granule cell neurons and their presynaptic connections. 8-week old mice were injected with tamoxifen and naïve (n=7 females, n=8 males) mice were euthanized 6-weeks post tamoxifen injections. Injured (n=3 females, n=2 males) mice received a controlled cortical impact (CCI) 6-weeks after tamoxifen injection and euthanized 3 days postinjury. Images of tdTomato+ pre-synaptic terminals in CA3 region of the hippocampus were acquired at 40x magnification using a Nikon confocal microscope. Image stacks from each animal were imported into Imaris for 3D visualization and reconstruction. Individual MFB have numerous synaptic release sites and a reduction in bouton density can be offset by a compensatory increase in the number of release sites that can be measured indirectly by examining its surface volume. Significantly fewer MFB were observed in the CA3 region of the hippocampus ipsilateral to impact compared to contralateral CA3 region (p=0.039). However, the surface volume of the MFB did not change 3 days post injury. Surviving mature granule cell neurons have significant alterations to MFB numbers 3 days post injury suggesting impaired connectivity acutely after TBI.

Idhant Gode

MD - University of Maryland College Park

Discipline: Education

Authors:
#1 Idhant Gode

Abstract Name: Applications and Limitations of LLM Use in The High School Education System

As the world rapidly digitizes, students and teachers rely increasingly on technology to help them in the classroom. Recent advances with Large Language Models (LLMs) allow teachers and students to use AI to help themselves do work in the classroom. In this study, I explore the perspectives of students and teachers to understand their opinions about teachers using LLMs to generate learning resources and students using LLMs to help them with classwork and homework. To do this, I conduct open-ended interviews and surveys. I discovered that teachers and students support themselves using ChatGPT more than the other group. However, this is not always the case; many other factors must be considered. This paper will answer questions related to how LLMs should effectively be used in the classroom, as well as proper limitations that should be put in place to guarantee the best classroom environment.

Elijah Godinez

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Elijah Godinez
Amanda Horton

Abstract Name: Design hero Abstract

This paper focuses on a design hero and their history and influence within design. For this research paper, Alvin Lustig who has made major contributions to American design with hundreds of book cover designs will be discussed. The paper contains his initial work with interior design with examples shown and even some of his accolades. From there he dabbles in cover design transitioning into his work under New Directions Publishing and an example of his past work. His own process is talked about with how he gets to the final product and also how he experimented with different techniques for his book cover designs. After that, Lustig discusses his views and ideas about designers and what differentiates a traditional and Contemporary designer. He gets into the logistics of the design process He discusses his thoughts on how they differ and that they go through different processes. There is also a section that highlights his time as an educator and inserts his pearls of wisdom that young designers can keep with them when faced with design obstacles. As well as talk a little about his final years dealing with diabetes and how he was able to work with his clients while losing his vision. Closing off with some final remarks and how American design would be forever changed by his passion and experimentation.

Kaitlyn Godwin

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Kait Godwin

Abstract Name: The Impact of Technology on Graphic Design

This comprehensive research paper explores how technology has influenced graphic design throughout history. From the Industrial Revolution to present day, each era has experienced significant breakthroughs that have revolutionized the way we create, visualize, and experience graphic design. These advancements have had varying degrees of impact on every aspect of design, including production techniques, audience reach, and overall visual aesthetics. For instance, the Victorian era's invention of the printing press resulted in a significant increase in production capabilities while simultaneously leading to a counter-production movement, and moveable type during the Renaissance allowed for more efficient and varied printing of type. In addition, the introduction of computer technology and digital design in the late 20th century enabled anyone to create and share designs worldwide, influencing both visual styles and engagement levels. However, it also introduced the challenge of a new medium. Today, the rapid emergence of AI in the industry has given rise to both skepticism and immense possibilities. All of these technological advancements have had applicable and measurable impacts in the field of graphic design. Through analyzing the effects of these technological advancements, we can gain valuable insights into the future of graphic design. This enables industry professionals to remain informed and current in an ever-changing visual landscape.

Jessica Goeij

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Jessica Goeij
#2 Volker Hartenstein

Abstract Name: Early stage lineage tracing via mid-late stage neural lineage reconstruction in Drosophila

Neural lineages are defined as groupings of neurons formed by individual, genetically specified neuroblasts. These lineages are distinguishable due to their axon tracts that are recognizable at later developmental stages, which progress towards the neuropil, which is a network at the center of the embryonic brain. We speculate that lineages interact with other lineages in a preferential and predictable manner, and vary in factors such as axon length and growth cone size. Growth cones exist at the tip of the developing axon tract, and are used to guide its growth. We aim to distinguish between lineages, specifically at earlier developmental stages, and gain a better understanding of lineage phenotype and interaction. We used transmission electron microscopy to generate 3D reconstructions of neural lineages in mid-late stage Drosophila embryos; specifically, lineages that are thought to belong to the antennal lobe and the mushroom body and lineages that have yet to be traced in the posteromedial region. We confirmed that lineage phenotype varies most notably in length and growth cone size, and we speculate that neurons of different lineages interact in a stereotyped manner already at this early stage in their development. Our findings will provide insight into the problem of the development of circuitry: we want to evaluate how the association of neurons with specific lineages shape the neural circuits of the differentiated brain.

Mason Gohde

KY - University of Kentucky

Discipline: Engineering and Architecture

Authors:
#1 Mason Gohde

Abstract Name: Sensorially Accessible Design for Neurodivergence

The built world was made for a very select few. While most people run into issues with the systems and environment around them, Neurodivergent individuals are much more likely to have frustrating and even debilitating interactions with systems, places, and things. This population is often overlooked in design, even though it accounts for an estimated 15-20% of the world. As we begin to become more accepting of neurodiversity in our society, our designed environment should better reflect that. While design guidelines and considerations exist for many disciplines (architecture, interior design and UX/UI), we're still lacking a proper framework on how to address neurodiversity in Product Design. As Product designers may have a hand in designing most of the objects you interact with everyday, we should constantly be looking for ways to design more accessibly. In order to establish these suggestions, research needs to be done in collaboration with the neurodivergent community around their perceptions of the products in their life. Currently the research focus is how products are interacted with through sight, sound, and touch, and subsequently how sensory sensitivities affect these perceptions. Through collaborative design workshops, the researcher intends to establish some correlation between the vast individuality of the spectrum. These workshops focus on introducing participants to materials and samples and learning more about the individuals' perceptions. The intended output of these workshops and subsequent guidelines is a tool that designers can use and reference

when designing for neurodivergent individuals. Establishing some baseline of knowledge will help elevate everyone's work, and be another step towards properly considering the communities we design for.

Julian Goins

FL - Embry - Riddle Aeronautical University

Discipline: Engineering and Architecture

Authors:
#1 Julian Goins

Abstract Name: The Effects of Spiraling Propellant Exhausts on Rockets and Its Possible Applications on Liquid Propellent Engines

The thrust that rockets rely on for flight is the reaction force of its propellant being shot at hypersonic speeds out of the rear of the vessel. The force produced is dependent on the amount of propellant being pushed out, the velocity of the propellant, and the pressure difference between the propellant and the external environment; the third factor is unimportant to this research, but the former two factors are integral to it. It is known that spinning projectiles travel farther and straighter due to spin stabilization; this is why gun barrels are made with spiraled grooves inside them. Such ideas have precedent in the Aerospace industry as a study by the American Institute of Physics has used this method to improve the efficiency of thermal rockets. It allowed their low power electric thrusters to achieve thrust similar to that of higher power electric systems by using propellent spin stabilization to produce high propellent density while maintaining lower propellent speed and power. The purpose of my research is to use these principles to improve the efficiency of higher power chemical engines. While working at a scale of 10-20 times smaller than an actual thruster, we'll test out different ways of creating spiraling motion in our model, including but not limited to adding rifling in the rocket nozzle as well as injecting the propellent at an angle. We'll also preemptively account for the torque to be produced by these methods and find ways to counteract it. The goal of this stage of research is to simply to confirm the underlying logic and identify useful applications for it in the field. I expect the experiments to be substantial in their results, even if not drastically significant, as it will be a starting point for other research efforts into spiraling propellant exhaust vortexes.

Sofia Goldschmidt

CA - California State University - Long Beach

Discipline: Education

Authors:
#1 Sofia Goldschmidt

Abstract Name: The Impact that school shootings have on children in the United States and the support they are given as a result of the trauma

School shootings in the United States have nearly tripled in the past twenty-five years, exposing over 338,000 children to the trauma of mass shootings (Sandy Hook Promise, 2013). The purpose of this research is to highlight the impact that school shootings have on children and identify ways to support children as a result of the trauma they endure. Through a systematic review of literature on school shootings in the U.S., my thesis examines the limited research on school and community support for students given to them directly in the wake of such events. Next, I examine possible avenues for support to bridge the gap between the initial response to school shootings and the long-term support that communities can provide to these children. I find

that trauma-informed teaching along with understanding adverse childhood experiences are two critical ways that teachers as well as the community can further support children who face a traumatic experience, like a school shooting. By showing the impact that school shootings have on children's lives both emotionally and physically, my thesis explores the importance of what happens once the media attention wanes. I aim to contribute to a critical discussion of how to better support children and communities affected by mass shootings over the long-term.

Natasha Goldson

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Natasha Goldson
#2 Priscila Chaverri

Abstract Name: Identification of an Unknown Fungus That is Lethal to Sand Fly Colonies

Colonies of sand fly larvae (vectors of the parasite that causes leishmaniasis) in a research lab at the Walter Reid Army Research Institute of Research were being killed by an unknown “blue” mold that was contaminating their food (rabbit dung). This research was conducted to determine the identity of the unknown fungus and its potential impacts to sand flies. To identify the fungus, DNA extraction, PCR, and sequencing analysis were conducted. In addition, we performed an experiment to determine if the fungus was phototropic (grows toward the light), a characteristic of dung fungi. Results confirmed that the fungus is phototropic and was identified as Aspergillus giganteus. This research has implications not only to care for sand flies, but also in potential fungal chemicals that may have insecticidal properties.

Ariana Gomez

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
#1 Ariana Gomez
#2 Katelynn Strickland
#3 Daniella Melgoza
#4 Sara Esquivel
#5 Beatrice de Oca
Daniella Melgoza
Sara Esquivel

Abstract Name: Effects of Slow-Paced Breathing on Rumination and HRV

The neurovisceral integration model highlights the intricate process of self regulation and dysregulation, which can be understood through a functional and structural network. Self-regulation involves not only emotion regulation but also attention regulation. Difficulty in self-regulating cognitions and behaviors leads to rumination and worry, which are often seen in various psychological disorders. Vagal tone is an indicator of autonomic nervous system regulation, which has been found to be related to attention and emotion regulation. A high vagal tone reflects parasympathetic nervous system activity and is linked to better attention, emotion regulation, and behavioral flexibility. Prior studies have found that breathing at a slow

pace can increase vagal tone, resulting in higher heart rate variability and improved decision-making. Past studies have also shown that executive functioning of the prefrontal cortex and heart rate variability (HRV) are connected and that HRV is an indicator of vagal tone. This study aimed to look at the effects of a slow-paced breathing task on participants' cognitive function and HRV and assess whether slow-paced breathing was beneficial. A slow-paced breathing technique was used to examine the effects of stress levels when completing the Wisconsin Card Sorting Task (WCST), a measure of cognitive flexibility. Specifically, this study examined the effect of slow-paced breathing on state rumination and stress levels by looking at participants' individual self-control, rumination and HRV scores. Participants were California State University Channel Islands undergraduate students. Physiological data from approximately 70 participants has been included and more data will be collected. Participants were randomly assigned to either a control (nature video) or experimental (slow-paced breathing) condition. We hypothesized that slow-paced breathing would reduce state rumination in those with higher self-control scores and increase HRV in all participants. The preliminary results show a decrease in state rumination.

Erika Gomez

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Evelina Sterling

Abstract Name: The Changing Understanding of Mental Health: Exploring Generational Differences

Mental Illness has been around since the beginning of time. However, our understanding of the causes, treatment, and long-term impacts of mental illness changes over time. In fact, the evolution of mental illness has not been linear or progressive but rather cyclical. Whether or not a behavior is considered “normal” or “abnormal” depends on the context surrounding the behavior and thus changes as a function of a particular time and culture. This study looks at three distinct generational cohorts: those born in the 1940s/1950s (Baby Boomer); those born in the 1970s/1980s (Gen X); and those born in the 2000s (Millennial/Gen Z). First, I thoroughly describe historical and contextual information, especially in terms of major sociocultural, political, environmental, and economic events during these time periods. Next, a content analysis was conducted looking at auto-biographies written by individuals living with mental health issues across the three aforementioned generations. Through coding and constant comparison, this content analysis determined the presence of certain words, themes, and concepts within the text that describes the understanding and lived experiences of someone with mental illness. The content was then compared, assessing generational differences. Results showed that our understanding and experiences with mental health issues are heavily influenced by time and culture. Specifically, issues related to stigma, health literacy, loneliness, internet usage, coping mechanisms, and seeking help varied across generations. Although some issues (such as stigmatization of mental health) have improved across generations, other challenges have emerged (such as too much information). Additionally, intersectionality with race, ethnicity, gender, sexuality, and religion were considered. Finally, trends in mental health diagnoses and treatment are highlighted over this time period using data from the Centers for Disease Control and Prevention and the National Institutes on Health. In conclusion, this study provides recommendations for more individualized mental health care.

Isabelle E. Gomez

GA - Kennesaw State University

Discipline: Education

Authors:

#1 Isabelle E. Gomez
#2 Johari Harris

Abstract Name: Building Citizens in Classrooms: Examining the Impact of Developmentally-Appropriate Civic Discourse Curriculum

Civic discourse is a crucial element of democracy that seems to have disappeared in America's polarized political climate, replaced with baseless claims & tenuous arguments. Lost in such debates are the abilities to compromise and find common ground, the cornerstones of democracy. To ensure the health of our democracy, researchers argue we must develop civic discourse skills in children and adolescents rather than waiting until adulthood (Byrd, 2012). Social domain theory (SDT) asserts that children and adolescents understand issues of fairness, social norms, and human welfare (key elements of citizenship & democracy) differently at various stages of development (Nucci, 2008). Deepening students' understanding of these politically-relevant issues is most effectively through peer-to-peer discourse. There has been limited application of SDT in K-12 classrooms, which greatly inhibits students' potential moral and civic discourse development. The Educating For Democracy initiative (EFD) addresses these gaps by providing K-12 students developmentally-appropriate opportunities to exercise empathetic thinking regarding historical inequities through civic discourse with peers and synthesize their collective positions into writing. Given the lack of research into developmentally-appropriate civic discourse activities for K-12 students, this current study examined students' thoughts about engagement with EFD materials. Through the use of focus groups, the exploratory qualitative study examined fifty 3rd-8th grade students' experiences with EFD curriculum (i.e. units, lesson plans, writing prompts). Using the constant comparative method (Kolb, 2012), thematic changes were identified across focus groups (Braun & Clark, 2006). Three themes emerged in preliminary data: that participants valued engaging with peer-to-peer civic discourse around issues of race and justice, participants appreciated conversations around racial implications and racism, and that participants enjoyed learning about topics typically prohibited in schools (e.g. confederate monument debates). This suggests that students not only understood developmentally-appropriate curriculum, but, through interaction with EFD materials, felt empowered to become justice-oriented, cooperation-focused citizens of democracy.

Michelle Gomez

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
#1 Michelle Gomez
#2 Jacquelyn Tsui
#3 Christine Smith
#4 Catherine Tallman

Abstract Name: Hippocampal Subregions and their Relationship to News Events Memory in Older Adults with Normal Cognition or Mild Cognitive Impairment

Individuals with Mild Cognitive Impairment (MCI) are at risk for developing Alzheimer's disease (AD). According to existing tests, MCI patients exhibit extensive impairment in remembering the past (retrograde memory, RM) concurrent with only mild impairment in new learning. This finding suggests that more sensitive RM tests could identify MCI closer to when subtle neural and cognitive changes begin, therefore improving earlier diagnosis and access to interventions. In older adults with either MCI (N=33) or normal cognition (NC) (N=34), we examined if a novel RM news events test (RM-NET) can significantly predict brain volumes of hippocampal subregions known to decline in AD (i.e., CA1 and subiculum). RM-NET scores significantly predicted the volumes of the whole hippocampus, subiculum, CA1, and dentate gyrus in the MCI group. No significant relationships were identified in the NC group for the RM-NET scores. The RM-NET holds promise for tapping into the brain structures that are known to decline early in AD.

Mateo Gomez Bedoya

IL - Elmhurst University

Discipline: Humanities

Authors:
#1 Mateo Gomez Bedoya

Abstract Name: Interactive Spanish Teaching Resources

This project helped students learn basic Spanish concepts, continue to develop their language skills, and critically think in a foreign language through a variety of didactic material and activities that covered personal, cultural, political, and social aspects. Further, the core concepts of culturally responsive pedagogy helped students reach academic success, be culturally competent, and develop critical consciousness. Although the research project focused on all three, it is important to note that the development of critical consciousness with the purpose of students being able to look at social injustices, identify them, and come up with a solution is what various activities emphasized. The material also focused on helping students be culturally competent by providing numerous situations and scenarios that happen all over the world in different countries. This allowed them to understand other cultures' values and social issues. This research also focused on one concept from the theory of multiple intelligences. It is important to recognize that students have different ways of learning. That is why educators were presented with diverse activities at all Spanish levels that encompassed linguistic, visual, and intrapersonal intelligence. Equally important, this empirical research focused on the use of different teaching resources for students to acquire a higher level of learning in the Spanish language, and teachers assessed the students to see results. Finally, one conclusion that is drawn from the research is that the use of interactive activities derived from short films and podcasts enhanced learning to the fullest in the Spanish language. Results included students being able to complete all activities designed for their level of Spanish and recording better academic results in the classrooms.

Ines Gonzales

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Ines Gonzales

Abstract Name: History Of Package Design

Within the history of packaging, it was important to reflect on how packaging was first made and how important design would eventually evolve. Typography and information graphics in design today have a communicative and proper effect on branding. Package design has also created many evolutions, such as internet packaging, which is known today. Overall, packaging has affected the way consumers see products. Such as how color, design, and typography can behaviorally affect the consumer. Typography on package containers was influenced by trends and fashion throughout the years, such as from Chicago and its design communities. These types of influences not only influenced designers but also influenced the growth of package design. Influences of typefaces from the Swiss movement affect the way packaging looks. Packing within typography influenced movements such as optimism and idealism. These movements would help change the way typography should look on packaging. From idealism and optimism, throughout the 1990s, a lot of packaging would be redesigned, such as when Campbell's red-signed their label. In the 2000s, the

internet became bigger, creating websites such as SAP. Designed by Frog Designs, it would help create the beginning and growth of package design. meaning internet packaging would be born from websites booming. iPhones and Coca-Cola would be good examples of internet packaging in terms of how they are packaged from the factory to the internet. Typography was influenced by packaging through main events and industrial routes. Package design has been the main reason of influence of comsumersim of it's growth today.

Mireya Gonzales-Rivera

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

Authors:
#1 Mireya Gonzales-Rivera
#2 Justin Perron
#3 Andrea Morello
#4 Danielle Holmes

Abstract Name: Qubit Readout Techniques for Donor-Based Quantum Architectures in Silicon

Donor-based qubits in silicon are a promising architecture for quantum information science. As with all qubit architectures, the ability to readout the qubit state is a crucial requirement. Typically, the charge state of the donor is determined by measuring current through a nearby charge sensor that is coupled to the donor. That measurement is then paired with spin-to-charge conversion that allows for the inference of the donor electron spin state. More recently, other techniques for detecting tunneling events in these systems have also been developed for use in spin-based quantum information systems. In this talk, I will discuss our efforts to implement various techniques in our lab, including gate and ohmic reflectometry techniques as well as typical electron transport methods.

Cassie Gonzalez

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Cassie Gonzalez

Abstract Name: The Influence of Poggio Bracciolini's Handwriting into a Typeface

This is an examination of the development of humanist handwriting, specifically Poggio Bracciolini, turning into a typeface for future use. The prominent argument presented is centered around the influence Poggio had on writing regarding graphic design elements. To begin, context about Renaissance humanist principles is necessary for examination of the important of manuscript copying. From there, Poggio’s goals will be discussed surrounding manuscripts, literature, and Latin. Then, his handwriting distinction will be examined in relation to other humanists to understand why his writing became the basis for production. Subsequent uses of Poggio’s handwriting for uses of typeface by later people and prints will finally be addressed. This research demonstrates the influence handwriting has in the art and design sphere. Considering graphic design is a fairly contemporary design study, it is important for early predecessors of graphic design to be discussed. Although personally copying manuscripts is considered an archaic form of graphic design, it is still related to current practices employed within the field.

Cassie Gonzalez

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Cassie Gonzalez

Abstract Name: Kisaengs' Negotiation of Social Position and Cultural Values in Joseon Society

Kisaengs were influential female artists of written and visual cultural production during the several hundreds of years in the Joseon period of Korea. Scholars have studied kisaengs as being exploited by the government and the wealthy for various self-interests. Some scholars emphasize that the government created kisaengs to produce art outside the constrictions of Neo-Confucian morality, while other scholars focus on how the wealthy used kisaengs' artistic production as an escape from the confines of their life, harming the emotions of both their wives and kisaengs. Thus, scholars present kisaengs as passive producers of art in service of the government and their wealthy counterparts. My research emphasizes the changing cultural role of kisaengs, as active artists who constitute an integral part of the society, producing text and visuals that complemented the artistic production of the period. To demonstrate this change, this study focuses on kisaengs between the seventeenth and nineteenth centuries. To begin, government functions and establishments in Joseon are addressed. Next, I demonstrate how the sixteenth century kisaeng, Hwang Jini, established her reputation, while, simultaneously, gaining her foothold as an artist, while other kisaengs produced text in the service to the government and ruling elites. I, then, demonstrate how Kang Dam-un, a kisaeng from the nineteenth century, developed the distinct identity of kisaengs, even under governmental and elitist surveyance—as seen in their artistic production. At the same time, two male influential painters, Kim Hong-do and Shin Yun-bok, exploited and, therefore, objectified kisaengs to critique the decaying morality in the nineteenth-century government, due to the growing cross-cultural trade.

Andee Gonzalez

CA - California State University - Long Beach

Discipline: Business and Entrepreneurship

Authors:
#1 Dr. Laura Gonzalez
#2 Andee Gonzalez

Abstract Name: Social Media Crypto Frenzy and Financial Decisions on P2P Lending

Financial technology, also called fintech, facilitates quick financial decisions. To further support financial inclusion, some P2P lending platforms have incorporated blockchain and crypto collateral (Gonzalez, 2022). The purpose of this research is to examine behavioral decision making through an experimental setting. Investing and trading apps are commonly used by Gen Z and Millennial users because of their convenience, user-friendly interfaces, and the trust users have on online platforms. Social media is well known for incentivizing herd behavior exacerbated by celebrity recommendations, and this can limit financial inclusion (White and Wilkoff, 2023). This study analyzes the lending decisions by finance students on a mock peer-to-peer (P2P) online social lending. Survey participants are conditioned through testimonials towards pro-social decision making and asked to make three lending decisions. The three loan applications are identical except for a female or male headshot (vs.an icon) and random reports of 50% funding for the female or male loan in

3 days (vs. 11 days for opposite gender and 7 for icon). Previous research surveys students on a mock platform (Gonzalez, 2020) and reports similar heuristics and lifelike decisions in student and general population samples (Gonzalez and Komarova, 2014). P2P platforms that use crypto collateral don't seem to support financial inclusivity. support financial inclusivity further. In the future, more stable digital currencies supported by central banks could further democratize P2P lending, if there is behavioral financial literacy as well. Lender confidence is increased by self-reported financial literacy, and the popularity of a loan among other lenders has an impact on lending decisions. To enhance the financial inclusion of qualified borrowers, P2P platforms need to improve crypto innovations and offer financial literacy on behavioral decision-making

Mariana Gonzalez

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Mariana Gonzalez

Abstract Name: Language Barrier Disparities for Patients and Families Seeking Medical Care

AbstractBackground: The United States (US) has a high population of non-English speakers that continuous to grow, however healthcare providers do not often reflect the population of non- English speakers. Current translation tools include the use of My Accessible Real Time Trusted Interpreter (MARTTI), in-person translators, family members, or a three-way phone call with an interpreter on the other end of the phone. While better than nothing, these translations methods are not completely effective and often lead to misunderstandings and misdiagnosis. Purpose: With the increasing use of artificial intelligence (AI), a new method of translation can be developed that is cost effective and reliable. Methods: This mixed method study will be conducted in various healthcare settings such as hospitals and clinics to test this new method for translation. Patients must be primarily Spanish speaking and in need of a translator. Participants in this study will be both healthcare workers and patients. Conversations between the patient and healthcare provider will be recorded using video recordings during consultations. Surveys and open-ended questions will ask patients and healthcare providers to rate the accuracy of the AI translation. Conclusions: Finding a solution that uses artificial intelligence in healthcare settings to help translate medical information to non-English speakers is necessary for time and cost- effectiveness. These solutions have the potential to improve patient-healthcare provider relationships and lead to less misdiagnosis. The ability to use AI for translation provides communication in an efficient manner due to the improved response time.Keywords: Non-English speakers, Artificial Intelligence, Language Barriers, Healthcare, Improved Quality of Care

Zayra Gonzalez

CO - University of Northern Colorado

Discipline: Education

Authors:
#1 Zayra Gonzalez

Abstract Name: Assessing Behavior Management Coursework in Teacher Preparation Programs

Teachers often report feeling ill-equipped to meet the needs of children who exhibit challenging behaviors, which can lead to frustration and can impede attempts to provide a safe and nurturing environment for their students. Teachers who report feeling inadequately prepared to manage classrooms or who report a low

ability to manage challenging behaviors are less willing to implement behavior support plans or effective education for all students. Children who perform low academically are at greater risk for behavioral problems, which leads to a cycle of negative experiences for both the student and the teacher. The purpose of this study is to understand how the most attended special education and elementary education teacher preparation programs in the Western region of the United States prioritize and facilitate behavior training in preservice education. This research will be conducted by analyzing coursework related to behavior management to identify whether there are differences in the amount of required behavior classes and the language within the state standard requirements for both special education and elementary education teacher preparation programs. Using a thematic analysis I expect to identify differences between behavior management coursework in special education and elementary education teacher preparation programs. Preliminary results suggest that special education teacher certification programs are more likely to include behavior and classroom management content in their coursework. Nevertheless, teachers in both elementary education and special education encounter behaviors that may disrupt student learning, therefore this research may support the need for additional training resources for elementary education teachers.

Priscilla Gonzalez

CA - Pepperdine University

Discipline: Social Sciences

Authors:
#1 Priscilla Gonzalez

Abstract Name: Analyzing Potential Shifts in Abortion Attitudes Among Hispanics/Latinos in the U.S.

The Hispanic/Latino electorate has consistently drawn attention from political candidates due to its increasing influence in American politics. The central research question guiding this investigation is as follows: To what degree did attitudes towards abortion among Hispanics/Latinos shift from 2016 to 2022? Given the diverse array of perspectives within the community, the primary objective of this study is to investigate the shifts in attitudes towards abortion across consecutive election years. While prior studies have delved into abortion attitudes among this ethnic group, none have explicitly scrutinized changes over time during successive election years. By scrutinizing the evolving sentiments of Hispanic/Latino individuals on this issue, the research aims to identify potential correlations or causative links, thereby contributing significantly to our understanding of behaviors and potential voting trends within this minority group. Anticipated within this study is an inclination towards more liberal attitudes among Hispanics/Latinos over the years concerning abortions and reproductive rights. This expectation arises from societal movements such as the Women's March in 2017 and the national outcry following the Supreme Court's 2022 decision to overturn Roe v. Wade. The research utilizes data from the Cooperative Election Study (CES) in 2016, 2018, 2020, and 2022. By focusing on abortion questions that remain identical over time, the degree to which answers have shifted or stayed the same will be made evident. By delving into the nuanced changes within this minority group, the study not only enhances comprehension of their perspectives on reproductive rights but also provides a valuable foundation for anticipating and interpreting future electoral dynamics within the broader American political context.

Carolina Gonzalez

TX - The University of Texas at San Antonio

Discipline: Interdisciplinary Studies

Authors:

#1 Carolina Gonzalez
#2 Vinodh Balendran
#3 Frank Raven
#4 Sara Aton

Abstract Name: The Effects of Sleep State on Somatostatin Interneuron Activity and Memory

Sleep is known to play a critical role in the encoding, storage, and recall of memories. Previous research has shown that sleep deprivation (SD) specifically impairs hippocampus-dependent memory. Our lab has shown that, in SD conditions, memory impairment is accompanied by increased activation of somatostatin-expressing (SOM+) inhibitory interneurons in the dentate gyrus of the hippocampus. SOM+ interneurons have been implicated in regulating hippocampus-dependent memory processes, supporting lateral inhibition between granule cells in hippocampal memory encoding. This project aims to see if sleep deprivation changes somatostatin levels and immediate early gene activation in various levels of the dentate gyrus. Next, we examined whether manipulating SOM+ interneuron activity affects mice's ability to encode, store, and/or recall memories. The goals were tested with gentle sleep deprivation techniques, intracranial SOM+ inhibition, and immunohistochemistry. Results showed that sleep deprivation following learning triggers increased expression of cfos in the granule cell layers of the hippocampus. More specifically, sleep deprivation significantly increased neuronal activity on the superior blade of the dentate gyrus. These results align with previous mRNA experiments from our lab. Next, we saw that somatostatin inhibition does not lead to significant differences in discrimination index; however, these experiments are not complete. The next steps of these experiments consist of, for the first experiment, looking at the overlap of somatostatin and cfos. For the second experiment, it has to be completed, redone, and analyzed via immunohistochemistry to look at the changes of neuronal activity that result from the inhibition of somatostatin in different memory stages.

Mariano Gonzalez

OK - University of Oklahoma Norman Campus

Discipline: Humanities

Authors:
#1 Mariano Gonzalez

Abstract Name: Political Meme Theory

Abstract: Memes are an ubiquitous feature of online culture that many know and love. However, while memes are best known as a means to deliver amusement, some have a serious impact on our culture. This paper focuses on a subset of important memes: political memes which increasingly characterize and influence our culture. Accordingly, I argue for a new theory of political discourse, based on the idea of memes informed by political psychology and social epistemology. At the center of this theory is the claim that American political discourse is usefully thought of as a competition of political memes. I call this perspective the “meme’s-eye view” of politics or “political meme theory.” To present this perspective, I first give some background including defining relevant terms and explaining the approach used. Then I show how the competition of memes manifests in partisan rhetoric and in the coverage and reception of news stories. This includes epistemological considerations such as the effects of “echo chambers,” “epistemic bubbles,” and “bullshit.” Additionally, I identify several problems with political discourse as a “meme war” in the context of increased polarization, focusing on common issues with the content and delivery of memes. These include the effects of rhetorical labels and arguments designating partisan affiliation– whether we intend it or not. Finally, a number of specific suggestions for ways to empirically buttress this theory during upcoming elections are given.Keywords: memes, political memes, political psychology, social epistemology, echo chambers.

Fabiola Gonzalez

TX - Texas A&M University - Kingsville

Discipline: Engineering and Architecture

Authors:
#1 Fabiola Gonzalez
#2 Mohammad Arif

Abstract Name: Physical and Chemical Activation of Crop Products to Manufacture Engineered Adsorbents for Environmental Applications

The aim of this study was to engineer crop-derived activated carbons (CDACs) from biomass waste for the adsorption of hazardous gases. The CDACs were synthesized from sugar beet pulp pellets through sequential activation after the carbonization of the pellets. The methodology includes physical activation with steam, chemical activation with nitric acid, and chemical impregnation using four different chemical groups as activating agents. The use of sugar beet pulp, a byproduct that typically goes unused, allows for an innovative and economically beneficial approach to the production of activated carbon. Optimal temperature, time intervals, and chemical solutions were the factors that were tested to produce high-quality activated carbon. The pollutants removed by the CDAC were nitric oxide (NO) and carbon dioxide (CO2). Each sample would undergo gas phase adsorption testing wherein each pollutant would run through the sample, and its adsorption capacity was measured. For CO2 adsorption, Magnesium oxide-impregnated CDAC had the highest adsorption capacity and percent removal efficiency before 20% breakthrough, and for NO, Vanadium oxide-impregnated CDAC had the highest adsorption capacity and percent removal efficiency.

Juan Pablo González Gómez

COL - EAFIT University

Discipline: Engineering and Architecture

Authors:
#1 Juan Pablo González Gómez
#2 Simón Emilio Suárez Gómez
#3 Pedro Gómez Bedoya
#4 Juan José Arrubla Garces
#5 Juan Sebastián Rodríguez Cuartas
#6 Francisco Javier Botero Herrera

Abstract Name: Experimentation phase of the process design methodology for the performance evaluation of medium rocket engine propellants

The Rocketry & Propulsion study research group from Universidad EAFIT welcomes students from different bachelors such as mechanical, physics, chemical, mathematical, industrial engineering, and computer science to take part in small research projects related to aerospace engineering focusing on the study of mid-power solid-propellant rocket systems.Moreover, for the last two years an educational and process-centered methodology has been developed and refined with the purpose of establishing a systematic procedure to propose and build reliable, low-cost propulsion systems with predictable performance.Three main work fronts were defined involving different steps within the design, production, and test of the rocket propulsion system, namely: propellant formulation; instrumentation & metrology; motor design. The first one seeks to validate, through burn rate tests under controlled conditions, the composition of mixtures of fuel, oxidizer, and binder agents. The second one aims through the capability of the instruments under development (Crawford Pump and Static Test Bench); to measure different physicochemical variables of the

performance of solid propellant rocket propulsion systems. The third aim is to test and iterate the design of the prototype rocket engine based on the analysis of the data obtained experimentally.Through an iterative way, each front couple analytical and/or numerical activities with experimental work, providing a strong validation of the whole process. As part of the implementation of the methodology in its experimental phase, different propellant burn tests have been carried out, determining a specific mixture to be characterized in the Crawford pump, which is undergoing hydrostatic tests to verify its correct operation. Additionally, the characterization of different sensors to measure variables such as thrust, pressure and temperature in a test bench and the remote transmission of data for the execution of a static test of the designed rocket engine was achieved.

Rafael Gonzalez Martinez

CA - University of California - San Diego

Discipline: Health and Human Services

Authors:
#1 Rafael Gonzalez Martinez

Abstract Name: The Effects of Resource Scarcity within Low-Income Latinx Communities

Diabetes currently affects 37.3 million people in the United States and has been shown to disproportionately impact minoritized groups, such as the Latinx community. This disproportionate effect of diabetes in Latinx people can be studied by investigating Latinx-enriched communities like Monterey County (61% Latinx according to the US Census), located in the Central Coast of California. Monterey County has a high incidence rate of diabetes of 1 in 8 Latinx diagnosed, and pre-diabetes rate of 1 in 2 Latinx diagnosed (Marino, 2019). This essay investigates the correlation between the lack of nutritional resources and accessibility to health care, two indicators of poor health outcomes, within the Latinx communities in the Central Coast and how lack of such resources may lead to illnesses such as diabetes, which have historically been found to disproportionately affect the Latinx group (Montoya 2011). This research analyzes both a scientific breakdown of diabetes and a discussion of the socio-economic influences that exacerbate rates of diabetes cases within low-income Latinx Central Coast communities. Findings from such studies will not only be applicable to the Latinx community, but may also be used as a resource for study of other low-income communities across California and the broader United States. The goal of this work is to reveal the socioeconomic factors as to why low-income Latinx communities have a greater risk of contracting diabetes and think of new ideas regarding the implementation of new accessible ways to support and understand the masses impacted by socio economic issues.

Dominique Gooden

WI - University of Wisconsin-Madison

Discipline: Engineering and Architecture

Authors:
#1 Dominique Gooden
#2 Andrew Pickering
#3 Paula Hammond

Abstract Name: Functionalizing Layer-by-Layer Nanoparticles (LbL NP) for Improved Glioblastoma Penetration

Glioblastoma (GBM) is a lethal brain cancer known for its resistance to standard surgery, radiation, and chemotherapy treatment options. GBM's dense, solid characteristics pose significant challenges in delivering drugs to the tumor microenvironment because many medicines cannot penetrate the tumor entirely. When vital medication cannot reach GBM, the cancer metastasizes. Our project utilizes Layer-by-Layer Nanoparticle (LbL NP) technology to engineer nanoparticles with features that improve their efficiency and effectiveness for drug delivery to glioblastoma. First, we layered multiple outer layer ratios of Poly-L-Glutamate (PLE) to Poly-L-Glutamate-PEG-iRGD (PLE-PEG-iRGD) onto LbL NPs containing Poly-L-Arginine (PLR). PLE was used to maximize cellular uptake, while PEG helped maintain nanoparticle colloidal stability. iRGD peptide was used for its tumor-penetrating properties. With a thiol detection assay, we quantified the amount of PLE-PEG-iRGD on our nanoparticles and tested each of our LbL NP batches on in vitro GBM cell lines. Next, we tested the colloidal stability of our LbL NP batches in artificial cerebrospinal fluid. Finally, we utilized flow cytometry to determine the percentage of cells that uptook the LbL NPs. Preliminary results show that outer layer composition and peptide incorporation impacts nanoparticle-glioblastoma cell interactions. Furthermore, we also observe improved nanoparticle stability and cellular uptake in GBM as we increase the amount of PLE-PEG-iRGD on our LbL NPs. Future work will involve loading siRNA and chemotherapeutics onto our LbL NPs. Additionally, we will use 0% PLE : 100% PLE-PEG-iRGD polypeptide as the outer layer for our future NP batches, based on preliminary experimental data. This project lays the groundwork for designing efficient nanocarriers for local and systemic drug delivery to GBM tumors in vitro and eventually in vivo.

Anya Goodman

CA - California Polytechnic State University - San Luis Obispo

Discipline:

Authors:
#1 Anya Goodman
Andrea Somoza-Norton
Daniel Bachrach

Abstract Name: Project CUREOS: Using Job Characteristics Theory to Reflect on Your Current Research Experience and Navigate Future Career Choices

Will the work you do one year or ten years after graduation resemble the work you did as an undergraduate researcher? When you choose a career path, which aspects of your research or internship experience will you want to keep, and what would you like to be different in your future job? Job characteristics theory (JCT) provides a theoretical framework for thinking about the structure of work. Based on JCT, core job characteristics (e.g., skill variety, task identity, task significance, autonomy, and feedback) affect work-related outcomes, including motivation, satisfaction, and performance (Hackman, J. R. & Oldham, G. R., 1975). Our research project titled CUREOS (Characterizing Undergraduate Research Experiences and Outcomes in STEM) aims to better understand how to optimize undergraduate research. We are also building a web-based resource to assist students in exploring careers based on work design preferences. We have created a pilot application that allows participants to complete a survey to characterize their work or volunteer research experience, modify the characteristics based on their preferences, and search a national occupation database for occupations matching the desired characteristics. Our team also plans to explore the relationships between structural facets of undergraduate research design and key student outcomes with the goal of improving the experiences of students in pursuit of STEM careers and increasing the diversity of the workforce. This presentation will provide an overview of JCT and this project. For more information, see https://www.cureos.org/. This work is supported by NSF IUSE #2142404.

Anya Goodman

CA - California Polytechnic State University - San Luis Obispo

Discipline:

Authors:
#1 Anya Goodman

Abstract Name: Addressing challenges of CURE instruction in biochemistry courses by scaffolding formative assessments using results from prior CURE implementations

Course-Based Undergraduate Research Experiences (CURE) deliver many cognitive and affective benefits. Effective implementation of CUREs involves scaling research training from “apprentice” to classroom size (12-24 students). When trying to integrate content and scientific process learning objectives, the instructors run into a problem unique to CUREs: different research projects progress at different rates, and some students may not be able to advance far enough in their projects to cover all content-related learning objectives of the course. How does an instructor design assessments and learning activities, when the research outcomes and challenges of a CURE are not known in advance? Using data obtained by students in an earlier CURE implementation allows instructors to build scaffolded activities that break down cognitive challenges into smaller chunks and showcase a range of problems students may encounter once they undertake their own research project. These activities allow students to work in small groups and with the instructor’s guidance to develop deeper knowledge of content and a range of skills required for research. Having a common set of activities allows for scaling the research training without removing the novelty dimension of the CURE. This approach helps reframe experimental “failure” in a positive light, as a cognitive challenge that students can welcome rather than fear. The approach to creating inquiry activities is straightforward and can be adapted for any CURE. I’ll share two examples of CURE course redesign: Protein Techniques and Bioinformatics Applications. The learning objectives in Protein Techniques are centered around protein purification and the CURE is supported by the Biochemistry Authentic Scientific Inquiry Laboratory community (BASIL, https://www.basilbiochem.org/). The learning objectives in the Bioinformatics Applications course are centered around annotating eukaryotic genes and the CURE is supported by the Genomics Education Partnership (GEP, https://thegep.org/). This work is supported by NSF IUSE1915544, 2141871.

Nina Goodwin

MI - Wayne State University

Discipline: Business and Entrepreneurship

Authors:
#1 Nina Goodwin

Abstract Name: The Relationship Between Value of a Purchase and Acquisition of a Loyalty Account: Is There a Price on Consumer Loyalty?

The purpose of this literature is to explore which variables relating to price may have an impact on the acquisition of a loyalty account. The research will ultimately explain if there could be a potential relationship between the acquisition of a loyalty account and value of a purchase. Analyzing price influences on consumer behavior and typical consumer decision making processes will show what makes an impact on the consumer decision to open a loyalty account with a brand or business. This will support the evidence behind exploring the theory behind pricing of a purchase and loyalty account enrollment through various hypotheses, including: (1) Non-loyal consumers will be less likely to enroll in a loyalty account if the purchase is $100 or less, (2) there will be no difference in the price threshold for enrolling in a loyalty program through different age groups, (3) there will be a difference in the price threshold for enrolling in a loyalty program throughout various income levels, and (4) there will be a difference in the price threshold for enrolling in a loyalty account when the consumer purchases from various product categories.

Devika Gopakumar

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Devika Gopakumar

Abstract Name: Examining the Impact of Data Imbalance on the Accuracy of AI/ML Models through Applying Conventional Methods.

Imbalanced data poses a significant challenge for individuals engaged in Machine Learning, as it often leads to suboptimal model performance. This issue arises because machine learning models struggle to train the minority class effectively, compromising predictive accuracy. The dataset under consideration in this study is derived from the Taiwan Economic Journal's financial data for 6819 companies from 1999 to 2009. The data contains 95 features, such as the ROA, total asset turnover, etc. IBM Watson's platform was used to develop predictive models using various algorithms. The Snap Random Forest Classifier produced a 97.2% accuracy with multiple enhancements, and the Snap Decision Tree Classifier produced a 96.9% accuracy. Each algorithm gave importance to different features. The Snap Random Forest Classifier gave the sum(ROA(C) before interest and depreciation before interest), Net worth/Assets) feature 100% importance in predicting the outcome. Despite good accuracies, confusion matrices, and ROC curves did not produce favorable results because the employed dataset exhibited an imbalance, with a predominant negative class (96.8% negative-class vs 3.2% positive-class). To assess the impact of imbalanced data on the accuracy of the proposed models, an attempt was made to systematically reduce the percentage of the negative class threefold to achieve data balance. Subsequently, the accuracy was scrutinized following each adjustment. Evaluation metrics, such as confusion matrices and ROC curves, were utilized to analyze the model's performance. Additionally, traditional methods for addressing imbalanced data, such as oversampling the minority class, are evaluated for efficacy at each stage. The resulting model accuracies went down by a few percent, but the impact on confusion matrix and ROC curves was at an acceptable level. This comprehensive examination aims to provide practitioners in machine learning with insights into the consequences and potential solutions when confronted with imbalanced datasets.

Zachary Gordon

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
#1 Zachary Gordon
#2 Oluwatunmise Alabi
Oluwatunmise Alabi

Abstract Name: ChatGPT Translation of Program Code for Image Sketch Abstraction

The evolution from MATLAB to Python (M-to-PY) has been a critical focus in computational research over the past two decades. Despite this transition's intricate and labor-intensive nature, the resurgence of MATLAB's relevance in high-performance, parallel, and quantum computing has reignited interest in such conversions. Since its inception, MATLAB has been the cornerstone of countless scientific research projects, many of which could experience a renaissance if translated into open-source Python. This language currently

spearheads the AI domain with its comprehensive libraries, frameworks, and transformers. This research elucidates a semi-automated M-to-PY conversion process through an exhaustive case study of a bespoke image skeletonization project. This complex project, encompassing fifteen MATLAB files and a dataset of 1404 images, executes the skeletonization of various images, from humans and animals to insects and cars. The skeletonization sets robust groundwork for future research in 3D motion detection using AI Transformers, which are largely implemented in Python. The AI bot, ChatGPT-4, is central to the translation project, serving as an AI pair programmer. The OpenAI API's unique public availability is critical to our conversion process. We engineered a prototype M-to-PY converter, rigorously tested it against alternatives using test cases generated by the Bard bot, and then used the resulting code for the AI app. This research makes two primary contributions: an M-to-PY conversion with thorough testing and a Skeleton App that can take an image of any object and draw a sketch and a skeleton. This functionality can be harnessed in many AI projects. This work underscores the role of AI tools like ChatGPT-4 in facilitating code conversion processes, especially for those with limited coding knowledge. It highlights the potential for such conversions in paving the way for innovative AI apps to scientific research with mostly MATLAB code.

Courtney Gordon

PA - Moravian University

Discipline: Health and Human Services

Authors:
#1 Courtney Gordon

Abstract Name: An Analysis for the Importance of Providing Culturally Competent Care in the Nursing Profession

In response to the ever changing cultural landscape of healthcare, the nursing profession must undergo transformative changes that equip nurses with the capability to accommodate the needs of our diverse society. The 2023 American Association of Colleges of Nursing (AACN) statement on cultural competence in academic nursing noted that “a diverse and inclusive nursing workforce reduced health disparities, addressed social determinants of health, and improved patients outcomes" (aaacnnursing.org). The project recognizes the importance of cultural competency and focuses on identifying and acknowledging instances where the nursing profession has fallen short as well as improving patient outcomes by providing culturally competent care. My research focuses on marginalized populations that are prevalent in the Lehigh Valley area in Pennsylvania, but can be applied for other areas. Although my research emphasizes specific populations, the project can be utilized and modified to establish cultural competencies for other marginalized groups. Building upon a previous summer project, this research includes a review of relevant literature that addresses the disparities and ties with the societal obstacles associated with these unique populations and the intersection of healthcare. Moreover, this project evaluates relevant nursing literature that has utilized culturally inclusive care in the nursing profession, while also reviewing how the profession can improve and grow in this area. Anticipated outcomes include fostering a dialogue within the nursing profession to spark a change for cultural competency among nurses and the means to achieve this in the different fields of nursing, with an emphasis in a higher academia setting, beginning with Moravian University. This project symbolizes a commitment to change and compassion for our increasingly diverse world and how nurses care for the world around us. The hope is that this project is not solely limited to nursing, but can be altered and applied throughout the medical field.

Morganna Gordon

IN - Indiana University Purdue University Indianapolis

Discipline: Natural and Physical Sciences

Authors:
#1 Morganna Gordon
#2 Ann Kimble-Hill
#3 Aaron Kile

Abstract Name: Understanding The Role of Phosphatidylinositol Driven Lipid Phases in Triple Negative Breast Cancer Aggressiveness

1/8 American women are diagnosed with breast cancer, with a 2.5% survival rate. ~17% of these diagnoses are triple negative breast cancer (TNBC), the most aggressive breast cancer subtype and most lethal as it lacks overexpression of the normal chemotherapy targets, hormone receptors and Human Epidermal Receptor 2 (HER2). TNBC is characterized by higher grade tumors and an overall increase in metastasis rate. Our lab has previously identified specific phosphatidylinositol (PI) lipids that could serve as biomarkers for highly metastatic phenotypes (PI3,4P2) by characterizing the PI lipidome and correlating those results to migration rates. We also found that increasing PI3P concentrations offset this effect. These results led us to study the lipid phases that these PI lipids induce in the plasma membrane and the downstream effect on cellular plasticity and invasiveness. We hypothesize that increasing PI3,4P2 leads to more plasma membranes fluid phases thereby making it easier to migrate and invade surrounding tissues. We also hypothesize that PI3P increases plasma membrane rigidity. In this study, we cultured both primary (HCC38, HCC1395, Hs578T) and metastatic (MDA-MB-231) cell lines to determine migration rates. The plasma membrane was removed for lipidome analysis. Small angle x-ray scattering (SAXS) characterized the lamellar organization (Bragg peaks). We expect to find that aggressive cells will have fewer yet broader (fluid phase) Bragg peaks. Furthermore, less aggressiveness will correlate with more sharp (rigid phase) Bragg peaks. By characterizing the role of PI biomarkers, we will gain a greater understanding of how these lipids may cause more aggressive phenotypes as well as better understand how to prevent metastasis and use these new biomarkers as therapeutic targets.

Ja'Nyah Gore

NC - Winston-Salem State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ja’Nyah Gore
#2 Sarah Adjei-Fremah
#3 Alexandria Williams

Abstract Name: Comparative evaluation of short and long-term Perfluorooctane Sulfonate exposure on Cytotoxicity and Mitochondria Structure Dynamics and function in HepaRG liver cells

Perfluorooctane sulfonate (PFOS), a synthetic fluorine containing organic compound with wide industrial use is persistent and bioaccumulate in living things. Studies have shown PFOS has adverse effects in humans and can lead to toxicity, oxidative stress, and inflammation in a variety of cell types including liver cells,but the underlying molecular mechanism remains unclear. As mitochondria play a pivotal role in sensing cellular response to environment and offer valuable insights into cellular health. The present study evaluated the effect of short term and chronic PFOS treatment on mitochondria structural dynamics,and functional parameters such as ATP levels. Human HepaRG liver cells were exposed to varying concentrations of PFOS (10 nM,100nM, and1000Nm) andcontrol group at varying exposure durations (short-24 hours, 48 hours,72 hours;long-term 96 hours and 1 week) in an incubator (37oC,5% CO2). Cell viability was determined with CyQuant XTT cell assay kit and absorbance at 450nm, and 660nm were measured using spectrophotometer. Mitochondrial structural dynamics were assessed using the Mitotracker orange CMROS dye, and fluorescence intensity was quantified via excitation (4985/20nm) and emission (528/20nm). Following

treatment, mitochondria were isolated using a commercial kit. Mitochondrial volume and ATP content was measured using the ATP Assay System Bioluminescence Detection Kit. Experimental data were analyzed and statistical significance was at p<0.05. Our resultsreveal that exposure to higher PFOS concentration at longer durations led to significant reduction in cell viability,mitochondria structure-associated mitotracker fluorescence intensity and ATP levels than the control group. Cells exposure to higher PFOS concentration (1000nM)over longer durations (1 week) resulted in reduced cell viability and mitochondrial structural dynamics and functional capacity resulting in reduced ATP levels than short term PFOS cells exposed at 24hrs, 48hrs and control group. The results warrants for further studies on long-term PFOS risk assessment on cellular health and diseases.

Colby Gore

KY - University of Kentucky

Discipline: Engineering and Architecture

Authors:
#1 Colby Gore
#2 Savio Poovathingal
#3 John Maddox

Abstract Name: Characterization of Coupled Radiative and Conductive Thermal Response in Fiborous Thermal Protection Systems

During the process of atmospheric re-entry, aerodynamic heating phenomena induce high-enthalpy boundary layer flow that encompasses the vehicle. The development of high-enthalpy flow necessitates the use of Thermal Protection Systems (TPS) to protect the payload. TPS materials are constructed from highly insulative fibers that limit heat transfer from the boundary layer to the payload. To characterize the radiative flow interacting with the payload, two experimental campaigns are currently being conducted. The experimental campaigns will consist of a set of local tests at the University of Kentucky Paducah Campus and a campaign in the HyMETS arc-jet plasma tunnel at NASA Langley Research Center (LaRC). The LaRC campaign will characterize the spectral response of LI-2200 to the thermal radiation generation by the arc-jet augmented with short wave-length lamps. The non-linear contribution of the radiation through the fibrous medium LI-2200 will be decoupled from the contri- butions of solid conduction using a modified cut-bar conductivity measurement experimental setup. The results of the two concurrent campaigns will be used to further extend and modify computational models used to design TPS materials.

Alexa Gormick

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
#1 Alexa Gormick
#2 Adam Zahm
#3 Justin English

Abstract Name: Evolution of TetR-TetO System Toward Orthogonal Transcriptional Repression

Recent gene therapy advancements have progressed the treatment of a spectrum of disorders and diseases caused by misregulation of gene expression programs and their transcriptional regulators. However, existing

genetic therapies largely lack tunable control of exogenous gene expression. We are exploiting the Tet-On system as a switch-like tool to explore the limits of flexible exogenous gene expression in mammals. Tet-On allows the expression of any gene to be reversibly, specifically, and differentially controlled on command. In this system, the tetracycline repressor (TetR) binds the tetracycline operator (TetO), impeding transcription of any downstream gene embedded by the researcher, blocking even the strongest promoters. The presence of tetracycline causes TetR to adopt a new conformation that removes it from TetO, inducing gene expression on command. Because of this system's diverse utility, we are in pursuit of developing novel TetR-TetO orthologous pairs that do not interfere with this wild-type circuit and can be used to regulate gene expression in parallel. As a first step to generating TetR-TetO orthologs, we mapped the usage of TetO by TetR in a massively parallel reporter assay (MPRA) by engineering an extensive library of mutant TetOs and quantified the resulting range of TetR regulation through reporter gene expression. From this screen, we identified candidate TetO mutants to direct the evolution of the wild-type TetR towards complementary states to those TetO mutant sequences. Finally, to showcase the zero cross-reactivity between our mutant circuits and the wild-type circuit, we plan to engineer a synthetic genetic circuit in mammalian cells, representative of complex circuits of synchronized cell signaling we observe in biological systems. By generating a novel suite of TetR-TetO mutant pairs, we will create a toolbox of expression "off-switches" for selective and reliable control over modified gene expression toward the pursuit of disease prevention and treatment.

Natalie Gorodetsky

NY - Brooklyn College

Discipline: Health and Human Services

Authors:
#1 Natalie Gorodetsky

Abstract Name: The Relationship Between Movement Patterns and Sport-Induced Lower-Extremity Injury

My research question explores the relationship between movement patterns and sport-induced lower-extremity injury. I hypothesize a strong relationship between low-quality movement patterns and sport-induced lower extremity injury. As ACL injuries in particular are on the rise, my research seeks to explore how we can curb injury rates by aiming to understand what factors are most influential on low-quality movement. Current scholars posit that there are several factors contributing to low-quality movement, most notably flexibility levels and neuromuscular fatigue. Current research explains that the ACL is vulnerable to injury due to the anatomy of the hips and knees and lack of muscle support structures to protect it from strain during jumping, landing, or cutting movements. As such, I am studying movement patterns that lead to injury, as well as movement patterns that follow the sustainment of the injury. My project explores the movement of the hips, knees, and ankles. My research spotlights the debates of flexibility and fatigue as precursors of injury sustainment, the effectiveness of injury prevention training, and the efficiency of the functional movement screen (FMS) in determining the risk of injury.My research methodology includes surveying and interviewing physicians, physical therapists, exercise physiologists, patients, coaches, and athletes who have experienced or are knowledgeable in orthopedic lower extremity injury. I will generate patterns across responses to analyze what types of movements lead to injury and how one's movement is affected following an injury. Injuries of relevance will be limited between the hip and the toes. The project analyzes data figures on fatigue and flexibility's relationship to injury, which supports current scholarly dialogue, and the purpose of my findings will be mainly to suggest preventive measures for the future.

Chloe Gotes

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Chloe Gotes

Abstract Name: Examining Lesbian Activism Throughout the AIDS Epidemic: Exploring Individuals Who Cared for Gay Men Living With HIV and AIDS

In 1981, Acquired Immunodeficiency Disease first emerged in the United States. It was initially labeled GRID (Gay Related Immunodeficiency Disease) because of the diagnosis of Ken Horne - an openly gay male. Many men who contracted the disease were abandoned by their families, friends, and loved ones due to unknown - and often stigmatizing - factors. Doctors and nurses were weary to take care of AIDS patients because of preconceived notions and homophobic assumptions. The activism that lesbians provided to those affected by the disease during its infancy, specifically gay men, has long gone unnoticed by the masses. During the 1980s, being a lesbian and caring for gay men living with HIV and AIDS was a complicated endeavor. Frequently, lesbians caring for AIDS patients faced misogynistic pushback from gay men who felt gay men should be the only leaders in this fight. They also faced criticism from other lesbians who felt they'd abandoned queer women's issues. Yet, despite all the pushback, lesbian activists during the AIDS epidemic continued to thrive by volunteering for organizations such as the Chicken Soup Brigade and the Bailey-Boushay House. Volunteer work wasn't their only form of activism. One individual who stands out is Jewel Thais-Williams, who utilized her LGBTQ+ nightclub as a space to host fundraisers and used money from her business to support AIDS organizations. This presentation will employ a variety of primary and secondary sources to provide historical context to lesbian activism in the 80s. More specifically, it will bring to light the suppressed history of queer women and examine their activism throughout the AIDS epidemic.

varsha gowda

SC - University of South Carolina - Columbia

Discipline: Natural and Physical Sciences

Authors:
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#6 Maria Pena

Abstract Name: Early life exposure to antibiotics and increased risk of early onset colorectal cancer

Colorectal cancer (CRC) is the second leading cause of cancer related deaths worldwide.1 CRC in patients older than 50 years has been decreasing, however, CRC in patients less than 50 years known as early onset colorectal cancer (EOCRC) has steadily increased since the 1990’s and expected to increase by 90% in colon cancer and 124% in rectal cancer by 2030.2,3 While EOCRC has been linked to typical risks associated with late onset CRC, its causes and mechanisms are still unknown.We hypothesize that increased risk of EOCRC may be associated with exposure to antibiotics (Abx). Antibiotics are indispensable in the treatment of infectious diseases. However, its overuse, particularly in infants and children has increased globally with over 1 million doses prescribed unnecessarily each year.5,6 While Abx are effective against pathogenic bacteria, it also targets the gut microbiota, which are important for proper development of the immune system and metabolic processes. We hypothesize that exposure to Abx early in life alters the gut microbiota causing gut inflammation resulting in increased risk for EOCRC. We further propose that there are developmental windows in life when exposure to Abx increases susceptibility to developing EOCRC. We will test this hypothesis using mouse models of CRC.In this study, we exposed A/J mice to commonly prescribed pediatric Abx at different developmental stages, then injected them with azoxymethane, a carcinogen, to induce tumor

development. Control mice were treated with water or polyethylene glycol. Thus far, our results indicate that multiple exposures to pediatric Abx increased tumor burden in the distal rectum of treated mice. Further studies will determine if a single round of Abx is sufficient to impact tumor burden. RNA sequencing to identify changes in metabolic and/or inflammatory pathways caused by Abx may elucidate the mechanisms underlying increased risk of EOCRC.

Serena Goyal

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Serena Goyal

Abstract Name: Examining How Shifting Gender Roles in Cooking is an Avenue for Achieving Modern Day Gender Equality

Cooking has been historically understood as the domestic task for women: it doesn't require the brute labor or sharp intellect that a strong, intelligent man is supposed to provide. It is a soft, gentle, and motherly duty for a woman to perform while her husband is earning a living for the family. Given the opportunity to choose between assigning a man or a woman to cook for their family, society would always choose the woman. Yet, recent research reveals an increasing number of men entering the sphere of cooking and subsequently loosening the tight association of women with household cooking. These shifting gender roles in cooking tie strongly with the goals from women in the past who were motivated to work towards greater gender equality. A variety of perspectives were explored and cross-analyzed throughout my research. This includes statistical analysis of the increasing number of men entering the kitchen, a historical feminist speech, as well as personal narratives by both female and male authors. It was concluded that men entering the kitchen as the main family cook is necessary for society to uproot deeply ingrained stereotypes which associate women with domestic tasks and men with the workforce. Further research on methods to mobilize young men to participate in cooking should be conducted to sustain the movement of overcoming gender norms. Thus, when given the opportunity to once again choose between assigning a man or a woman to cook for their family, society would see no difference.

Connor Graben

AL - University of Alabama at Birmingham

Discipline: Interdisciplinary Studies

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Abstract Name: An analysis of undergraduate student understanding of the interdisciplinary nature of immunology

Immunology is inherently interdisciplinary. The understanding of immunologic processes and immune system components often requires an understanding of foundational knowledge from several science disciplines. UAB offers a unique, 4-year, comprehensive undergraduate immunology major in which students in the Undergraduate Immunology Program (UIP) begin a sequence of 5 core courses, starting with Introduction to the Immune System in their sophomore year. For some students, the Introduction to the Immune System course precedes their completion of introductory science sequences for biology and chemistry. Thus, students enter the course with varying backgrounds in foundational science knowledge. To address potential knowledge deficits, foundational science topics that are necessary to understand complex immunology concepts are incorporated within each of the courses. The goal of this project is to evaluate student understanding of the application of foundational science topics in the understanding of immunologic processes. Sophomore, junior, and senior students in the UIP were invited to complete a 3-part survey that assessed student ability to identify foundational science topics necessary to understand four different immunologic concepts, student confidence in understanding each foundational science topic, and identified the science course in which a student felt the foundational science concept was fully understood. Preliminary findings suggested that there was consensus among UIP students about the requirement of specific foundational science knowledge being critical for understanding certain immunologic processes, which did not correlate with academic level. Furthermore, reported confidence in student understanding of foundational science topics increased in the junior year cohort compared to the sophomore year cohort, but confidence diminished in the senior year cohort. Analyses to evaluate differences in student confidence among cohorts and correlations with consensus on foundational science topics required to understand specific immunologic processes are ongoing.

Elena Graf

VA - Virginia Commonwealth University

Discipline:

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Abstract Name: Women’s Marital Roles in Classical Period Athens: Male Understanding and Portrayal in Euripides’ Medea and Aeschylus’ Agamemnon

The Classical Period of Athens (500-336 BCE) was an era of sociocultural growth and stability for the ancient Greeks, renowned for its development of tragic theatre. While Classical Athens nurtured the public sociocultural success of male citizens, women adopted a submissive role, confined to their responsibilities as wives and mothers. Women were forbidden from directly taking part in politics, philosophy, and above all, the theatrical scene of Athens. Due to these societal perceptions of traditional gender roles, the literature of the Classical Period was heavily influenced by a male bias. This study investigates the connections between women’s role in Classical Athenian society and the portrayal of female literary characters in tragic theatre by male playwrights. The use of stage costumes, characterization, and narrative of female characters in two Classical tragic plays, Euripides’ Medea and Aeschylus’ Agamemnon, were analyzed to determine if male societal perceptions of women in Greek society influenced the structure of female characters. Through these analyses, it was determined that male bias and traditional gender roles of women in Athenian society established four prominent stereotypes in female dramatic characters: the femme fatale, the conspirator, the victim, and the villain. Tragic theatre was a vital pillar of ancient Greek history, so contemporary understanding of the real roles of women in Classical society are undeniably warped through a male bias. The reality of women’s roles in Classical Athenian society and literature remains a mystery to modern historians.

David Graf

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
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Abstract Name: Single Cell RNA Sequencing Reveals a Lineage-specific Response to Angiotensin II in Smooth Muscle Cells in the Ascending Aorta of Mice

Background:Ascending aortic aneurysm is a life-threatening disease with no pharmacologic treatment options. The aorta is composed of 3 primary layers, intima, media, and adventitia. Medial remodeling such as, cellular hyperplasia and extracellular matrix disruption have been identified as key features of ascending aortic aneurysms. The primary cell type occupying the medial layer is smooth muscle cells (SMCs). SMCs in the ascending aorta are derived from two embryonic origins, cardiac neural crest (CNC) and second heart field (SHF). SHF-derived SMCs play a vital role in the pathophysiology of AngII-mediated thoracic aortic aneurysms. However, functional differences between the two origins have not been determined.Methods and Results:Ascending aortas were harvested from Mef2c-Cre +/0 mT/mG mice at baseline and 3 days of AngII infusion (1,000 ng/kg/min). After single-cell suspension, cells were sorted based on their origins separated by tdTomato and mGFP signals. Mef2c is the promoter for the SHF origin, therefore cells marked with mGFP were labeled as SHF-derived. Cells fluorescing red were deemed to be not SHF (nSHF). Afterwards, we conducted RNA sequencing on individually sorted cells to identify transcriptomic differences between the two cell origins. Two-way ANOVA for the interaction (infusion x origin) identified 3,703 differentially expressed genes (DEGs) in SMCs. Among them, 295 genes exhibited a unique transcriptional response, being the upregulation by AngII only in SHF-derived SMCs. The top 10 upregulated genes in this sub-cluster included Loxl2, a key enzyme for elastic fiber development. Of note, other LOX members, such as Lox and Loxl1, were downregulated in SHF-derived SMCsConclusions:AngII infusion alters the transcriptome of aortic SMCs in a lineage-specific manner. AngII upregulates genes related to extracellular matrix development specifically in SHF-derived SMCs.

James Graham

MT - Montana State University - Bozeman

Discipline: Engineering and Architecture

Authors:
#1 James Graham
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#4 Wataru Nakagawa

Abstract Name: Nanofabrication Techniques for Advanced Wire Grid Polarizers

Polarization, a fundamental property of light, plays a crucial role in various optical and photonic devices and applications. Wire grid polarizers (WGPs), composed of nanoscale parallel metallic wires, are a widely used device to create or measure optical polarization. One way of implementing these devices is by structuring a silicon substrate into the desired wire pattern through etching, followed by the deposition of metal onto that structured surface. To enable enhanced performance and broader applications of WGPs, smaller, more precise features within WGPs are needed. Building upon existing research, the project investigates the creation of nanoscale structures in silicon to serve as templates for wire grid formation. The project seeks to push the boundaries of silicon etching and metal evaporation techniques to enhance the fabrication process of WGPs.

This research involves systematically optimizing reactive ion etching processes for silicon to achieve sub-micron size features. Significant progress has been made in silicon etching, with developed processes achieving target depths of 100-200nm and demonstrating a precision of ±10nm. Simultaneously, optimized techniques are developed for precise metal layer deposition, emphasizing control over shape, thickness, and location. In addition, through literature exploration, the project aims to identify materials suitable for broader wavelength applications, crucial for enhancing the performance of wire grid polarizers. The advanced fabrication techniques developed in this project aim to significantly expand the application possibilities of WGPs, ushering in a new era of optical device fabrication with improved performance. These findings contribute substantially to the field of optics and photonics, presenting novel tools for manipulating light polarization.

Natalia Graham

GA - Spelman College

Discipline: Engineering and Architecture

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#12 Mia Williams
#13 Kyleigh Brown
#14 Jael Mackell
#15 Jada Mason
#16 Sharon Onyancha

Abstract Name: Spelman College SelfGuided Tour System: A Systems Engineering Approach

There are several locations that provide “self-guided” tours. For instance, when visiting some museums, visitors can purchase and use a system consisting of a small audio device and headset. When the device is in close proximity of a given artifact or exhibit, the device will present facts about the given artifact/exhibit, thus allowing the visitor to proceed through the museum at their own pace, and reducing the need for an in-person or active “tour guide”.Our goal is to create a system like this at Spelman College with the use of guide posts and Raspberry Pi’s. The system development team shall research various Raspberry Pi hardware and software configurations to determine and propose an optimal configuration. We will also be implementing this concept on real world applications such as turn-by-turn GPS directions. Data from the Raspberry Pi’s GPS coordinates will be obtained, compared to known databases, and then facts will be returned.

Ava Graham

MT - Montana State University - Bozeman

Discipline: Natural and Physical Sciences

Authors:
#1 Ava Graham
#2 Nate Burman
#3 Royce Wilkinson
#4 Blake Wiedenheft

Abstract Name: Attack, Counter-Attack, and Escalation Between Viruses and Bacteria

The ongoing conflict between bacteria and phages is often likened to a molecular arms race, where bacteria evolve immune systems that block infection and phages evolve immune suppressors that restore the infection. Many phage-encoded immune suppressors are small proteins, and recent work has shown that PARIS is a two-component system (AriA, AriB) that induces cell death upon detection of phage-encoded suppressor proteins. Here we purify the ≈425kDa supramolecular complex and use cryo-electron microscopy to determine structures of a PARIS complex. The core of the complex is composed of 3 AriA homodimers which assemble into a C3 symmetric scaffold while three AriB nuclease subunits are positioned at the interface of each AriA homodimer. Phage-encoded anti-restriction proteins Ocr and LF82 have been shown to activate the PARIS complex, resulting in an abortive infection that prevents phage replication and spread. To determine how the trigger molecules interact with the PARIS complex, strep-tagged triggers were co-expressed with the PARIS complex, and pulldown products were analyzed using size exclusion chromatography and SDS-PAGE. Collectively, this work reveals mechanistic details of an additional layer of bacterial immunity that detects diverse phage-encoded suppressor proteins to induce cell death in the presence of phages that would otherwise escape RM or CRISPR defenses.

Natajha Graham

GA - Spelman College

Discipline: Health and Human Services

Authors:
#1 Natajha Graham
#2 Ernest Alema-Mensah

Abstract Name: Exploring the Relationship between Socioeconomic Resources, Oxytocin Levels, and Maternal Mental Health Outcomes in Black Women

Black women face higher maternal mortality and morbidity rates and are more likely to experience discrimination in healthcare settings. Black women are more likely to be exposed to socioeconomic factors, such as education, health services, transportation, environmental controls, availability of food, quality of housing, and occupational health regulations, that cause discrimination and increase stress. Chronic stress resulting from discrimination has been associated with negative health outcomes, including lower oxytocin levels, higher rates of depression and anxiety, and other relevant factors. This research has the potential to inform interventions to mitigate the impact of discrimination on maternal health and improve outcomes for black women. The methodology used in this research is a secondary analysis of data from peer-reviewed literary articles conducting research analyzing depressive symptoms of women after birth in white women and black women. Data on women diagnosed with postpartum depression was also collected from the Psychiatric services in Washington, DC. Oxytocin categories (low, medium, or high) and depressive symptoms (CESD scores) came from the National Association of Posttraumatic Stress Journal. Results indicated that women who identified as African American from the United States had a higher frequency of depression symptoms about socioeconomic factors based on studies from the World Health Organization. Studies have demonstrated that women who exhibit lower oxytocin levels, and interventions, such as skin-to-skin contact and breastfeeding, aimed at increasing oxytocin levels may reduce depression and anxiety risk. Results show that sociodemographic factors like age, employment, marital status, and income influence these

disparities highlighting systemic inequities and limited resources. Lower oxytocin levels, affected by discrimination, economic resources, breastfeeding, and support systems, contribute to higher rates of postpartum depression in black women. Addressing these disparities requires tailored care, interventions, and promoting optimal oxytocin release.

Kendra Granchi

PA - Westminster College

Discipline: Social Sciences

Authors:
#1 Kendra Granchi
#2 Loreen Huffman

Abstract Name: Enhancing Workplace Productivity and Motivation: The Role of Positive Organizational Behavior, Relationships, and Healthy Lifestyles

This research study investigates the multifaceted relationships between positive organizational behavior (POB), workplace relationships, healthy lifestyles, and their combined impact on employee productivity and motivation within the context of industrial/organizational psychology. Through surveys and analysis, this study aims to shed light on the factors that can contribute to creating a more productive and motivated workforce. In a sample of faculty staff from several colleges in Pennsylvania and nearby states, data collection examined the impact of POB, workplace relationship quality, and health-related behaviors on measures of productivity and motivation at work. Positive correlations were expected between POB, workplace relationship quality, health-related behaviors and the workplace outcomes of productivity and motivation. This study contributes to the existing literature in industrial/organizational psychology by highlighting the importance of a holistic approach to enhancing workplace performance. By fostering a positive organizational culture, nurturing interpersonal relationships, and promoting health-conscious behaviors, organizations can effectively boost employee motivation and productivity. Understanding these dynamics can offer practical insights for employers and HR professionals seeking to optimize workplace environments. Ultimately, this research underscores the significance of considering not only job-related factors but also employee well-being and positive workplace culture in the pursuit of enhanced productivity and motivation.

Alexander Grande

FL - Florida Atlantic University

Discipline: Business and Entrepreneurship

Authors:
#1 Alexander Grande

Abstract Name: Analyzing shopping trends across ages

As consumer trends change, more research is needed to determine what shoppers want. This research delved into the shopping preferences of consumers, comparing the allure of online shopping with the traditional in-store experience. I wrote and implemented my survey by collecting data on Amazon Mechanical Turk and analyzing my 199 responses on IBM SPSS. A key discovery was that most shoppers prioritize dodging shipping costs when they shop online, which could be a pivotal selling point for companies aiming to attract more customers and boost sales. Furthermore, I noted interesting variations in behavior and preferences

among different age groups. Younger shoppers appeared to rely more on product reviews to guide their purchasing decisions, while middle-aged consumers seemed more willing to pay for shipping when shopping online. In contrast, older shoppers favored avoiding shipping costs as well as online shopping whenever possible. These findings offer valuable insights to businesses looking to fine-tune their marketing, pricing, and customer engagement strategies based on the age groups they target. Moreover, the study also uncovered age-related reasons why some people still prefer shopping in physical stores, which can help businesses enhance the in-store experience and entice more visitors, ultimately leading to increased sales. This research provides practical guidance for companies to optimize their sale growths both online and in-person as well as displaying where majority of consumers prefer to shop.

Isabell Granillo

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Isabell Granillo

Abstract Name: Housing for the Visually Impaired - The Emerald City Estate

The purpose of this project is to design a detached single-family house for someone with a visual impairment. This home is owned by the Lockwood family. One of the family members has type 1 diabetes and proliferative retinopathy. This visual impairment results in fluctuating levels of vision, blurred vision, dark floaters, and progressive vision loss.According to research, almost 20 million Americans have a visual impairment, and 26.43% of people with diabetes develop retinopathy. It is important to consider materials, colors, lighting, furniture, and wayfinding when creating a design for someone with a visual impairment. People with retinopathy may not have a total loss of vision, so it is still important to consider the visual environment. Some important things to consider include making sure to use materials that do not produce glare, using textures that make identifying objects easy, using contrasting colors to highlight separate surfaces, and creating a layout in a way that avoids confusion or dangerous scenarios.The research methodology includes case studies, a review of design guidelines, a meeting with a specialist who works directly with individuals with visual impairments on a daily basis, and a literature review. These research methods were used to research inclusive design features for people with visual impairments. The design results in a home with easy wayfinding that is not only easy for the end user but also safe. This is achieved by utilizing contrasting colors on vertical and horizontal planes to make surfaces and objects easier to recognize. Lighting plans are strategically placed to make lighting adjustable to the user and to avoid glare in the spaces. Lastly the furniture is laid out in a way that creates straightforward pathways that are easy to navigate.

Isabell Granillo

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Isabell Granillo

Abstract Name: Furniture Design for Neurodivergent People - "The Peace Pod"

The purpose of this project focuses on developing furniture for neurodivergent individuals to utilize in an open office workplace environment. The research illustrates the need to create furniture that provides comfort and stability while reducing factors that can cause overstimulation.According to research, people who are neurodivergent are more susceptible to mental illness, which poor working environments can induce. These individuals have unique sensory experiences that fluctuate based on their surroundings. Different colors, textures, sounds, and other sensory stimuli can negatively impact many neurodivergent people. When workplace design accounts for sensory sensitivity, neurodivergent individuals can use their unique thought processes as a superpower in the workplace. However, only 1 in 10 businesses consider neurodivergent people in their management strategies. With around 20% of the US population being neurodivergent, that's roughly 1 in 5 people in the workplace who aren't being considered. The research methodology for this project primarily focuses on looking at different case studies. These studies contain information on office pod designs and existing designs that target the neurodivergent population. Research was also conducted by interviewing neurodivergent individuals about experiences within their own workplace and personal experience as someone who is also neurodivergent. The research for this project results in a design for "The Peace Pod," an individual workstation that uses universal design to benefit neurodivergent people. The furniture piece is designed to be inclusive to as many people on as many spectrums as possible, inevitably benefiting everyone. This is accomplished through different materials, colors, and functions incorporated in the furniture piece that are known to enhance the ability of neurodivergent people to excel in the workplace. By understanding their unique sensory experiences and incorporating design elements that cater to their needs, The Peace Pod contributes to a workplace that promotes productivity, well-being, and inclusivity.

Shana Grant

GA - Spelman College

Discipline: Health and Human Services

Authors:
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#2 Tamarra James-Todd
#3 Azariah Boyd
#4 Marissa Chan

Abstract Name: Good Hair or No Hair: An Examination of the Impossible Hair Choices Black Women Adversely Face.

CCCA (Central Centrifugal Cicatricial Alopecia) almost exclusively affects Black women. Environmental factors such as exposure to endocrine-disrupting chemicals (EDCs) may be an important contributor to this health disparity. The objective of this project was to conduct a scoping review to understand the body of literature available on the association between EDC-containing hair products and CCCA. We also sought to understand EDC content in hair products marketed to Black women. We searched "black women," "CCCA," "hair products," and "history of Black women's hair" in PubMed and HOLLIS. We also used the

Environmental Working Group (EWG) to assess ingredients and risk scores for hair products marketed to black women. We found 16 articles that met the criteria of covering the content of CCCA, EDCs, and Black women in the United States. Hair relaxers were the most common EDC-containing product and also had the highest mean EWG risk score. Given the disparity in both the exposure to EDC's and adverse health outcomes driven by Eurocentric beauty standards, more research is needed to evaluate the association between EDC-containing hair products and CCCA.

Nia Grant

VA - Norfolk State University

Discipline: Education

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#2 Maqoi Hubbard
Maqoi Hubbard

Abstract Name: Tales of A Title 1 School: George Washington Carver Intermediate

This film is about the changes and differences in a Title 1 elementary school after COVID-19. After the pandemic, schools have been given an unimaginable task to bridge the learning gap caused by the COVID-19 pandemic. During this time, educators were unable to provide the same caliber of teaching and learning. With the world being forced into isolation, schools had to reevaluate how they could provide quality teaching for student learning. School districts had to provide students with individual hotspots and computers to keep up with the technological demand that the pandemic caused. Educators now had to teach virtually rather than face-to-face. Interpersonal relationships were lost along with the ability to differentiate learning to meet every student's academic need. This along with other extenuating circumstances forced teachers to teach to the mainstream (students on grade level). Students with learning differences and impairments were left out/behind along with students who fell below and above grade level. Other factors that contributed to the educational gap were the varying levels of parental involvement and student engagement. Social-emotional growth, academic progression, and increased misbehavior, higher rates of violence, social anxiety, and lack of focus were challenges uncovered. These challenges persist as we are back in schools, face-to-face, along with a pressing issue of chronic absenteeism. Isolation coupled with extreme loss of instructional time has caused students' transition back to in-person school to be rocky. Educators are reteaching what should have been learned during the pandemic while also tending to students' social-emotional and mental growth challenges. This film explores how a Title 1 school located in Chesapeake, Virginia, is handling these daily challenges while working to ensure student success.

Tessa Greathouse

AR - John Brown University

Discipline: Social Sciences

Authors:
#1 Tessa Greathouse

Abstract Name: Mental Illness within the Southern Baptist Convention: Understandings, Treatment Methods, and Stigma in Local Church Communities

For generations, Protestants have struggled to accurately understand mental illness. Some have assumed that

mental illness is a form of sin, while others have blamed demon possession for the occurrence of mental illnesses. Along with this, many have treated mental illness as a spiritual illness that can be cured through practices like prayer and Scripture reading. These poor understandings of mental illness have often led to unnecessary stigma towards mental illness, rejection of counseling and medication to treat mental illness, and poor mental health care within church communities. However, along with these false understandings, there are many Protestants who have thoroughly integrated psychological science and faith in a way that enables them to understand mental illness as biological, psychological, social, and spiritual in nature. In this project, attitudes towards mental illness are examined within the Southern Baptist Convention in the last 25 years. The Southern Baptist Convention's spoken and written thought about mental illness is analyzed through a review of past research and primary sources from Baptist leaders and convention resolutions. After analyzing the patterns of the SBC over the last 25 years, I determine whether their assumptions and treatment methods fall within any of the categories formerly listed (sin, demon possession, spiritual illness), or within a more integrative approach. After this, I discuss the experiences of attenders of Southern Baptist churches surrounding mental health and how a right understanding of mental illness is important in adequately meeting the needs of congregation members and making the church a more welcoming place for those with mental illness.

Angela Green

MI - Hope College

Discipline: Humanities

Authors:
#1 Angela Green

Abstract Name: Les Quatres Communes: How Four Senegalese Cities Grew to Challenge Prevailing Narratives on the Colonizer and the Colonized

When the French began to get involved in transatlantic trade in the 16th and 17th centuries, they initially focused on establishing small trading posts off the coast of West Africa, in modern-day Senegal. Upon the arrival of mostly single French men involved with monarch-enabled Charter Companies, intermarriage became standard practice. This paper focuses on the development of the four settlements of Saint-Louis, Gorée, Rufisque, and Dakar from their origins as early trading posts through the establishment of the Four Communes in 1848, with a special focus on intermarriage and the process of creating a truly créole society. As French men and signares—powerful African women—intermingled and married in the 17th and 18th centuries, they soon gave birth to a sizable métis class. The métis class, characterized by European and African blood relations, possessed the cultural finesse needed to inhabit both European and African cultural spaces, rendering this new group of Eurafricans incredibly influential in each of the cities that eventually made up the Four Communes. By breaking down hierarchical barriers at the family level, early interracial families elevated the status of Africans, paving the way for a colonial policy shaped by the complexity of racial and ethnic identity in the cities that would eventually be known as the Four Communes.

Makari Green

CA - Loyola Marymount University

Discipline: Engineering and Architecture

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#2 Barbara Marino

Abstract Name: Interdisciplinary Approaches to Studying Climate Change: Measuring Gaping of Intertidal Mussels

The study of the effects of climate change on indicator species like intertidal mussels can indicate the health of ecosystems, but studying mussels in their natural habitat can be costly and labor-intensive. This project set out to design an automated system to track mussel gaping behavior in a laboratory environment to enable a more complex understanding of their emotional states and responses to heat stress. A system was designed to measure the gaping of a mussel using a linear Hall effect sensor and a small permanent magnet. We experimented with several types of Hall effect sensors to see which would provide the most accurate results for the expected gaping distances. The system was calibrated using an electronic caliper; data collection was accomplished using an Arduino microcontroller. This data comparing the sensors will be presented. The results of this work will eventually be incorporated into a more complete mussel monitoring system used to track the gaping of mussels in response to the application of a dynamic heat ramp that mirrors the intertidal zone's temperature patterns.

Aidan Green

OK - Oklahoma State University

Discipline: Business and Entrepreneurship

Authors:
#1 Aidan Green

Abstract Name: Unwrapping Sweet Success: A Journey through Chocolate Packaging Design

This paper discusses the deep history of graphic design and how it is seen in chocolate packaging. By examining how functionality, design, and information presented overlap when creating chocolate packaging, it is clear how these can influence consumers' perceptions of a product. By evaluating various existing articles, this paper explores diverse historical periods, shifts in design trends, and how they affect customer preferences. The findings from the studies cited offer valuable insight into the relationship between graphic design and consumer behavior when it comes to chocolate packaging.

Marleigh Green

AL - Auburn University

Discipline: Health and Human Services

Authors:
#1 Margaret Green
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#3 Gretchen Oliver

Abstract Name: Arm Slot Predicts Fastball Induced Vertical Break in Collegiate Pitchers

BACKGROUND: In baseball pitching, fastball performance has been linked to velocity. However, pitchers will likely strive for additional metrics to induce swings and misses. One metric used is induced vertical break, which is the vertical movement of the ball based on spin and the magnus effect when excluding the effect of gravity. Coaches and pitchers commonly theorize that arm slot influences induced vertical break;

however, little data on metrics beyond pitch velocity have been studied. The study aims to identify if the induced vertical break of fastballs can be predicted by arm slot. METHODS: In-game kinematic and ball metric data from sixty-five collegiate baseball pitchers (1.88 ± 0.06 m, 92.9 ± 9.52 kg) were retrospectively analyzed. All fastballs thrown had metrics averaged, giving each pitcher a single representative pitch for analysis. Arm slot was defined as the angle between the vertical axis of the world and the vector of the throwing shoulder and hand (0°=over-the-top, 90° sidearm). Linear regression was used to determine if an arm slot could significantly predict induced vertical break at an alpha level of .05. RESULTS: Results indicate that induced vertical break could be significantly predicted by arm slot ($F(1,63)=102$, p < .001). Arm slot accounted for 61.8% of the variance in the induced vertical break ($r = .786$, $R2 = .618$). For every degree increase in arm slot (less 'over-the-top'), there was a decrease of 0.3 inches in the induced vertical break on fastball pitches (unstandardized $\beta = -0.303$, $t = -10.1$, $p = .001$). DISCUSSION: Pitchers with a more over-the-top arm slot tend to trend towards a greater induced vertical break compared to those with a more side-arm pitching style. This provides supporting evidence that arm slot effects induced vertical break.

Sedera Green

GA - Spelman College

Discipline: Social Sciences

Authors:
#1 Sedera Green
#2 Shannon Sung
#3 Derrick Hylton

Abstract Name: The Impact of Personality on Algorithmic Thinking in Undergraduate Students

The purpose of this study was to investigate the methods and possible correlations between algorithmic thinking and a noncognitive factor, personality, in undergraduate students in an attempt to further the understanding and the teaching of algorithmic thinking. It was hypothesized that the difference in personality traits would impact the students' algorithmic thinking levels, specifically with openness resulting in the highest levels of algorithmic thinking. A correlational design was used to investigate the relationship between the variables. The levels of each Big five personality trait were gauged through an IPIP-NEO-PI personality test. Algorithmic thinking levels were assessed through a series of 11 Cross Array Tasks (CATs), while a singular CAT was used as training. A Pearson correlation test was used to determine if there was a statistical difference between each of the personality traits and the scores from the 11 series CAT assessment in this correlational design. The tests displayed a significant negative relationship between the agreeableness personality trait and algorithmic thinking levels, $r = -0.664$ $p = .036$. None of the other big five personality traits were found to be significantly related to algorithmic thinking. We conclude that high levels of agreeableness may be found to correlate to lower levels of algorithmic thinking.

Spooner Greenbird

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

Authors:
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#5 Gareth Harris

Emily Ridino

Abstract Name: Characterizing the neural mechanisms and natural variation in a multisensory behavior.

Multisensory behaviors are critical in vertebrates and invertebrates across the phyla. The simultaneously processing of multiple sensory modalities allows organisms from humans to worms to maximize their perception of the environment and execute important behaviors, during encountering attractive or adverse conditions. Despite this appreciation, our understanding of the neural mechanisms underlying this behavior and how this various across individuals or even species is not fully understood. Our present study uses a combination of genetics and behavioral analysis to understand the neural circuits, molecular mechanisms and how sensory-dependent behavioral strategies vary across different species of the Caenorhabditis nematode. This question will 1) specifically characterize the genes and neurotransmitter pathways that mediate this behavior, and 2) identify differences across Caenorhabditis nematode of a variety of species respond in a decision-making/sensory behavior. In Dr. Harris's laboratory, we examine worms in an assay that exposes worms to attractive(food) and repulsive (2-nonanone) simultaneously, and exam food leaving during worm exposure to a repulsive cue that generates an escape response. Distinct natural isolates will be examined across a behavioral paradigm where worms are challenged with both food and danger cues and there escape behavior will be examined. We have identified multiple genes and neurons involved and identified differences across Caenorhabditis nematodes in food leaving during exposure to the conflicting sensory cues. For example, we have identified C. remanei, C. briggsae, C. yunquensis and C. portoensis behave differently to our normal control C. elegans worms in food related behaviors. Suggesting, different strains of nematode perform these multi-sensory behaviors differently. We will continue to map out the molecular pathways, and overall identify differences in behavioral preference across various species of nematodes.

Charisma Greenfield

CA - Pepperdine University

Discipline: Social Sciences

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Abstract Name: A Systematic Review of How Workplace Outcomes are Impacted by the Biohacking Intervention of Mindfulness-Based Stress Reduction

INTRODUCTION: Organizational scholars explore workplace outcomes (e.g., performance, job satisfaction) and how to improve them for employees/managers. Likewise, companies have begun advocating for the betterment of workplace outcomes with biohacks (i.e., using science-based self-experimentation to enhance one's body, mind, and life via techniques such as exercise, supplements, or mindfulness), yet research on the impact of these hacks in the context of the workplace is scant. One biohack, Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 2003), has been shown to improve health in clinical/healthy populations (Grossman et al. 2004), but its effect in an organizational context is relatively unexplored. PURPOSE: The purpose of this review is to determine the extent of research conducted on MBSR's impact at work. METHODS: We conducted a systematic literature review in the SCOPUS database in September 2023 searching for articles that include the MBSR intervention in the work context. Of the 332 articles identified in the search, 309 studies were excluded because they do not assess a workplace outcome. Thus, we reviewed 23 remaining articles (Article samples are: healthcare - 50%; education - 18%; construction/architecture -

9%; management - 9%; mix - 9%; mining 5%.). RESULTS: We find that MBSR has a positive impact at the individual level on workplace outcomes (e.g., performance, job satisfaction, burnout); one study demonstrates a positive impact of MBSR on an organizational-level workplace outcome. The findings are consistent across various occupations (e.g., managers, nurses, and educators). CONTRIBUTION: This review advances knowledge in organizational science as the first to synthesize the current literature on MBSR's effects on outcomes in the workplace. Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. Journal of Psychosomatic Research, 57(1), 35-43. Kabat-Zinn, J. (2003). Mindfulness-based stress reduction (MBSR). Constructivism in the Human Sciences, 8(2), 73.

Erica Gregg

CO - University of Colorado Denver

Discipline: Natural and Physical Sciences

Authors:
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#2 Aubrey Rutz
#3 Robbie Breininger
#4 Cadianne Chambers
#5 Toufiq Reza
#6 Nezamoddin Kachouie

Abstract Name: Modeling the Adsorption of Sargassum-Derived Hydrochar

Harmful algal blooms (HAB's) are the abundance of toxins released from the overgrowth of algae in bodies of water. Hydrochar (HC), a carbonaceous substance made through the process of hydrothermal carbonization (HTC), has been seen in its effectiveness to mitigate the effects of HAB's by adsorbing the released toxins, stopping contact with the environment. This study focused on HC derived from Sargassum, a species of seaweed, and its effectiveness in adsorbing Methylene blue dye (MB). The results were analyzed in order to predict the potential capabilities of adsorbance of HAB toxins and the impact of parameters in the creation of HC on its adsorption capabilities. Nine versions of HC were created through HTC at three varying levels of temperature, duration of HTC, and sargassum-to-water ratio. The highest performing HC version was made from the maximal of each performance parameter– a HTC temperature of 260°C, for 60 minutes, and a sargassum-to-water ratio of 1:20– with a percentage removal of 99.02% against 100 ppm MB and 95.53% against 300 ppm MB. All versions of HC against 100 ppm and seven of nine versions of HC against 300 ppm exceeded a 90% removal threshold, designating sargassum-derived HC a sufficient adsorbant of MB and indicating adsorbance potentiality against HAB toxins for future study and eventual water treatment applications.Multiple beta regression models were run on different subsets of the data collected– 100 ppm, 300 ppm, and combined concentration– to analyze which performance parameters are significant in the HTC synthesis of Sargassum-derived HC. HTC temperature was shown to be both consistent in significance and a positive correlation with adsorbance performance. This same consistency was not shown for duration of HTC, and sargassum-to-water ratio. This conclusion aids in further optimization of Sargassum-derived HC and its adsorbance capabilities against HAB toxins.

Taylor Gregory

NC - Western Carolina University

Discipline: Natural and Physical Sciences

Authors:

#1 Taylor Gregory
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#3 Clarissa Mitchell
#4 Scott Huffman

Abstract Name: The Diffusion of Limonene through Paraffin Wax Using Infrared Spectroscopy

Waxy substances are part of many chemical systems of natural, consumer, and industrial importance such as agricultural plants, insects, cleaning products, cosmetics, and pharmaceuticals. Understanding how solutes diffuse through these waxy systems is vitally important. For example, this knowledge can lead to improved performance in insecticide penetration through the waxy cuticle on the surface of insects. In this work, we describe the development of a method to determine the diffusion coefficients of terpenes into waxy substances. This method utilizes an FT-IR spectroscopic imaging system to monitor the flux of terpenes through a slab of wax. Infrared spectroscopy imaging was chosen as a measurement system because it provides not only spatial/ temporal resolution of the flux of the terpene through the wax layer but also is sensitive to the intermolecular interactions between the solute and the waxy molecules, and thus can provide insights about the roles functional group interactions can play in diffusion. A limonene/paraffin wax system will be described as an exemplar. Spectra and results will be shown.

Christopher Gresh

MD - University of Maryland College Park

Discipline: Social Sciences

Authors:
#1 Christopher Gresh

Abstract Name: Foreign direct investment and economic growth; an empirical analysis of the role of local conditions.

This paper explores the relationship between foreign direct investment (FDI), economic growth, and the role of local conditions in recipient countries. I examine whether countries with well-developed financial systems, strong institutions, and low corruption experience stronger positive spillovers from FDI. I conduct a cross-country empirical analysis using a local projection and instrumental variables approach to determine the effect of exogenous changes in FDI flows on growth. In accordance with previous literature, this analysis reveals that the effect of FDI alone has an ambiguous effect on growth under various specifications. However, when considering the interaction of FDI with financial development, institutional quality, and low corruption respectively, countries receiving FDI experience strong benefits. By introducing new instruments for FDI flows and using a local projection approach, this paper addresses the endogeneity issue and the long-term, cumulative effect of FDI on growth in a way yet to be explored in the existing literature.

Jordan Grider

LA - University of Louisiana at Lafayette

Discipline: Natural and Physical Sciences

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#3 Soundharya Dhanabal
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Shelby Meche
Soundharya Dhanabal

Abstract Name: Comparison of the Protein Structures of Mammalian Caspases

This research focuses on comparing the protein structures of mammalian caspases, which are proteins that are involved in the process of apoptosis or programmed cell death. There are three main types of mammalian caspases: initiator caspase, executioner caspase, and inflammatory caspase. Initiator caspases initiate the apoptosis signal, while executioner caspases carry out the mass proteolysis that leads to apoptosis. Inflammatory caspases are involved in inflammatory cytokine signaling and pyroptosis, which is cell death caused by a microbial infection.We gathered a data set of proteins from the RCSB Protein Data Bank (PDB) and evaluated their structural similarity using the Triangular Spatial Relationship (TSR)-based method. This method generated a cluster map that was used to compare the proteins based on structural similarity. Other figures that compared the structural similarity of each type of caspase and highlighted the presence of common and unique substructures in each type were made from this data. A phylogenetic tree based on amino acid sequence rather than structure was also generated using the Molecular Evolutionary Genetic Analysis (MEGA) software.From this data, we gathered that the structural analysis using the TSR-based method indicates that executioner and inflammatory caspases are more similar, while the sequence analysis indicates that executioner and initiator caspases are more similar. The common and unique substructures that are identified in the data set provide the structural basis for designing drugs to inhibit all types of caspases and specific types of caspases, respectively.

Karissa Grier

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

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Abstract Name: Microwave-Assisted, Gold-Catalyzed Intramolecular Etherification of Diols to Afford Aryl-Substituted Tetrahydrofurans and Tetrahydropyrans

The first reports of gold catalysis date back to the beginning of the previous century, but the use of homogenous gold catalysis is relatively new due to the antiquated belief that gold is a prohibitively expensive, chemically inert metal. Recent reports show gold catalysts have demonstrated high catalytic activity in numerous organic transformations, and the structural motifs attainable by these methods are a common building block for the synthesis of natural and synthetic products ubiquitous in biologically active compounds. The methodology presented herein builds off prior studies using gold(I) salts to catalyze SN1-type etherification reactions. A novel one-pot methodology utilizing gold(I) salts has been developed to yield aryl-substituted tetrahydrofurans and tetrahydropyrans, a common structural motif found in antibiotic and antidepressant treatment drugs, from readily available diols. To our knowledge, an intramolecular gold-catalyzed etherification reaction is currently unprecedented in the literature. The intramolecular gold-catalyzed etherification reaction has been optimized using 1,4-diols and 1,5-diols as the starting substrate, 5 mol % of the gold(I) and silver(I) salts, polar solvent, and slightly elevated temperatures generated from microwave irradiation to afford 95% yield of the target cyclic ether. Using these conditions, the substrate scope for this reaction will be presented for fifteen electron-rich and electron-deficient substrates, ranging from 70%–93% yield. All starting materials and reaction targets were fully characterized by 1H-NMR and 13C-NMR spectroscopy. The long-term objective is the synthesis of bioactive natural products and other

various building blocks useful in the synthesis of bioactive molecules, as well as enantioselective transformations.

Ethan Griesman

IA - Iowa State University

Discipline: Engineering and Architecture

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#3 Vishal Muralidharan

Abstract Name: Enhancing Interdisciplinary Urban Simulations through Scripting: A Case of Data Integration

This study is part of a larger research project to explore the impact of integrating new data into building energy models at urban scale. The specific focus here is on the development and application of a Python script designed to automate the integration of tree property data into building energy models to enhance the accuracy and efficiency of urban planning and building design.Comprehensive energy simulations in urban modeling involve numerous factors and interdisciplinary collaborations. Managing data across different simulation platforms creates challenges, often requiring understanding the background scripts used to run simulations. The transfer of intermediate data between platforms necessitates scripting knowledge, posing barriers for interdisciplinary teams in urban simulation projects. This study aims to connect scripting expertise with urban simulation concepts, providing a solution to the difficulties of integrating data across diverse simulation platforms. The project methodology entails the creation of a script in Python designed to augment Input Data Files (IDF) generated through an urban modeling interface (UMI) for energy simulation.Along with main functionalities, the script also makes IDF files compatible for simulation in Linux OS environments. Detailed exception and error handling is implemented throughout each step of the program's execution to ensure the augmented data is in agreement with the semantic and scientific requirements of the energy modeling software. In conclusion, this research addresses a critical aspect of urban simulations, facilitating smoother data interchange among various simulation engines. The developed script serves as a practical solution for interdisciplinary teams aiming to streamline their simulation processes.

June Griffin

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
#1 Guaciara dos Santos

Abstract Name: Demystifying the Tropics: FTIR Characterization of Pantropical Woods and Their Components for Use in Radiocarbon Analysis

Tree-ring radiocarbon (14C) measurements are used to reconstruct atmospheric 14C levels. Reliable 14C measurements require α-cellulose extraction, which chemically reduces mobile carbon compounds found in raw wood (e.g. waxes, fats, resins, and other soluble organic compounds). Since pantropical trees commonly contain excessive amounts of these compounds, researchers argue that more elaborate chemical treatments

involving organic solvents are required to refine 14C results. However, this has yet to be demonstrated. We address this knowledge gap by using Fourier transform infrared (FTIR) analysis to compare raw wood and α-cellulose extracts obtained by a user-friendly and efficient chemical treatment without organic solvents. The simplified treatment involves 1N acid-base-acid warm baths, acidified bleach at 70°C, and strong base (17% NaOH) treatments at room temperature. We expect that while different raw tree species will contain different compounds, the simplified treatment will be effective in reducing all different species to pure α-cellulose extracts. To rigorously test if this protocol works for a wide range of pantropical tree species, 8 tropical species were selected as well as 3 reference wood materials. Furthermore, FTIR analysis was run on extracts between treatment steps to conclude each step's accomplishments in α-cellulose extraction. We chose woods from different longitudinal and latitudinal settings with various phenological traits. We found that while the FTIR spectra of different species of raw woods showed mild variations, probably because of compound composition, they were largely similar. FTIR results from α-cellulose extracts were basically indistinguishable, meaning that our simplified treatment can be safely used in atmospheric 14C reconstructions across pantropical regions.

Memphis Griggs

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Memphis Griggs

Abstract Name: An Allegorical Interpretation of the Tragedy of Icarus Representing Aristotle's Golden Mean

The tragedy of Icarus and Daedalus holds much to be revealed about how to live one's life and the importance of the virtue of temperance. Throughout this paper I seek to develop my own allegorical interpretation of the tragedy of Icarus and Daedalus as it is found in Ovid's Metamorphoses. I will base this interpretation upon Aristotle's golden mean which he discussed in book two of The Nicomachean Ethics. To properly convey these ideas, I will first describe Aristotle's doctrine of the mean, briefly summarize the tragedy itself, and define the important pieces of the story that I will use to create the allegorical interpretation. I will then discuss the different ways that those pieces may interact with each other which will reveal what can be learned from my interpretation of the classic tragedy and how this interpretation showcases the golden mean. Finally, I will close with what inspired me to interpret the story in this way and how reading the story in this way has application for one's life. It is a common pitfall of humanity to set unachievable goals for themselves inevitably leading to a failure to improve resulting in the downfall of one to their old habits. By understanding the story of Icarus through Aristotle's golden mean, one may improve the way in which they set out to create an improvement within their life. This interpretation encourages a method of careful consideration about the full impact of one's decisions on their own life and the lives of those around them.

Memphis Griggs

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Memphis Griggs

Abstract Name: The Zoo: A Living Museum or a Bulwark of Conservation

The purpose of this essay is to consider if zoos as a concept hold any value and if their operation can be considered ethical in any capacity. To accomplish this, I will reference John Berger and his conception of zoos and their purpose. Zoos are very limiting when compared to the real world and how animals would act, behave, and feel when seen in their proper context. Berger notes that this shift is due to the separation of other animals from humans. Instead of living alongside us as they did merely two or three hundred years ago, animals now occupy a different role for humans. We take them in as pets, put them in boxes to look at, and make them symbols of human feelings and emotions. Although, zoos are helpful for conservation purposes and keeping certain animal species alive there are millions of animals being raised in captivity. They are posted up in imitations of their environments for humans to view like living museums. Furthermore, upon reviewing the websites of the Smithsonian National Zoo and the North Carolina State Zoo, I am bombarded with them asking for donations, advertising ticket prices, and links to feeding time schedules for these animals. The entire concept of a zoo revolves around treating animals like objects to be viewed. That notion is incredibly problematic in the eyes of many people, which is one reason why zoos are held to incredibly high standards. For a portion of this paper, I will also discuss some of the ethical standards that are held in AZA accredited institutions and the importance of conservation efforts.

Hannah Grimes

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Hannah Grimes

Abstract Name: Motivations for Retaliatory Aggression on Social Media among Borderline Personality Endorsers

Social media has become a popular way of connecting with people, but it has also led to an increase in cyber aggression. Borderline Personality Disorder (BPD) is a condition that is characterized by retaliatory aggression, difficulty in interpersonal relationships, and high impulsivity. Those who endorse BPD symptoms experience unstable interpersonal relationships and struggle to maintain connections with others which can lead to problematic behaviors on social media like retaliatory aggression. Understanding the motivations behind those behaviors can help inform the experiences of the diagnosed population, mitigate problematic behaviors, and facilitate healthy social relationships. This study aims to explore the motivations that BPD symptom endorsers most identify with, such as self-protection, affiliation, and status, and the prevalence of retaliatory aggression on social media. The participants will complete a self-report survey that measures their motivations, online revenge behaviors, and BPD symptom endorsement. A correlation analysis between variables will be conducted, alongside a moderation analysis that will identify how the motivations influence the relationship between BPD symptom endorsement and retaliatory aggression. An exploratory analysis will help determine the most prevalent motivation and inform coping strategies for those who exhibit symptoms of BPD. The findings of this study will help to strengthen existing literature about BPD features of impulsivity and reactivity. It will inform treatment and therapeutic methods by identifying the frequency of retaliation and motivations for those who exhibit symptoms of BPD. It will also have clinical implications for how social media use is advised and addressed.

Aleksa Groen in 't Woud

CAN - Queen's University

Discipline: Natural and Physical Sciences

Authors:
#1 Aleksa Groen in 't Woud
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Abstract Name: Investigating Diet-Induced Transcriptional Differences in the Arcuate and Paraventricular Nuclei of Mice with Varying Mitochondrial DNA (mtDNA) Backgrounds

Cardiometabolic diseases (CMD) is the leading cause of global mortality, demanding an urgent response to accelerate research efforts, to investigate the molecular mechanisms underpinning risk factors such as obesity. The mitochondrial genome has been identified as an area of interest for studying CMD and obesity. A recent mouse model, called the mitochondrial-nuclear exchange (MNX) mouse, has been designed to investigate mitochondrial-nuclear genome interactions. Studies suggest mitochondrial-nuclear interactions contribute to transcriptional differences in fat tissue deposits within the MNX mouse model. While several studies have explored this model, the brain, specifically the paraventricular (PVN) and arcuate (ARC) nucleus, have not been investigated despite their role in feeding dynamics and energy homeostasis. These processes are regulated through the expression of signal molecules, receptors, and channels within the neuronal pathways of the ARC and PVN. There remains a lack of understanding of diet-induced differences in the transcriptomes of these structures. To analyze the effects of mtDNA on CMD and obesity, the ARC and PVN will be isolated from brain slices obtained from Wild-type and MNX mice fed a chow diet or high-fat Western diet. Subsequent genetic profiling will utilize Next-Generation Sequencing (NGS) on transcriptomes, followed by advanced bioinformatics analysis. We hypothesize different mitochondrial DNA (mtDNA) backgrounds in MNX mice will lead to changes in gene expression associated with energy homeostasis and feeding regulation in the ARC and PVN, following dietary adjustments.

Juniper Gromis

MN - Hamline University

Discipline: Humanities

Authors:
#1 June Gromis

Abstract Name: A Feminist Survey and Analysis of Syncretic Goddess Worship Among Neopagan Women in the Twin Cities

This project sought to document and analyze women’s religious expression, gender identity, marginalization, and empowerment within the Twin Cities Neopagan community. The emergence of spiritual practices that represent an alternative form of religious expression to organized religion has become an increasingly influential part of American religious life. For women, the syncretic pantheon of goddesses and the practice of goddess worship at the disposal of the Neopagan practitioner have produced a wealth of literature and new approaches to divine femininity and women-centered religious community and devotion. The methodology for this project was an ethnographic survey with an interview component and a questionnaire component. Using a narrative centered approach, the personal experiences recounted in depth through interviews were interwoven with the demographic data collected in the surveys to highlight commonalities and construct overarching conclusions. Firstly, the research showed that participants draw clear connections between their

spiritual and gender identities and therefore view their lived experience as women as a spiritual experience. Secondly, it revealed that Neopagan spiritual practices concerning women's bodies and liberation in particular have allowed participants to process trauma relating to the marginalization they experienced as a result of systemic patriarchy and misogyny. Lastly, the research uncovered the beliefs that commonly inform the practice of religious syncretism among participants; for example, a monistic conception of divine femininity of which individual deities across spiritual and cultural sources are manifestations. In conclusion, the religious innovation and spiritual empowerment practiced by Neopagan women in the Twin Cities contextualize growing trends in American religious life and provide important insights for the developing intersectional study of religious identity and marginalization.

Kayla Gross

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Kayla Gross

Abstract Name: The Consumerism of Art Deco: An examination of Art Deco Advertising and its Evolution

Art Deco: A style developed during the "Roaring Twenties" and still widely known today. It is a style defined by modern elegance. This paper investigates the style of Art Deco and, specifically, its evolution regarding advertising. By examining Art Deco advertising posters and their evolution from their conception in the 1920s to the post-WWII era, this paper analyzes how society and culture of the period have affected advertising and vice versa. After examining the evolution of Art Deco and its corresponding advertising posters, Art Deco advertising is influenced by the intense consumer culture and soaring economy of the 1920s. The growing economy and influx of products bought allow for an advertising style to emerge that emphasizes elegance and ornament. After analyzing how Art Deco advertising evolved after the Great Depression through post-WWII, it is concluded that Art Deco advertising is fueled by consumerism and defines a period of economic prosperity.

Jordan Grothe

SD - University of South Dakota

Discipline: Engineering and Architecture

Authors:
#1 Jordan Grothe
#2 Stephen Gent
#3 Mark Messerli

Abstract Name: Analyzing Heat Generated from Electro-Osmotic Flow Utilizing Computational Fluid Dynamics

In the absence of extensive vascularization, the transfer of essential fluid and nutrients within human tissue is severely limited to diffusion across pores and weak interstitial flow. However, electroosmosis has become a promising option in the realm of tissue engineering and regeneration research. Clinicians and scientists have recently began applying an electric field to human tissues to promote stronger interstitial flow via electroosmosis in clinical settings. However, optimization of this process has proven to be a significant challenge due to the generation of heat that accompanies the application of the electrical field. This research

seeks to better understand and quantify the range of voltage where the heat generated by the electric field leads to cell degradation and death. Cells survive and proliferate within a small range of temperatures and heating the cells beyond that range will cause them to degrade and eventually die. When a voltage is applied, heat is generated from the electric field, yielding an increase in the temperature of the nearby cells. Utilizing a computational fluid dynamics software, Sim Center Star-CCM+, a representative model of tissue mimicking a clinical application of electricity to the knee has been created. This model will be used to test different voltages while monitoring the temperature and time; then, these temperatures will be compared to the prior-established values depicting when cells undergo irreversible damage. Analysis will show what voltages clinicians can safely apply for variable amounts of time or whether a pulse-like method of application would be more appropriate. The implications of this research directly affect wound regeneration and tissue engineering and vascularization. By understanding exactly how much heat is generated by different levels of voltage, this research would allow doctors and scientists to know more precisely how much voltage they can apply before risking damage to the tissue.

Mark Grove

MI - Wayne State University

Discipline: Health and Human Services

Authors:
#1 Mark Grove
#2 Marissa Smith
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#5 Edward Kerr
#6 Tamara Hew-Butler

Abstract Name: Strong Hand, Strong Body? Associations between Handgrip Strength and Body Composition in College Students

Handgrip strength is a simple and quick measurement technique that is associated with health and disease.PURPOSE: To 1) assess handgrip strength in relationship with normative values (ACSM Guidelines) and 2) evaluate relationships between total body composition metrics in a cohort of collegiate athletes (87%) and non-athletes (13%).METHODS: 397 different participants across 13 collegiate sports teams (athletes; 87%) and two non-sports teams (53 non-athletes; 13%) were tested for handgrip strength using a dynamometer. The right and left grip strength were tested 3-times, with the elbow flexed at 90°, and the highest values for each hand were added together to create a total handgrip score (kg). Then, each participant underwent a whole-body DXA scan. All scans were performed and analyzed by a single operator. ACSM guidelines define grip strength for 20–29-year-old males as: ≥115kg=excellent; 104-114kg=Very Good; 95-103kg=Good; 84-94kg=Fair; <84kg=Poor and for females as: ≥70kg=excellent; 63-69kg=Very Good; 58-62kg=Good; 51-57kg=Fair; <51kg=Poor.RESULTS: 280 males (20±4 years) and 117 females (22±8 years) completed testing. The (mean±SD handgrip scores=ACSM rating) for teams are as follows for males (total:92±20kg=Fair): Football (98±17kg=Good); Tennis (76±11kg=Poor); Fencing (75±21kg=Poor); Swimming (82±23kg=Poor); Students (80±19kg=Poor); Baseball (100±16kg=Good); Basketball (100±18kg=Good); Running (60±9kg=Poor). For the female teams (total:51±11kg=Poor): Weightlifters (60±13kg=Good); Swimming (52±8kg=Fair); Softball (64±6kg=Very Good); Students (47±12kg=Poor); Basketball (57±11kg=Fair); Running (41±6kg=Poor); Volleyball (56±4kg=Fair). Regression analyses revealed handgrip strength (kg) was positively correlated with lean mass (r=0.82;p=0.00) and bone mineral content (r=0.0.79;p=0.00) and negatively correlated with body fat% (r=-0.41; p=0.00).CONCLUSIONS: Overall handgrip in competitive male collegiate athletes was rated as “fair” for males and “poor” for females. Handgrip was positively correlated with lean mass and negatively correlated with fat.

Max Gruber

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Max Gruber

Abstract Name: Prion Protein-induced Neurodegeneration in the Central Nervous System of Drosophila Melanogaster: Building a Model

Prion diseases are fatal neurodegenerative disorders characterized by neuronal loss and the accumulation of misfolded, membrane-bound prion protein aggregates (PrPSc) in the brain. PrPC, the normal cellular prion protein encoded by the Prnp gene, has been implicated in binding oligomers, including PrPSc, A oligomers, and α-synuclein assemblies, that form in patient brains with neurodegenerative disease. However, the mechanism by which PrPC interacts with PrPSc and causes neuronal death is poorly defined. The 92N-PrPC point mutation may be a tool to help to elucidate the neurotoxic pathway, as it has been shown to result in spontaneous spongiform degeneration in mice despite the absence of PrPSc and prion infectivity. Due to their low cost, rapid reproduction rate, short life span, and susceptibility to genetic manipulation, Drosophila melanogaster are an excellent candidate for studying prion-induced neurodegeneration. To investigate prion disease in a non-mammalian model, we generated transgenic 92N-PrPC and wild type mouse (WT) PrP control Drosophila lines, which were sequence validated by PCR. Western blot analysis revealed that the 92N-PrPC point mutation is uniquely expressed in the 92N-PrPC fly lines. Lifetime and climbing (motor function) assays have been conducted to test behavioral differences between 92N-PrPC and WT-PrPC and non-transgenic control groups. These experiments show the generation of a mutant prion protein disease model in Drosophila, and future experiments will focus on assessing behavior, histopathology, and signaling pathways towards a goal of understanding how mutant prion protein induces neuronal death.

Ashley Gruman

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

Authors:
#1 Ashley Gruman
#2 Grace Lewis

Abstract Name: Processing-induced taurine encapsulation for energy drink and nutraceutical applications

Taurine is a sulfur-containing β-amino acid abundant in the milk of mammals, and caffeine is a naturally occurring stimulant of the central nervous system, both impacting the cardiovascular system. Encapsulation of these compounds has the potential to slow their release and absorption, as well as potentially increase their bioavailability. The objective of the present work was (1) to develop a standardized procedure for determining taurine and caffeine concentration via fluorescence spectroscopy and (2) to apply high-pressure homogenization (HPH) and processing aids to milk- and taurine/caffeine-containing solutions to determine encapsulation potential. Using fluorescence methodologies, successful standard curves were developed for the concentrations of 0.12 - 25.17 μM taurine and 0 – 100 μM caffeine ($R^2 = 0.9984$ and $R^2 = 0.9837$, respectively). HPH was shown to expose more amino acids for interaction with the target compounds. This interaction between milk proteins and taurine/caffeine provides insight into the feasibility of this process, with the potential to use this process for novel, value-added food ingredients with continued research.

Sofia Guagenti

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Sofia Guagenti

Abstract Name: How Auditory DIstractions Affect Short-term Memory

People commonly study in the presence of distractions, whether those be small sounds in the background or a conversation just across the room, but claim that silence helps them focus better. Previous studies found that auditory distractions have a negative impact on the manipulation of information in short term memory such as mental arithmetic. This study plans to look at whether or not sound has a tangible effect on short-term memory and information recall by taking 60 undergraduate students at a small, liberal arts university, and randomly dividing them into three groups of 20 people. Each group will then be exposed to varying levels of auditory distraction while they attempt to memorize a list of 15 words for 30 seconds and asked to write down as many as they can remember. The control group will work in silence, the second will be exposed to a constant distracting sound, and the third will be interrupted midway through by a short-term distracting sound. Data will be collected in February, 2024. The hypothesis is that the control group working in silence will have the highest number of correctly remembered words of the three groups. If this proves to be the case, it would support the idea that having sounds in the background while attempting to memorize something reduces one’s ability to retrieve information in short term memory, and that silence is preferable when attempting to memorize something.

Sofia Guagenti

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Caelyn Anderson
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Sofia Guagenti

Abstract Name: The Framing of Decisions and the Psychology of Choice Regarding Novel Treatment of a Deadly Disease

This study examines the impact of question framing, inspired by Kahneman and Tversky's framing study, on participants' willingness to choose specific treatment options.Our primary objective is to investigate whether the framing of questions regarding treatment options influences participants' choices. We hypothesize that subtle changes in question presentation, similar to the framing effects observed by Kahneman and Tversky, will significantly impact participants' willingness to opt for particular treatment modalities. Data for this study were collected through a survey administered to students at Dominican University of California. Participants voluntarily and anonymously self-reported their responses to hypothetical medical scenarios framed either positively or negatively. The survey aimed to capture individual preferences for treatment options based on framing manipulation, with key variables including the framing condition and participants' treatment choices. As the surveys are still being completed, specific results and findings are pending analysis. Once data collection is finalized, we will conduct a thorough analysis to identify patterns, correlations, and effects related to question framing and its influence on treatment choices among the surveyed participants. While the study's results are pending, the anticipated findings hold potential implications for understanding

the role of question framing in medical decision-making, particularly among university students. If our hypotheses are supported, this research could contribute valuable insights into the psychological mechanisms that shape treatment preferences. The study's implications extend to healthcare communication strategies, with potential applications in improving patient engagement and decision-making processes. Future research directions could explore the generalizability of these effects across diverse populations and delve into practical strategies for implementing framed communication in healthcare settings.

Eris Guan

MD - University of Maryland College Park

Discipline: Business and Entrepreneurship

Authors:
#1 Eris Guan

Abstract Name: Effect of Tort Reform on Medical Malpractice Lawsuits

The efficiencies of tort reform in the US in regards to medical malpractice have been widely debated, with perspectives examining its effects on the victims, the medical field, and insurers. Using monetary payment and case data collected by the National Practitioners Database, this paper addresses the specific consequences of noneconomic damages caps within states on the behavior of medical malpractice victims with a two-way fixed effect difference-in-difference model, fixing the state the case occurred in and the year of its filing. The results portray the effect of a cap on the number of cases and amount of payment received by the victims, and the regression captures the behavior of victims, practitioners, insurers, and attorneys. Overall, the paper finds the existence of a noneconomic damages cap results in a decrease in payouts per case from practitioners to victims, and there is an increase in the number of cases filed when a cap is in place, implying the behaviors of practitioners and victims in particular are acting in opposition to each other. Possible interpretations of the results include victims reacting to the cap because the cap brings to their attention the possibility of suing, and medical practitioners exercising less care with a cap in place.

Anmol Guard

AL - University of Alabama at Birmingham

Discipline: Humanities

Authors:
#1 Anmol Guard

Abstract Name: How Accurate Should Historical Dramatized Documentary Films Be? The Case of In the Name of the Father

This presentation examines the challenges involved in cinematic representation of real, but complex, historical events and the acceptability of filmmakers' deviations from factual evidence. Jim Sheridan’s film In the Name of the Father (1993) was based on a 1990 autobiography by Gerry Conlon titled Proved Innocent: The Story of Gerry Conlon. Conlon was one of the Guilford Four, four British citizens who were wrongfully convicted of the Irish Republican Army's (IRA) bombing of a Guildford pub that killed four off-duty soldiers and a civilian. Conlon signed a confession under duress (later considered torture), though still maintaining his innocence. Sheridan drew widespread criticism for his film’s historical inaccuracies in depicting this case. Specific questions that I will address are: 1) to what extent are the inaccuracies in Sheridan's film acceptable considering the goals of the film? 2) to what extent is historical dramatized documentary valuable even if it

takes liberties with the truth? Some critics claim that Sheridan attempted to sympathize with the IRA, with which Conlon was not involved, while others suggest he was attempting to portray both the Irish Troubles and the case of Gerry Conlon, while prioritizing general commentary over specific facts of the case. Using a close analysis of the inaccuracies in the film itself, published interviews with Sheridan, film critiques, and relevant published literature, it is concluded that the inaccuracies largely reflect an attempt to display and comment on the Troubles in Northern Ireland in general through the lens of Conlon's specific case, leading to the alteration of some facts of the case to better depict the historical and political factors that caused the injustice. Sheridan's film will be used as an example of the challenges and pitfalls filmmakers face in capturing complex historical and highly charged political topics.

Laura Guerra-Lopez

CT - Yale University

Discipline: Social Sciences

Authors:
#1 Laura Guerra-Lopez

Abstract Name: Y Como Hacemos: A Study on NGOs in Autocratic Regimes like Venezuela

In strictly authoritarian regimes, the ability to exercise a state's capacity is very important to retain legitimacy and control. However, in places like Venezuela, many day-to-day operations are brought to people by NGOs (non-governmental organizations) and the efforts of non-profit organizations. In this essay, I will examine the relationship between governments that seek to minimize people's liberties through coercive means, while still allowing these non-profit organizations that directly inhibit the government's ability to control people, to operate. Through interviews with members of Venezuelan society, those on the periphery of the government, and leaders in the philanthropic sector, I want to analyze this dynamic to better understand how the relationship between government and civil society functions. Likewise, I will explore the grey area in Venezuelan civil society and the expectations of NGOs in autocratic governments. Mainly, I want to determine whether allowing these NGOs to operate is in the best interest of the state or if this actually proves to be a hindrance to the state's capacity. To propose a framework for understanding the relationship amongst state and social interaction under a strict regime, it is necessary to explore the livelihood of these organizations, and the government, to determine whether civil society's involvement is rooted in complacency.

Jhonathan guerrero

OK - Southern Nazarene University

Discipline: Health and Human Services

Authors:
#1 Jhonathan Guerrero
#2 Caio Franca

Abstract Name: DNA Barcoding of the Mosquito Community in Central Oklahoma

Mosquitoes play a pivotal role as pathological vectors, capable of inciting severe epidemics. It is imperative to undertake proper monitoring and identification measures in order to minimize mosquito-borne diseases. DNA barcode functions as a molecular fingerprint enabling accurate and efficient identification of organisms, even when conventional morphological approaches prove inadequate. In this regard, the mitochondrial

Cytochrome c oxidase 1 (COI) gene barcoding has emerged as a potent molecular tool for precise species identification and taxonomic investigations. However, to ensure reliable molecular identification, it is essential to establish a comprehensive collection of validated reference sequences. This study aims to generate a DNA barcode database of the mosquito community in central Oklahoma. Mosquitoes were collected using host-seeking and gravid traps from 11 sites and identified using morphological keys by Darsie and Ward. A tissue homogenizer was used to extract DNA from mosquitoes' legs, and the LCO1498/HCO2198 Folmer primers or LepF1/R1 primers were used to amplify the COI fragments by PCR and Sanger sequencing. Twenty-one barcode sequences were generated, encompassing nineteen species and five genera. Sanger sequences were visualized in Geneious, whereas taxonomic identification and phylogenetic analysis using the Barcode of Life Data (BOLD). Lastly, as part of this study, annotated COI sequences will be uploaded into the BOLD and GenBank genome database, and voucher species stored at Southern Nazarene University. This endeavor to describe the mosquito community and report DNA barcoding data is important for the precise molecular identification of vector species.

Mateo Guerrero

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Mateo Guerrero

Abstract Name: The Impact of Economic Fears on Voter Participation

The financial aspirations associated with the American Dream can motivate hopes of opportunity and prosperity. However, if this dream feels unattainable, it can intensify unwanted effects such as disparities in voter participation. Using the 2021-2022 Chapman University Survey of American Fears, a nationally representative sample of current fears across U.S. adults, I examine the extent to which demographic metrics link to current fears of financial uncertainty. In addition, I analyze how the disparity in current financial and economic fears can impact American democracy through voter participation. Adding to the discourse on economic influence and political behavior, economic-induced voting habits may stem from individual or community factors.I find a moderately strong relationship between historically oppressed demographic groups and higher fear levels of financial uncertainty. Consequently, my essay seeks to demonstrate that economic fears personally affecting minority groups correlate with lower voter turnout. The scope of my research extends to exploring the difference in voter turnout for high fears of community economic stress and personal financial worries through analyzing pocketbook voting and sociotropic voting theories. Analyzing the disparity of economic fears and their impact, one can look to legitimize the promises of equitable opportunities throughout American democracy and help estimate its role in the upcoming 2024 presidential election. Although perfection across opportunities of equity is an unrealistic goal, implicit biases question the legitimacy associated with the American Dream, democracy, and its impact on the future.

Karen Guerrero Rosas

CA - University of California - Merced

Discipline: Interdisciplinary Studies

Authors:
#1 Karen Guerrero Rosas
#2 Elaine Denny

Abstract Name: Phishing for Mindfulness: A Comprehensive Study on Mindfulness Interventions and Phishing Susceptibility

Phishing is a branch of social engineering that exploits human error to gain unauthorized access to confidential information by breaching cybersecurity barriers. A prevalent form of attack is through an urgent-themed email that targets individuals with high cognitive loads. High cognitive load means reduced information retention and working memory available for competing stimuli. People with high cognitive load have been shown to behave more impulsively, with less effective emotional regulation. Mindfulness is attracting increasing academic attention for its demonstrated ability to increase memory and executive function, reduce stress, and improve irritability. This study will test the impact of mindfulness interventions and see how individuals engage with online information in order to evaluate participant phishing resiliency. We expect that mindfulness will reduce vulnerability to phishing because it will improve participants' careful consumption of information. Our intervention involves randomized delivery of mindfulness content to students at a Hispanic Serving Institution over the course of two weeks. Following the end of the treatment period, participants in all treatment groups will receive university-approved fake phishing emails over a subsequent 7-day period. We expect mindfulness-treated individuals to click less frequently on phishing links, showing higher resilience to social engineering attempts. Our results will assess whether mindfulness training is a promising combatant toward this cyber risk and assist with decreasing susceptibility toward phishing emails. This study is currently under IRB review and data will be collected starting in early 2024. Our preliminary results will be available by April.

Ayush Guha

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Ayush Guha
#2 Ayaan Raza
Ayaan Raza

Abstract Name: Passive Cooling of a High Power LED Panel using a Heatsink with Embedded Thermosyphons

High-energy LED panels have many applications, from lighting to indoor farming. However, the LED panels create significant amounts of heat, deteriorating their performance. While active cooling methods, such as fans, are traditionally used, these not only consume more energy but also add moving parts which reduce the lifespan of the system. In this research, a passive cooling technique using a heatsink is investigated. The unique feature of this design is the embedded thermosyphons inside each fin (10mm X 10mm). 144 rectangular pin-fins (with 3mm embedded holes) were attached to a vapor chamber where R134a refrigerant was filled at a low pressure to activate the thermosyphon process at elevated temperatures. The lower vapor chamber was sealed and the LED panel was attached underneath it. To minimize air pockets between surfaces and improve heat conduction, thermal paste was used between the surfaces. The theoretical temperatures along the fins were modeled using MatLab, and then the panel was turned on to acquire experimental data. The temperature data was acquired by using 16 k-type thermocouples that were attached to the tips and bases of 8 different pins around the heat sink. The temperature was recorded using a PCB connected to a Raspberry Pi. The LED panel was turned on and the active cooling fans were removed for this investigation. The data shows that the percentage change along the fins varies between 6.3% to 12.8% depending on the location of the fin along the periphery of the heatsink. The temperature variation along the fins indicates that the thermosyphon process was activated at higher temperatures and the LED panel was cooled down by transferring heat from the base to the condenser section of the thermosyphon. Detailed measurements are being collected for this special heatsink and full results will be presented in the coming conference.

Christopher Guillory

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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#1 Christopher Guillory
#2 Mohammad Hossan

Abstract Name: Investigation of Nitinol Flow Diverters for Aneurysms through Laser Machining

Flow diverters have emerged as a highly effective endovascular technique for treating brain aneurysms, primarily employing braided structures made from materials like nitinol and chromium-cobalt alloys. However, the design parameters for these braided flow diverters (FDs) are somewhat constrained. This research explores the feasibility of producing finely meshed, non-braided nitinol FDs using precision laser machining. This study aims to assess the impact of various laser parameters on the quality of the laser-fabricated nitinol FDs. Through a precision fiber laser machine, fine pores were meticulously designed and created, with variations in laser power, focal distances, laser horizontal speed, passes, and cooling media (air and underwater). The resulting FDs underwent polishing in an in-house custom tumbler, and their surface quality was analyzed using a scanning electron microscope (SEM) and high-resolution images. The study quantified surface burning using a scale from 1 to 10 based on high-resolution images. The findings revealed that laser power and focal distance significantly influenced the prevention of excessive surface burning and bulge formation. While water as a cooling medium offered more flexibility, frequent refilling proved inconvenient due to rapid evaporation. However, fine-tuning laser power and passes with air cooling yielded burn-free, high-quality FD surfaces. This research contributes valuable insights towards the development of non-braided FDs for brain aneurysm treatment, offering enhanced control over crucial parameters in the fabrication process.

Navya Gullapalli

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Navya Gullapalli
#2 Haifa Alsharif
#3 Sushant Bhatnagar

Abstract Name: Deletion of Brain Angiogenesis Inhibitor 3 in Mice Decreases Inflammation in White Adipose Tissue

G-protein-coupled receptors (GPCRs) stand as the most targeted receptors for drugs. They play a pivotal role in regulating obesity-related inflammation, which is notably associated with white adipose tissue (WAT). In our previous study, we found that the absence of brain angiogenesis inhibitor 3 (BAI3), a GPCR, resulted in reduced body weight gain and increased energy expenditure. This suggests that BAI3 could potentially contribute to obesity and heighten susceptibility to the development of type 2 diabetes (T2D). However, the role of BAI3 in regulating obesity-related inflammation remains inadequately understood. To investigate whether BAI3 plays a critical role in WAT inflammation, we used CRISPR technology to create BAI3 knockout C57BL6J mice (BAI3-/-) and subjected them to normal and high-fat diets. Subsequently, we assessed the impact of BAI3 deletion on pro-inflammatory and anti-inflammatory markers within their inguinal white adipose tissue (iWAT) and epididymal white adipose tissue (eWAT) by examining the expression of key genes involved in both pro and anti-inflammatory responses (such as IL2, TNFα, MCP-1,

F4/80, IL6, TGF-B, IL4). Ongoing analyses will provide insight into BAI3's influence on inflammation in WAT. In conclusion, our study aims to elucidate the effect of BAI3 on inflammation within WAT. Understanding this relationship will aid in mitigating the risk of developing diseases such as obesity and T2D.

Vipin Gunda

NY - Cornell University

Discipline: Mathematics and Computer Science

Authors:
#1 Vipin Gunda
#2 Chi-Jung Lee
#3 Cheng Zhang

Abstract Name: Real-time Hand Pose Tracking and Hand-Object Interaction Detection via Low-Power Active Acoustic Sensing

Our hands serve as a fundamental means of interaction with the world around us. Therefore, understanding hand poses and interaction context is critical for human-computer interaction. We introduce a minimally obtrusive, low-power wristband designed to provide both continuous 3D hand shape tracking and a nuanced understanding of various hand-object interaction activities. The band utilizes active acoustic sensing, incorporating two pairs of compact speakers and microphones positioned in close proximity to the skin on each side of the wrist. The speakers emit inaudible frequency-modulated continuous waves (FMCW) directed toward the hand, and the resulting sound wave reflections and diffractions are captured by the wristband's microphones, creating distinct patterns corresponding to different hand poses. We then use a customized deep convolutional neural network (CNN) to deduce the 3D hand poses represented by the 3D positions of 20 finger joints while also classifying various hand-object interactions. To evaluate performance in continuous hand-pose tracking and hand-object interaction recognition, we conducted two user studies, each involving 12 participants. The results indicate that the device can continuously track 20 finger joints with a mean joint Euclidean distance error (MJEDE) of 4.81mm or mean joint angular error (MJAE) of 3.79°. Furthermore, it exhibits impressive accuracy, achieving a recognition rate of 97.6% across 12 diverse hand-object interactions, spanning static scenarios, such as firmly holding a cup, to dynamic actions involving movement, such as chopping. In addition, it operates at a significantly low power consumption of just 57.9 mW, with the sensing modules consuming only 10.0 mW, highlighting its smaller footprint compared to previous work. To our knowledge, our device is the first wristband that can both track 3D hand poses continuously and recognize hand-object interactions. Further, we present the design considerations and iterations, and discuss the opportunities and challenges of deploying at scale.

Colleen Gunn

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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#1 Colleen Gunn
#2 Stephanie Helman
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#4 Rod Ghassemzadeh
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#6 Richard Henker

Abstract Name: The Prevalence, Depth, and Duration of Postoperative Hypothermia in Neonates after Cardiopulmonary Bypass

Cardiopulmonary bypass (CPB) is commonly used for surgical repairs of neonatal critical congenital heart defects (CHD). Intentional hypothermia is often induced to preserve end organ function during low blood flow states. Intentional hypothermia is corrected after CPB with the aim of achieving normothermia. Despite rewarming, neonates remain at risk for unintentional postoperative hypothermia. Study purpose: define neonatal postoperative hypothermia prevalence, depth, and duration 48-hours after CPB. We accessed UPMC Children's Hospital of Pittsburgh EHR data between 2016 and 2020 that included 196 neonates ≥ 34 weeks gestation undergoing their first CPB surgery. Hypothermia was defined as < 36.5°C (normothermia defined as 36.5°C to 37.5°C). Hypothermic episodes were defined in hours starting with the first hypothermic temperature up to the first normothermic temperature. The next hypothermic temperature marked the beginning of the next episode. Descriptive statistics for continuous variables are reported using means and standard deviations (SD), as well as medians and interquartile ranges (IQR) when distributional normality was violated. For categorical variables, frequencies and percentages are reported. Average gestational age of 196 neonates was 38.2 weeks (SD 1.32), they had an average birth weight of 3.14 kilograms (SD 0.52), 142 (72%) were white, and 127 (65%) were male. Approximately half (48%) of the neonates underwent a STAT category 2 or 3 surgery (mortality risk score). All neonates experienced at least one episode of hypothermia, and on average 4.17 episodes (SD 2.4). The first hypothermic episode median lowest temperature (depth) was 35°C (IQR 1.2) and had a median duration of 9 hours (IQR 22.19). Postoperative hypothermia was prevalent; there was variability in the lowest documented temperatures (depth) and lengths of time before normothermia was achieved (duration). Researchers should investigate clinical practice procedures as potential explainable mechanisms for temperature instability, as well as define its clinical significance.

Daniel Gurholt

CA - University of California - San Diego

Discipline: Health and Human Services

Authors:
#1 Daniel Gurholt
#2 Maripat Corr
#3 Ryan Phan

Abstract Name: Toll-Like Receptors 7 and 9 Regulate Sex Differences in a Murine Arthritis Model

Rheumatoid arthritis is an autoimmune disease that can lead to deformities. Although the adaptive immune system drives the development of rheumatoid arthritis, the cardinal signs of inflammation are regulated by the innate immune system, which includes the Toll-like receptors (TLRs). We tested a series of mice that were deficient in individual TLRs in the K/BxN passive serum transfer model of arthritis. Serum transfer into wild type mice confers paw inflammation and lasting allodynia. Tlr7-/- , Tlr9-/- and Tlr7.Tlr9-/- mice were injected with K/BxN serum and the paw swelling was serially measured with a caliper and withdrawal threshold tested by von Frey fibers. The allodynia in male wild type mice persists whereas it largely resolves in female mice. In Tlr7-/- and Tlr9-/- mice there is reduced allodynia in both males and females; however, the doubly deficient mice (Tlr7.Tlr9-/-) had markedly reduced allodynia throughout the entire time course. Interestingly, in the Tlr7.Tlr9-/- mice the females had minimal paw swelling differing from the males (F (13, 182) = 11.56 two way ANOVA, P. These results demonstrate that there are sex differences in the development of arthritis in this model and specific TLRs play critical roles in developing allodynia associated with inflammation. Understanding sex differences in the development and symptoms of arthritis could lead to further refined therapeutic decision making.

Ari Gurovich

GA - Emory University

Discipline: Humanities

Authors:
#1 Ari Gurovich

Abstract Name: Scapegoating as Political Power in Beowulf

The character of Beowulf's Grendel has traditionally been read as that of a monstrous villain. But in my research, I argue that Grendel represents a sinister convergence of social forces scapegoating the supposed "monster" to explain social problems that he played no part in creating. This argument draws upon the work of cross-disciplinary scholars of scapegoating, like the sociologist Emile Durkheim, the political psychologist Gordon W. Allport, and the anthropologist Rene Girard. I trace the social forces that created a need for scapegoating in the Anglo-Saxon epic poem, the convergence of those forces on Grendel, and the process by which his killing was legitimized and preserved through mythology. Beowulf itself is treated as a cultural artifact, by which deductions can be drawn about scapegoating in Anglo-Saxon society at large. I conclude that the Beowulf epic illuminates the economic, political, and social forces that continue to scapegoat groups of people in the twenty-first century.

Rachael Gutierrez

CA - Reedley College

Discipline: Visual and Performing Arts

Authors:
#1 Rachael Gutierrez

Abstract Name: The Forbidden Fruit: Art History's Shapfeshifting Motif

Art is, and was wildly important in Catholoicism, but since the church had strict authority extending from the fall of the Roman Empire into the 19th century, religious art was vital then, given the hiearchy of the church. Laity were at the bottom of the pyramid and couldn't read, so imagery provided comprehension of scripture outside of mass. The Fall of Man for example, is a renowned biblical story represented by the forbidden fruit in which Adam and Eve partook, and it can be spotted in countless artistic manifestations throughout those centuries. There isn't a universal icon for a fruit, nor can imagery convey the idea of a fruit as just that--no matter what, one will find that artists chose specific, recognizable forms to represent the fruit of the tree of knowledge of good and evil, allotting new manifestations through each painted vessel.

Rose Gutierrez

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Rose Gutierrez
#2 Daniel Erenso

Abstract Name: Electromagnetic Ionization and Radiation Creation in Neuroblastoma Cancer Cells

Neuroblastoma is a common childhood cancer that has one of the highest incidence rates for children less than one year with poor prognosis as children age. Although current radiotherapy treatments are efficient, many patients are left with unpleasant side effects. Laser trapping is a technique that traps dielectric objects as small as an atom and as big as 100 micrometers with a high-power laser. The laser trapping technique with the addition of magnetic beads was used in this study to initially provide a more efficient treatment for neuroblastoma. This study determined that the amount of radiation received in neuroblastoma cells through laser trapping was significantly reduced. However, throughout this study, it was discovered that these neuroblastoma cells could produce radiation emission, which lasted over six hours with a consistent amount of over 93% energy absorption of an infrared light (low energy) resulting in intense visible radiation (high energy light). Using infrared laser light with the neuroblastoma cells and magnetic beads has the potential to create a new source of energy of white light that has the complete blackbody radiation. The overall results of this study has the possibility of improving cancer treatment, solar energy harvesting, and microchip and battery efficiency.

Katherine Gutierrez

FL - The University of Tampa

Discipline: Natural and Physical Sciences

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Alexandra Larson

Abstract Name: Effects of Environmental Disturbance on Bird and Parasite Presence

Zoonoses are parasites that are readily transferred between animals and humans through various forms of transmission. Birds are one group of organisms capable of carrying these parasites and have been shown to transmit Influenza A, West Nile Virus, Lyme Disease, and bacteria genera containing antibiotic resistance to humans. In Florida, both residential and migratory species are able to carry these parasites. Migratory birds include those that utilize the Atlantic Flyway which serves as a migration route for various species in the fall and spring seasons. Within a given area, both migratory and residential species can encounter environmental disturbances such as foot traffic, construction, weed-killing chemicals, and noise and light pollution. These anthropogenic alterations can negatively impact organisms leading to physiological changes including disruptions in reproduction, development, and immune function. Animal, human, and environmental health are inextricably linked such that when one is disrupted, the other two inevitably suffer. Therefore, determining whether environmental disturbance affects the presence and diversity of birds and parasites can provide insight to effects that anthropogenic factors have on both animal and human health. In this study, we are using bird feeders with cameras to monitor species present at The University of Tampa. Fecal samples are collected weekly and analyzed using fecal floatation to identify which parasites are present. Data collected over the course of one year (August 2023 - December 2023) will be analyzed to determine whether bird and parasite presence differs between seasons with or without migration and areas of moderate and high disturbance.

Luigi Gutierrez Cruz

CA - California State University - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Luigi Gutierrez

Abstract Name: Enantiomeric Resolution of Spirobifluorene Derivatives via Chiral Auxiliaries: Diastereomers

Spirobifluorenes are macromolecules with material science applications including organic-semiconducting technology such as OLED devices, gas storage/separation, biotechnology, and solar panel energy conversion efficiency. Typically, inorganic molecules are used for these applications as metals have intrinsic conductive properties and organic molecules do not. But, their unique structure allows their molecular orbitals to overlap in such a way that gives rise to useful optical and electronic properties. The aim is to transform their complementary structures to non complementary structures with a particular group of molecules known as chiral auxiliaries. The pair of molecules take on different physical properties and can be separated through practical chemistry purification techniques. Larger scaffolds and topologies of the isolated configuration will be made to study their potential towards the above mentioned applications.

Diego Guzman

CA - University of California - Irvine

Discipline: Mathematics and Computer Science

Authors:
#1 Diego Guzman
#2 Mirelle George
#3 Jesus Beltran
#4 Franceli Cibrian
#5 Gillian Hayes

Abstract Name: Using Large Language Models to Augment Reflective Thematic Analysis for Semi-Structured Interviews

Reflective thematic analysis is a common qualitative research approach employed to identify major themes within unstructured data sets, including semi-structured interviews and videos, addressing specific problems. However, the analysis process is often time-consuming, requiring substantial effort to identify shared experiences or feedback ("codes"). Large Language Models (LLMs) such as ChatGPT offer promising avenues to alleviate these challenges. However, current research has shown that LLMs can potentially introduce bias in their analyses. In our study, we propose integrating LLMs into reflective thematic analysis to generate context-appropriate codes and themes from large amounts of qualitative data while maintaining human/researcher oversight to regulate biases in analysis. We continuously refined and passed through well-structured prompts using ChatGPT GPT-3.5 API to generate codes and themes. To evaluate the efficacy of our approach, we performed experiments utilizing a collection of semi-structured interviews that had been previously coded by using an inductive approach. In order to quantify the level of agreement between our augmented approach and the manual coding, we applied Cohen's Kappa statistical test. This statistical analysis measures how well our augmented approach aligns with the manual coding, providing valuable insights into the effectiveness of our approach. The results suggest that using LLMs contributes to a significant reduction in labor and time. However, prompt engineering is needed to improve the efficiency of the augmented approach to thematic analysis with LLMs. It also underscores the need for researchers to continuously oversee and ensure the quality of analysis outcomes.

Emily Guzman

CA - Fullerton College

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Cultivating Synergies Between Organic Architecture and Biology in El Salvador

This collaborative project, developed within the framework of the Fulbright US Student Program and hosted by the Department of Architecture at Universidad Centroamericana "José Simeón Cañas" (UCA) in El Salvador, explores the transformative potential of organic architecture in harmonizing human-made structures with the natural environment in urban settings. Inspired by familial heritage and experiences with indigenous communities, the study investigates how organic architecture can catalyze positive change and enhance the well-being of diverse urban populations. Working in collaboration with the "Fundacion Salvadoreña de Desarrollo y Vivienda Minima" (FUNDASAL), the project involves conducting workshops that emphasize multidisciplinary collaboration. Through interviews with community members and architects engaged in sustainable, nature-inspired housing projects, the study delves into the intricate relationship between architecture and nature. These transformative workshops aim to integrate marginalized voices into the design process and infuse biological principles into architectural solutions. As a Latin American architecture student, the researcher values cross-cultural explorations and the integration of heritage in design. The Fulbright program provides a unique opportunity to foster international academic and professional experiences, laying the groundwork for future graduate studies. The study seeks to encourage collaboration between architecture and biology, highlighting the potential of organic architecture to enrich urban environments and contribute to sustainable, nature-inspired design solutions that benefit both communities and the natural world.

Ramon Felix Guzman III

CA - University of the Pacific

Discipline: Engineering and Architecture

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Alexander Pedrzzini

Abstract Name: Advanced Pressure System Optimization in a Bioreactor for Corneal Tissue Engineering

Introduction The prevalence of vision impairment, affecting over 2.2 billion people globally, necessitates innovative solutions in ophthalmology; tissue engineering, particularly for corneal tissue, promises to address this challenge. Building upon our previous development of a corneal bioreactor, this study focuses on optimizing the pressure system integral to cultivating corneal cells. We aim to refine the microenvironment for corneal cell growth, advancing towards generating transplantable corneal tissue.Materials and Methods The redesigned pressure system incorporates sprockets, allowing precise pressure modulation. This system features a compact design with a motor, track, and syringe mount. Integrating this system into our existing bioreactor aims to achieve precise control over the mechanical signals critical for corneal cell cultivation. Cells are grown in the bioreactor system at multiple pressure levels and assessed for protein expression via western blot. Cells are lysed after 7 days in culture, followed by a Bradford assay to determine the total protein in the sample and a western blot with antibodies against α-smooth-muscle-actin, indicating cell phenotype(fibroblasts). Results and Discussion Initial trials have demonstrated the system's efficacy in

maintaining cell viability and cultivating fibroblasts. Transitioning from fibroblasts to keratocyte cells is crucial in corneal repair and is a significant step forward. Protein analysis of our samples helps us to determine the optimal pressure to achieve the desired transition of fibroblast cells to keratocytes. Our results indicate that the optimized bioreactor mimics the native corneal biomechanical environment, strengthening the cell viability for the transplantation of corneal tissue. Conclusion This research marks a significant advancement in bioreactor technology for corneal tissue engineering. Optimization of the pressure system brings us closer to the goal of creating transplantable corneal tissues. Future studies will focus on expanding tested pressures and integrating other signals, such as light, with advancements for worldwide vision restoration efforts, especially for donor-dependent transplants.

Seongyo Gwon

GA - Kennesaw State University

Discipline: Education

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Abstract Name: Efforts Towards multi-lingual and -cultural South Korea: Insights from immigrant bilingual coaches and Korean Government Officials working in Health Family Support Centers

Health Family Support Centers in South Korea play a pivotal role in promoting multilingualism and multiculturalism in South Korea that practices Korean-only assimilation policies. With an increased influx of multicultural immigrants, these centers provide assistance and services to immigrants. These centers also serve as a hub for both immigrants who have gained proficiency in the Korean language and culture also work there as bilingual coaches and translators, and dedicated Koreans fostering cultural harmony. Thus, it is crucial to examine experiences and perspectives of employees striving for immigrant equity in South Korea at these centers.This study explores the perspectives and experiences of employees in Health Family Support Centers across South Korea, specifically eight bilingual coaches in different cities and five government officials in the northwest region of Seoul. Data was collected through individual interviews lasting 70 to 120 minutes with the bilingual coaches, originating from countries like China, Japan, and Vietnam, along with a 130-minute focus group interview with government officials. It aims to understand how these experiences contribute to our knowledge of challenges and opportunities in promoting equity for immigrants and implications for policies related to multilingualism and multiculturalism in ethnolinguistic minority family contexts.Thematic coding in our qualitative analysis revealed that the coaches found their work rewarding but faced challenges like heavy caseloads, lack of early childhood education expertise, and coaching in incompetent languages. Korean government officials, drawing on their experiences as directors, noted issues such as insufficient resources including funds for employees, heavy caseloads with both proficient and non-proficient tasks, employee numbers, awareness, and the need to support immigrant mothers. This research has broader implications for policies and programs supporting ethnolinguistic minority families and children in promoting multilingualism and multiculturalism beyond South Korea.

Jessica Ha

MN - University of Minnesota - Rochester

Discipline: Natural and Physical Sciences

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#6 Brittany Brown

Abstract Name: Elucidation of Bacterial Species Composition in Soil Samples From The Village Community Gardens

Soil ecosystems provide habitats for diverse groups of biota, including bacteria, archaea, fungi, microalgae, protozoa, nematodes, and bacteriophages. These ecosystems are complex and involve abiotic and biotic

inputs. Bacteria of diverse species perform many important ecosystem services, including improved soil structure, soil aggregation, and recycling of water and soil nutrients. Soil health is linked to crop fertility as well as environmental and anthropogenic hazard resilience. Bacterial species diversity contributes to functional biodiversity and can be used as a sensitive indicator of stable ecosystems. The Village Community Gardens of Rochester, MN provides gardening space at multiple locations for families to produce culturally relevant food with an added aim of achieving sustainable agricultural practices. We aimed to elucidate the bacterial species composition within the soils of three Community gardens. Soil samples were collected from each of the three locations. Serial dilutions were performed and used to isolate individual colonies by plating on complete media. Universal primers targeting the 16S rRNA gene region were amplified using PCR. Chromatograms were analyzed, and the National Institute of Health Nucleotide BLAST was used to identify isolated species. A phylogenetic tree was generated depicting species relationships of bacteria cultured from The Village Collaborative Gardens. There were observational differences in species composition between the three garden sites. Interestingly, Bacillus taxonomy is under persistent revision; our phylogenetic results using 16S sequence information with high Bootstrap values support Priesta being a unique clade. As numerous factors influence microbial soil populations and contribute to overall soil health, growers were interested in learning of our results.

Aliya Haas

NE - Creighton University

Discipline: Mathematics and Computer Science

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#3 Brian North

Abstract Name: Integrating Neural Networks and RNA Sequencing Analysis to Decode the Cardiac Impact of BubR1 in the Adult Heart

Heart disease is the leading cause of mortality in the adult population and its incidence increases with age. Recent studies have identified the mitotic checkpoint protein Budding uninhibited by benzimidazole Related-1 (BubR1) as a regulator of aging. Mice engineered to have lower levels of BubR1 (termed hypomorphic mice) exhibit early on-set of aging phenotypes such as cataracts, curvature of the spine, shorter lifespan, and impaired wound healing (Baker, 2004). We have further identified that BubR1 hypomorphic have varied cardiac rhythms and die in a manner similar to sudden cardiac death in humans (North, 2014), suggesting that BubR1 plays a major role in the maintenance of cardiac structure and function. Because BubR1 declines with age, it can be inferred that this decline may mediate various age-related pathologies in humans. Therefore, it is important to further understand how BubR1 regulates cardiac structure and function, and how loss of BubR1 contributes to the increased incidence of heart disease in the aging population. Recent strides in machine learning and bioinformatics have ushered in cutting-edge tools that enhance the analytical capabilities and predictive models for biological data. Notably, RNA sequencing analysis has been employed to discern genes exhibiting significant upregulation or downregulation in hypomorphic mice compared to their wildtype counterparts.The versatility of RNA sequencing extends to exploratory data analysis (i.e. heatmaps and volcano plots) and Principal Component Analysis (PCA), all of which are utilized to identify key genetic regulators and to visualize the data in a comprehensible and concise manner. In addition, the convolutional neural network can be used to distinguish between diseased and healthy hearts to provide a predictive model intended to eventually become a diagnostic tool. Overall, machine learning and bioinformatic analysis will provide insights into a role for BubR1 in cardiac function, offering potential diagnostic tools for age-related heart disease.

Teancum Hadden

UT - Utah State University

Discipline: Humanities

Authors:
#1 Teancum Hadden

Abstract Name: Monkey: The Chinese Sisyphus The Absurd Hero in Wu Cheng'En's Journey to the West

With strong roots in the mythologies of Taoism and Buddhism, the classic Chinese novel Journey to the West is a religious allegory as well as a satire of 16th century Chinese society. The text is both a serious retelling of traditional folk tales and an absurd comedy about a group of ramshackle pilgrims on a quest for scriptures and enlightenment. Throughout their journey Sun Wukong (Monkey) demonstrates a lighthearted detachment from the dangers of his journey and an indifference for the myriad of demonic encounters he has on the way. His detachment from the difficulties of his life and happiness make Monkey very similar to the absurd hero of Sisyphus in Albert Camus' essay The Myth of Sisyphus. Before their punishment, both Monkey and Sisyphus enjoy incredible power as they play tricks on the gods. Because of their wanton abuse of power invokes the wrath of heaven, both heroes are condemned to the mundane as they seek to earn their penance. When faced with the absurd world Monkey retains that "his fate belongs to him"[1] despite the heavy hands of gods that attempt to control him. This realization brings Monkey to the highest plain of existence possible, which Camus describes as happiness, and to Monkey describes as immortality. Whether an ancient Greek myth, or a classic novel about a sentient stone monkey, all can relate to the plight of Sisyphus and that of Monkey. The absurd hero indeed can manifest itself in any and every living person. [1] Camus, Sisyphus, 106.

Zohal Hafizi

CA - California State University - San Bernardino

Discipline:

Authors:
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#4 Christian Valenzuela
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Abstract Name: Best practices on prevention of pressure injuries in the ICU

AbstractPurpose: To determine the effectiveness of repositioning, moisture control, and knowledge/attitude promotion by exploring best practices of hospital-acquired pressure injury (HAPI) prevention methods in the adult intensive care unit (ICU) among various literature. Practice Change: Implementations such as 2-3 hourly repositioning, moisture absorption pads, and staff education programs can help in the mitigation of patient risk of pressure injury development during their hospital stay. Strength of the Evidence: We performed a literature review of studies that assessed pressure injury prevention methods. We identified three common methods - (1) barriers that protected the patient's skin from moisture improving skin integrity resulting in a reduced risk of HAPI development among applied patients, (2) repositioning performed on a scheduled basis was found to be a determining factor during data collection, and (3) education programs with attitude promotion facilitated nurse compliance with HAPI prevention. Implementation Strategies: Implementation of moisture barriers uncoated paper in the sacral area can be used during patient care, education programs of

preventative with pathophysiology of HAPIs can be given to staff, and reminders for repositioning all can be implemented in ICU practice. Stakeholders: ICU nurses will attend education programs for HAPI prevention and must be compliant with repositioning and moisture barrier application that impacts the prevalence of HAPIs in the ICU adult patient population. Evaluation: All these three interventions have shown effectiveness and implementation of at least one of these interventions can significantly reduce the risk of HAPIs giving the nurse options to choose from according to the situation.

Jeffrey Hage

CO - University of Colorado at Boulder

Discipline: Natural and Physical Sciences

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#1 Jeffrey Hage
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Abstract Name: Finding New Options in Biotherapeutics: Exploring Partially Morpholino-Modified Oligonucleotides as Potential RISC Users

The potential of biomolecules in the world of targeted gene regulation therapeutics has grown massively in the last twenty years. As of September 2022, fourteen oligonucleotide drugs were FDA-approved. Among these fourteen, multiple contained morpholino modifications to the nucleotide backbone, which creates a hexose in place of the usual pentose. These drugs have shown major promise in treating rare genetic diseases, such as Duchenne muscular dystrophy, by altering mRNA processing through base complementary and thus generating protein binding interference. Most of these drugs rely on the fully-morpholino modified oligo's negligable affinity for endogenous proteins, which promotes their longevity and reduces their off-target effects.Very few studies have been done on the binding properties of oligonucleotides that contain a mix of morpholino-modified nucleotides and non-morpholino nucleotides. These hybrid molecules contain much promise for a potential middle ground between siRNA-like molecules, which bind to the RISC complex and perform mRNA degradation, and fully morpholino oligonucleotides, which rarely interact with proteins and thus don't perform RNA degradation. Optimizing the balance of morpholino modifications with non-morpholino nucleotides could result in a ‘best of both worlds’ scenario, where the modified oligonucleotide can bind to the RISC complex, and exhibit resistance to degradation from RNases. This would push the morpholino modification into a new use, from its current place in RNA interference to a potential usage in RNA degradation. To determine the potential for partially-morpholino modified oligonucleotides as siRNA variants, I tested several siRNAs containing various amounts and patterns of thiomorpholino modifications for their capabilities to knock down protein expression. I will also complete full rtPCR analysis and an AGO-2 binding assay using a fluorescent oligo. I have shown that all these modifications exhibit protein knockdown, and I anticipate that the rtPCR and AGO-2 binding study will distinguish the mechanism of knockdown.

Paige Hagemann

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Paige Hagemann

Abstract Name: Vehicle Searches on the Border: Applying Fourth Amendment Search Exceptions between

States with Differing Marijuana Laws

This research paper examines the application of the Community Caretaker Doctrine and the utilization of this 4th Amendment exception in officer's efforts to combat drug trafficking across state borders within the jurisdiction of the 7th Circuit. The Community Caretaker Doctrine, traditionally applied within law enforcement for ensuring public safety and welfare, has the potential to be extended in use when addressing drug trafficking. This paper employs a comprehensive legal analysis that utilizes relevant cases throughout the United States as applied to the 7th Circuit legal precedents. Through this analysis, the study aims to clarify legal standards applied under the Community Caretaker Doctrine to be applied to vehicle stops and drug discovery. Varying jurisdictions are wrestling with legalization of marijuana, for example the smell of marijuana alone is not probable cause for vehicle searches in states where the substance is legal. The findings of this research contribute to a deeper understanding of the role that the Community Caretaker Doctrine plays in law enforcement efforts to ensure public safety and welfare intersected with the issue of drug trafficking across state borders. The University of Wisconsin-La Crosse is uniquely positioned in a metropolitan area that encompasses two states with differing approaches to the legalization of marijuana, from legal recreational use to the prohibition of medical usage. Additionally, the findings of this work have the potential to unveil legal insights into the future of the application of the Community Caretaker Doctrine and other 4th amendment search exceptions. Furthermore, the study's outcomes aim to guide legal and policy recommendations that foster a more consistent and responsive approach to curbing the unlawful and extensive use of 4th amendment exceptions.

Miles Hagen

WI - University of Wisconsin-Whitewater

Discipline:

Authors:
#1 Miles Hagen

Abstract Name: Functional Analysis of the pdk-1 gene in Brugia Malayi

Lymphatic filariasis is a human disease caused by blockage of the lymphatic system due to infection by the parasitic nematode Brugia malayi and related parasites. We are using the nonparasitic nematode Caenorhabditis elegans as a model organism to study the pdk-1 gene in the insulin/IGF-1 signaling (IIS) pathway. The IIS pathway regulates the dauer stage in C. elegans. This stage parallels the infective (iL3) stage in B. malayi, allowing it to survive within the mosquito vector until transportation to the human host. Using bioinformatic analysis, gene sequencing and polymerase chain reaction I have been able to compare the amplified gene sequences in B. malayi to predicted C. elegans gene sequences. Of the seven predicted isoforms of B. malayi I have supporting evidence that confirms that at least isoform A is expressed in B. malayi. I am currently preparing recombinant DNA constructs to test the function of Bma-pdk-1 isoform A in a cell culture system. Understanding the role of pdk-1 in the IIS pathway may contribute to potential future research that could assist in the treatment and/or management of lymphatic filariasis.

Makan Haghighi

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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Carlyle Ezpeleta

Abstract Name: Analysis of Lightweight Cryptosystems for IoT Applications

The widespread use of resource-limited devices in the Internet of Things (IoT) era has raised concerns regarding data security. To address this, lightweight cryptosystems have emerged as a solution to provide sufficient security while using minimal resources. This research focuses on studying lightweight cryptosystems that employ two types of encryption methods: block ciphers and stream ciphers. Block ciphers are encryption algorithms that work on fixed-size data blocks and require both devices to share the same secret key. In contrast, stream ciphers encrypt data byte by byte using a keystream.In this study, we designed and implemented two block ciphers and two stream ciphers using the Vivado toolchain and Nexys 4 DDR hardware. Our goal is to assess the security features of these ciphers and compare their effectiveness in safeguarding data. Through this exploration of lightweight cryptosystems and our evaluation of different encryption algorithms' performance and security, we aim to contribute to developing secure communication protocols tailored for resource-constrained devices in the IoT ecosystem.

Meredith Hagler

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Meredith Hagler

Abstract Name: Scroll Trance: The Relationship Between Screen Time, Social Media, Anxiety, and Depression

The present study investigates the relationship between screen time, social media usage, and mental health. High levels of screen time have been associated with an increased likeliness of mental health symptoms, specifically with prolonged, long-term use. The overall increase in social media usage has skyrocketed alongside the influx of cases of suicide and depression. Frequent use of social media has been suggested to increase the symptoms of depression and anxiety. This study hypothesizes that greater levels of screen use will be related to higher levels of anxiety and depression, and high social media usage will be related to higher levels of anxiety and depression than other forms of screen use. A survey was created asking questions regarding the number of hours spent on screen usage and social media, and the Depression, Anxiety, and Stress Scale short form (DASS-21) will be utilized to measure recent levels of anxiety, depression, and stress. Participants will be asked to provide their screen time hours from their phone data and their usage of specific applications, including social media platforms. The sample size is expected to be around 120 participants, ranging from the ages of 18-65, mostly residing in the Bay Area, varying areas of Northern California and the rest of the United States. The expected results of this study are that individuals who have higher levels of screen time have higher levels of stress, anxiety, and depression. Furthermore, individuals who use social media as their primary mode of screen time are expected to have the highest levels of anxiety and depression, with symptoms increasing as the time usage goes up. This research will be beneficial to future exploration of the association between screen usage and mental health to aid in methods of prevention for individuals affected by prolonged social media and screen time.

Leena Haider

KY - University of Kentucky

Discipline: Health and Human Services

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Abstract Name: Mediating Medicine: Patient Perceived Level of Comfort and Confidence in Healthcare Interactions

Whether filing medical paperwork or understanding the scope of diagnoses, confidence in healthcare systems influences individuals' health behaviors and healthcare interactions. Current evidence indicates that patients with high confidence levels are more likely to engage in healthy behaviors such as exercising, eating a balanced diet, and seeking medical care when needed. Confidence is impacted by factors that contribute to feelings of self-worth and support: socio-demographics, health status, and overall quality of life. The purpose of our study is to describe the relationship between patients' confidence and level of comfort within their healthcare interactions. We conducted a qualitative study by distributing surveys to patients within the Medical Specialties Clinic at the University of Kentucky (UKY), approved by the UKY IRB (#88078). Our goal enrollment is 200, with the data presented here reflecting 34 for a preliminary analysis. We found significant relationships between patients' preference for being accompanied by family and anxiety with the need for medical clarification or further questioning. Patients who reported needing clarification from their provider also preferred to accompany a family member to their appointments. (r =0.659, p =<0.001). Moreover, they reported feeling more anxious about healthcare interactions. (r =0.421, p =0.013). Future analysis with an increased sample size will group patients to describe any associations between sex, race/ethnicity, and geographic location on confidence within healthcare interactions. The results of our preliminary analysis demonstrate the need for improved therapeutic alliance between patients and healthcare providers. This relationship is bidirectional and allows patients to express their health concerns and build trust with their providers and the broader healthcare system. Our study results can lead healthcare providers to adapt their approaches and ensure that individuals receive the support they need to make informed health decisions and have positive healthcare experiences.

Maliha Haider

NJ - Kean University

Discipline: Mathematics and Computer Science

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Abstract Name: Utilizing Machine Learning for Review-Based Rating Prediction

Since sentiment analysis tools often differ from the nuanced evaluations conveyed by user-provided five star ratings, this study aims to analyze the two by comparing the sentiment between text reviews and numeric star ratings. The second objective focuses on predicting star ratings using machine learning to offer a valuable tool for products or businesses on different platforms that lack native rating systems. To conduct this study, the Yelp dataset is retrieved from the Yelp Open Dataset, which contains 7 million reviews and 150K businesses, and consists of five large files, including a file with the Yelp reviews. This file is input into a Python program that contains four state-of-the-art sentiment analysis tools: TextBlob, Vader, NRC Lexicon,

and Stanza. The sentiment analysis values that are generated are then analyzed using a Python program to calculate the Pearson correlation coefficient, indicating that overall, sentiment analysis tools do not show strong correlations with star ratings. Therefore, this study employs machine learning techniques to develop a more accurate model that will predict 5-star ratings. The large language models that are used in this study are BiLSTM (Bidirectional Long Short-Term Memory) and BERT (Bidirectional Encoder Representations from Transformers). To train these models, the Yelp reviews and their corresponding star ratings are utilized. After the machine learning models are created and their performance on the test sets are assessed, the overall accuracy is 66.54% for BiLSTM and 71.42% for BERT, indicating that the BERT model yields more accurate results than the BiLSTM model. To further this project, we use other machine learning techniques to make a more accurate model for predicting 5-star ratings so that it can be used for products or businesses on different platforms that do not have a star rating.

Rawan Haj-Hussein

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

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Abstract Name: Exploring the Impacts of Neuronal, Huntingtin Aggregates on Adult Drosophila melanogaster from Cells to Behavior

Huntington's Disease (HD) is an inherited, monogenic disease affecting thousands of Americans (~1/10000) yearly. Mutant Huntingtin protein contains a stretch of glutamine repeats that, when expanded, becomes unstable and forms inclusion bodies associated with the pathophysiology of the disease. We modeled HD pathophysiology using larval and adult forms of Drosophila melanogaster expressing control and pathogenic versions of human huntingtin tagged with RFP. We tracked huntingtin aggregate proliferation in the nervous system (NS) of Drosophila from eggs every 24 hours and determined a linear progression in the size and number of aggregates in the developing brain, motor axons, and at the neuromuscular junction. Using live imaging of fluorescently labeled huntingtin, we determined that axonal aggregates significantly impaired trafficking of organelles like synaptic vesicles, mitochondria, and dense core vesicles. To assess the downstream implications, we conducted electrophysiological recordings from muscles using intracellular voltage recordings and muscle force recordings and observed significant impacts on neuromuscular transduction. Larval crawling patterns were significantly impacted, showing impairments in movement speed and total distance traveled. To extend our findings to the adult form of Drosophila, we expressed huntingtin-aggregates in the wings to circumvent their lethality when expressed in the NS. The size and number of Htt-positive puncta increased to a greater extend in the pathogenic version of HD flies compared to controls. Here we have shown significant molecular, cellular, physiological, and behavioral deficits associated with pathogenic human huntingtin expression in the nervous system of Drosophila. Our work serves as a robust model to assess the progression of HD, and as a rigorous tool for potential genetic and therapeutic treatments for HD disease progression.

Rebekah Hakala

UT - Utah Valley University

Discipline: Social Sciences

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Abstract Name: How Attachment Theory Affects Relationship Status

Numerous studies have gone into the significance of attachment theory. Attachment theory states that how caregivers respond to children's bids for attention shapes how they connect in all relationships; moreover, this affects their relationships and well-being long-term (Bretherton, 1992; Kurth, 2013; Wilson-Ali et al., 2019). Due to the weight attachment theory, this study aims to address how attachment theory can impact relationship status. Relationship status is often defined by whether a couple is dating, cohabiting, married, or divorced. Studies have shown that relational status can correlate to relationship competency, greater life satisfaction, and lower levels of loneliness (Beckmeyer & Cromwell, 2018; Adamczyk & Pilarska, 2012). This study specifically looks into how attachment theory affects relationship status. Recruitment for the present study involved snow-ball methodology where undergraduate students from four universities were invited to share an online survey via social media. The following selection criteria were required in order to participate in the research: currently be in a romantic relationship and be between 18 – 70 years old. The sample consists of 838 participants (females = 61.6%, males = 38.4%). The mean age of participants is 25.92 (SD=9.068), the average length of the participants' relationship is 5.56 years (SD=6.06). Participants reported their relationship status as follows: 43.6% married, 37.5% dating in a committed relationship, 14.7% cohabitating, and .8% dating after a divorce. Results will be quantified in the next month and data will be analyzed to understand the significance of attachment upon relationship status.

Anisha Haldar

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: Cross-Species Investigation and Analysis (CoSIA): An R package and Shiny App that Provides an Alternative Framework for Cross-Species Transcriptomic Comparison Studies

High throughput sequencing technologies, such as RNA sequencing, have allowed cross-species comparative transcriptomic studies to be developed. However, due to challenges pertaining to biological and technical factors, there are numerous problems with comparing gene expression across species. Previous cross-species comparative studies have implemented multiple methods for gene-expression-based studies by examining evolutionary relationships between the species and employing rigorous statistical assumptions to account for species-level differences in the expression. However, these methodologies use direct comparisons, which are affected by batch effects and differences in gene expression patterns. Therefore, we have developed CoSIA (Cross-Species Investigation and Analysis), a Bioconductor R package and Shiny app that provides an alternative framework for cross-species transcriptomic comparison of non-diseased wild-type RNA sequencing gene expression data across tissues and species using variability, diversity, and specificity metrics. Users are able to employ these relative comparison metrics (variability, diversity, and specificity) using data from Bgee to visually and quantifiably compare across five different commonly used biomedical model organisms (Mus musculus, Rattus norvegicus, Danio rerio, Drosophila melanogaster, and

Caenorhabditis elegans), in addition to Homo sapiens. CoSIA provides a key tool for measuring and visualizing the variation in a gene's expression profile to better determine suitable model organisms for studying a specific gene or variant and allows users to make better comparisons between species using gene expression.

Kamila Haliru

SD - University of South Dakota

Discipline: Social Sciences

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Abstract Name: Effects of Psychological Disorders on Reachability Judgements

Understanding peripersonal space and object perception is crucial in daily life. Previous studies indicate that individuals with major depressive disorder (MDD) perceive objects as being farther away. This study investigates whether post-traumatic stress disorder (PTSD), often comorbid with MDD, affects reachability judgments and object perception similarly. We also examine how tool use alters perceived object distance and the underlying neural mechanisms in a clinical population. Participants, categorized into four depressive symptom groups, performed a behavioral task to estimate distances of objects placed at varying lengths, both with and without a tool. Additionally, a task-based fMRI assessed brain activity while participants viewed objects on a screen, indicating perceived distances via a button box. Contrary to expectations, PTSD did not influence reachability judgments. However, the PTSD group exhibited heightened activation in sensory, motor, and visual processing brain regions compared to the non-PTSD group. Intriguingly, objects were perceived as more distant when participants held a tool, except when within and beyond 80cm, the boundary of peripersonal space. Comparing the mild and minimal depression groups revealed significant differences in distance estimation, with the mild group reporting shorter distances. Neuroimaging showed increased activation in areas associated with inhibition, sensory processing, and self-awareness in the mild depression group. These findings suggest that tool use extends perceived peripersonal space and that depressive symptom severity influences object distance estimation and brain activation patterns. This research enhances our understanding of spatial perception in clinical populations and highlights the complex interplay between mental health conditions and sensory processing.

Julia Marcelle Hall

AL - University of Alabama at Birmingham

Discipline: Social Sciences

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Abstract Name: The Mediation Effect of Mindfulness in the Relation Between Adolescents' Inhibition and Working Memory

Background. Adolescence represents a critical period for cognitive development of executive functioning, marked by increases in impulsivity and decreases in self-regulation behaviors. Poor inhibition has been linked to deficits in working memory (WM), and recent studies propose mindfulness as a possible strategy to enhance facets of executive functioning. Thus, higher levels of mindfulness might mediate the relationship between inhibition and WM. Methods. The current study investigated the mediation effect of mindfulness in the relation between inhibition and working memory. As a part of a larger study, 128 adolescents ages 9-13 completed two computer-based cognitive tasks to assess inhibition, the Go/No-Go and the Stroop test, and a memory retrieval task to assess WM, Digit Span. They also self-reported mindfulness using the Child and Adolescent Mindfulness Measure (CAMM). Mediation analyses predicting performance on the WM task were performed, with inhibition as a predictor, mindfulness as a mediator, and age and gender as covariates. Results. Mindfulness did not mediate the relation between inhibition and working memory. The Go/No-Go task was positively correlated to WM and inhibitory control correlated positively with WM. Discussion. Contrary to the hypothesis, mindfulness did not mediate the relationship between inhibition and WM. The current study utilized a self-report measure of mindfulness, while others have studied comparison groups with a mindfulness intervention. The adolescents may have misestimated their self-reported mindfulness abilities or failed to use these skills for the tasks. The study's findings suggest youth may need to learn how to exercise mindfulness practices to use them effectively.

Eric Hall

NC - Elon University

Discipline:

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Abstract Name: Undergraduate Research as a Career Readiness Tool

Through the history of CUR, we have better understood the positive implications of undergraduate research for participants. Over the years, the list of benefits has continued to grow. We are now synthesizing these benefits into broader implications they could have for students. Over the last few years, CUR leaders have been conversing with funding agencies, industry partners, human resource experts, future employers, professional societies, and beyond to understand the impact of undergraduate research, scholarship, and creative inquiry (URSCI) on career readiness.

Emma Halliburton

TX - Stephen F. Austin State University

Discipline: Education

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Abstract Name: Empowering Youth through Social Justice: A Mixed Methods Case Study of the Deaf Community Travel Trunk Project

This project, undertaken as part of an honors contract, aimed to develop a Travel Trunk centered around one of the core strands of humane education: Social Justice. It contains a carefully curated collection of materials, resources, and interactive lessons designed to captivate students' interest and inspire exploration of critical topics. In this case, the project focused on raising awareness about the deaf community.The undergraduate student, enrolled in the Deaf Education program, approached this project with a deeply personal connection. Having completed the RedRover Reader training, which emphasizes the incorporation of social and emotional learning through literature, she selected the book Listen: How Evelyn Glennie, a Deaf Girl, Changed Percussion as the centerpiece of the Travel Trunk. This book not only highlights the achievements of a deaf individual but also aligns with the goal of fostering empathy, kindness, and understanding. To engage students, an immersive activity was developed. Students were introduced to Evelyn Glennie through a YouTube video, gaining insight into her life and accomplishments. They also had the opportunity to interact with various percussion instruments, including a vibra-slap, maracas, and more. Some students wore noise-canceling headphones to simulate the experience of deaf individuals, enhancing their understanding of how music can be approached in the deaf community.In addition to the interactive elements, the undergraduate student created pre- and post-surveys to measure students' perceptions of the abilities and challenges faced by people within the deaf community. These surveys were administered to an elementary classroom as a selected case study. The data gathered was analyzed using both quantitative descriptive statistics and qualitative coding to identify emergent themes.The project exemplifies the power of education to promote inclusivity, empathy, and social justice, and highlights the importance of initiatives like the Travel Trunk in fostering a more just and inclusive society for all.

Jerome Hamilton Jr.

MI - Michigan State University

Discipline: Social Sciences

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Abstract Name: Searching for Harmony in the Outdoors: An Exploration of Hunting and Fishing Participation in Michigan

Hunting and fishing are important because of the physical and mental health benefits that they offer to participants and the monetary support that they provide for conservation in the United States. At the federal level, some of the funds allocated to all 50 states for conservation are derived from two large funding models, embedded in the Pittman-Robertson and Dingell-Johnson acts. In these models, the amount of funding depends on how much hunting and fishing participation there is in each year. With hunting declining nationally and fishing participation below peak 1990s numbers, conservation may run out of funding soon. In an effort to increase participation, scholars have gathered information about the motivations and constraints of hunters and anglers, and have studied the behavioral intentions of prospective hunters and anglers; however, little research has attempted to connect the motivations and constraints of prospective hunting and fishing participants to that of the current participants. Therefore, it is the purpose of this study to understand the constraints and motivations of hunters, anglers, and general outdoor recreationists through a survey of Michigan recreators. In addition, rather than only asking about constraints, the survey will ask each participant to identify solutions that they believe are most likely to improve their access to and enjoyment of outdoor recreation areas. The results of this study are expected to inform the development of successful campaigns that recruit and retain hunter and angler populations, thereby spreading the known physical and mental health benefits of these forms of recreation and preventing the evaporation of funds for conservation.

Tyler Hamm

UT - Brigham Young University

Discipline: Engineering and Architecture

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Abstract Name: Advancing Molten Salt Reactor Technology: Experimental Thermal Conductivity of MSR Salts

Molten salt reactors (MSRs) are being investigated for use in clean energy to replace the common pressurized-water nuclear reactors in the United States. MSRs use high-temperature, low-pressure molten salt coolant to provide safer and more efficient energy production. However, many MSRs salt compounds lack tested thermophysical properties, including thermal conductivity. Our research focuses on experimentally measuring MSR salt thermal conductivities using a modified transient hot-wire technique. We use a needle probe, equipped with a thermocouple and heating wires, immersed in molten salt compounds at temperatures running from 400–700℃. Thus far, we have tested the thermal conductivity of LiCl-NaCl (eutectic and 91%LiCl composition), NaCl-KCl (eutectic), LiCl-KCl (eutectic), LiF-NaF (eutectic), and FLiNaK. These test results indicate higher than expected thermal conductivities and consequential further investigation into the physical properties of our probe to improve the experimental design and data evaluation. This research and experimental method will provide accurate and precise experimental results of MSRs molten salt thermophysical properties to populate the national database used by MSR developers which will help further the possibilities and practicalities of MSR technology.

Priscilla Hammermeister

TN - Middle Tennessee State University

Discipline: Interdisciplinary Studies

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Abstract Name: Financial Success Based on Maslow's Hierarchy of Needs

Financial success and what factors contribute to it can be assessed from many different angles.This study assessed how an individual’s financial success in adulthood, with the help of financial success indices, is correlated with an individual’s adolescent years according to Maslow’s Hierarchy of Needs. To better understand this relationship, a survey was administered to 519 participants between the ages of 35 and 45 at the time of the survey. Results confirmed the correlation between an individual’s upbringing and their financial success in adulthood. Different factors contributing to financial success in adulthood include but are not limited to having basic needs met, such as shelter, sufficient food, strong relationships, and a sense of self-esteem. Additionally, this study established competing hypotheses to determine whether some individuals who experienced a lack of satisfying their needs in their adolescent years were still financially successful in adulthood because of the desire to compensate for the lack experienced during adolescence.

Yasmin Hamoud

EGY - The American University in Cairo

Discipline: Social Sciences

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Abstract Name: Testing the Effects of Different Languages of Music on Learning and Memory in Bilinguals

Researchers have long debated the effects of music on learning and memory. This study aims to test the effects of music in different languages and speeds on visual and reading task completion, specifically in regards to bilinguals. An experiment was conducted using 30 English-Arabic bilingual participants that ranged from 20 to 30 years of age, all with college level educational backgrounds. They were split into three groups that had to complete two tasks: one being a visual/problem solving task and the other being a reading/memory retrieval task. Participants in the first group had to listen to one medium paced and one fast paced Arabic song while completing the two tasks, one song would accompany each of the two tasks. The second group had the same conditions of the first group with the main difference being that the songs were in Russian and the third group completed the tasks while not listening to any music. The study managed to support one of the four hypotheses it aimed to test. Results supported the first hypothesis that participants who listened to music while performing comprehension tasks would perform poorly. Based on the results, the second hypothesis that music would help with visual tasks was rejected, instead showing significant results of the opposite. The third hypothesis that music in an incomprehensible language would make it easier to focus on the tasks was also rejected. Lastly, The fourth hypothesis which suggested that faster music would make task completion quicker was rejected, also showing significant results of the opposite. In conclusion, the results yielded significant evidence that music is detrimental to cognitive processes in learning and memory regardless of language and pace, contrary to popular belief.

Allison Hanby

MS - University of Southern Mississippi

Discipline: Health and Human Services

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Abstract Name: Gender, Body Shame, and Sexual Anxiety: A Mediational Model Among College Students

Previous research on sexual anxiety among emerging adults has consistently reported gendered differences in sexual anxiety levels with women reporting significantly higher levels of sexual anxiety than their male peers. As sexual anxiety is linked to several aspects of sexual functioning and enjoyment, this gendered discrepancy bears further investigation. Past literature has explored factors that may be influencing sexual anxiety in emerging adults, and body shame has emerged as a potential contributing factor. Using Objectification Theory as a basis, in this article, we seek to understand the coexisting relationships between gender, body shame, and sexual anxiety. We hypothesize a model wherein body shame may act as a mediator between gender and sexual anxiety. Through recruiting 293 participants aged 18-26 at a public Southern university to complete an anonymous online questionnaire, a mediational model test between these factors was conducted. Results indicated that body shame fully mediates the relationship between gender and sexual anxiety, and body shame is significantly correlated with sexual anxiety across both genders. Consistent with previous literature, women were also more likely to report higher rates of body shame and sexual anxiety than men. These findings provide a clearer understanding of the impact of body shame on emerging adults' sexual anxiety, which has important implications for educators, mental health professionals, and researchers.

Similarly, these results highlight how body shame stemming from gendered differences in sexual objectification may be contributing to higher rates of sexual anxiety among women.

Katelyn Hancock

CA - California State University - Fullerton

Discipline: Social Sciences

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Abstract Name: Influence of Adverse Childhood Experiences on Date Rape Recognition and Victim Blame

The present study examined how adverse childhood experiences (ACEs) affect recognition of date rape and victim blame in a sample of diverse college students. ACEs are important to consider in regards to sexual assault perceptions since they can have lasting, negative effects on personal health and wellbeing. The sample (N = 193) included college students at California State University, Fullerton. There were 112 (57.7%) participants who reported low (1 or less) ACEs, and 82 (42.3%) who reported high (4 or more) ACEs. Participants completed an online protocol utilizing the ACE scale, an attitudinal measure of rape survivors, and a questionnaire in response to a date rape scenario. It was hypothesized that: (H1) Participants with low v. high ACEs would endorse greater blame of a date rape victim/survivor; (H2) Participants with low v. high ACEs would be less likely to recognize date rape as rape per se. The results supported H1 ($t(96) = 2.96$, $p = .01$); participants with low v. high ACEs expressed more (victim) blame toward the date rape survivor. The results did not support H2; low v. high ACEs participants did not differ in date rape recognition. The majority of participants, irrespective of ACEs, did not consider the date rape depicted in the vignette as rape. The present results may be beneficial in promoting collegiate date rape awareness and reducing marginalization of date rape survivors.

Gabriella Handford

VA - Virginia Military Institute

Discipline: Natural and Physical Sciences

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#3 Molly Kent

Abstract Name: Effect of psychedelic therapy on male Betta splendens aggression as compared to traditional pharmaceuticals

Mental health disorders such as depression, anxiety, and mood disorders have been on the rise, and current success rates of antidepressant therapy for all populations ranges between 40 to 60 percent. These antidepressants, such as serotonin selective reuptake inhibitors (SSRIs), work to slow the reabsorption of the neurotransmitter serotonin from the synaptic gap, allowing serotonin to have a greater impact in the body (Chu and Wadwha 2021). Similarly, atypical antipsychotics used in depression treatment act on serotonin and dopamine receptors (Zhou et al 2015). Current methods of depression treatment still leave a sizable portion of

patients without relief, necessitating research into alternatives. Psychedelic therapy suggests success because many psychedelics are serotonin receptor agonists they bind to the serotonin receptor and mimic the effect of serotonin (Madsen et al 2019). Psychedelic therapy is a closely monitored procedure where patients experience a "trip," or a carefully guided, out-of-body experience resulting from psychedelic use (Johnson et al 2008). Researchers have questioned if psychedelic-driven remissions are caused by a change in neurochemistry or are simply the result of a profound psychological experience. To investigate this process, sixty male betta fish were divided into five treatment groups: control, 11 doses of an antidepressant, 11 doses of an antipsychotic, 11 doses of a combination of antidepressants and antipsychotics, or 1 low and 1 high dose of a psychedelic. Their behavior was recorded and analyzed before, during, and after dosage and both alone and paired with a conspecific. Ethogram data from the final aggressive displays suggests an impact of the psychedelic on behaviors such as frequency of turning.

Emilee Handy

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Emilee Handy

Abstract Name: Housing Design For A Child with Retinopathy of Prematurity

The purpose of this project is to design a home for a family of four, with two working parents, a 4-year-old daughter, and a 10-year-old son with retinopathy of prematurity.This disease affects babies born prematurely, in some cases it is curable and in others it can lead to lifelong visual impairment. The child in the user profile with this impairment experiences full vision loss and has special needs in the home such as; clear and wide walkways, materials that differentiate spaces, reachable counters and storage, and being able to navigate the space with a cane. Research for this project focused on quality of life which led to the design choice of featuring large custom textile art pieces in the home. The research around the effects of textile art has been collected through case studies and literature reviews specifically focused on textile art and people with any visual impairment. The research findings indicated significant positive change to overall wellbeing when introducing experiencing textile art in some way. With careful consideration around the textiles used in each piece, all featured works are designed to withstand the love given to them throughout the family's time in the home. The experience of interacting with textile pieces has shown to increase serotonin and provide feelings of independence, growth, meditation, and relaxation. It is also said by users that featuring textural art in the home provides a space for intentional time with the senses. Contrasting materials on furniture in various rooms were also utilized to help distinguish different furniture pieces as well as different rooms of the house. From the designs for this project, the expected outcome is the family inhabiting the home can help their children grow their independence and have safe, sensory, and friendly spots in their house that accommodate their family’s needs.

Jackson Hanle

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: An Investigation into the Mechanisms of Electron Transport in Highly Doped AlGaN:Si (Al% > 65%)

Highly conductive contact layers are an integral aspect of modern electronics. AlXGa1-XN, due to its ultrawide bandgap (5-6 eV) and high breakdown voltage (10MV/cm2), is a promising material for the production of UV LEDs and high-power electronics. Previous research shows an increase in activation energy for conduction with increasing aluminum mole fraction, thus making highly conducting contact layers a challenge. Current methodologies, up to this point, have focused primarily on electrical measurements (e.g. temperature dependent hall effect). This research, in contrast, seeks to better understand electron transport in heavily silicon doped, high aluminum content AlXGa1-XN (X > 0.65), specifically by monitoring the neutral donor concentration with 10 GHz electron paramagnetic resonance (EPR). EPR can measure more directly the behavior of the carrier species, in our samples being the neutral Si donor. Samples were doped on the order of 1018 – 1020 [cm-3] and were measured from room temperature to 4K. The temperature dependence of the neutral donor EPR spectra linewidth and intensity were measured, and statistical models were used to understand the mechanism of transport in these high Al mole fraction AlGaN samples. The results of this research indicate the presence of impurity band conduction and electron hopping as well as the presence of compensating centers.

Kayleigh Hanlon

IL - University of Illinois Urbana-Champaign

Discipline: Engineering and Architecture

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Abstract Name: Small-Scale Motion Capture Enclosure for Pediatric Heart Simulator Kinematics

A pediatric heart simulator is expected to serve as a platform to evaluate the mechanical mitral valve in advance of a mitral valve replacement surgery. In this regard, the purpose of a small-scale motion capture enclosure is to study intricate iterations of contractile motion of a pediatric heart simulator. Additionally, the extracted motion data can be used to identify the optimal mechanical mitral valve for a specific patient. Motion capture enclosure that specializes in precision and submillimeter scale can help study the dynamics of the heart simulator that replicate hearts' twisting behavior, especially at their apex. We conducted both small angular rotation and translation tests within the enclosure to determine tracking accuracy. We performed the translation test by moving a small rigid disk which had approximately the same diameter as a heart simulator along the XYZ plane. This test revealed that our system can capture the movement data in a micrometer scale in microseconds. The rotation test was conducted by spinning a flat disk by 45 ° and testing its accuracy of angle changes. We found out that there was an error of less than 0.25 ° when rotating the object in small scale. Currently, we are investigating how we can apply the motion capture system to volumetric measurement tracking. We have recently detected an average volume deflation rate of about -0.144 mm3/s. The similar physical and mechanical properties of a balloon will be used to help formulate an experimental set up for the heart simulator. Understanding changes in balloon volume can provide further insight on geometry and dynamics of the synthetic heart simulator after both the diastole and systole periods. We expect that our work will contribute to a biotechnology setting and insight into the mechanical behavior of heart simulators devised for mitral valve replacement surgery.

Lucas Hanna

CA - California State University - Long Beach

Discipline: Engineering and Architecture

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#2 Amr Morsy

Abstract Name: Effective Methods to Predict how Aging Mechanically Stabilized Earth Walls will Degrade.

Mechanically Stabilized Earth (MSE) walls have widely been used across the United States and globally as earth retention systems in numerous civil engineering projects since the 1970's. MSE walls comprise mainly of structural fills reinforced by tensile inclusions, such as steel strips and steel grids. Such walls are prone to several aging-related deterioration mechanisms that need to be understood to develop an effective asset management plan for them. One of the key deterioration mechanisms in MSE walls is the corrosion of steel reinforcements with time. While significant research has been conducted to study the corrosion of steel reinforcements buried in soils, it has continued to be one of the most vexing challenges in the asset management of MSE walls for its high uncertainty and variability both spatially and temporally. Current corrosion models that are used in the design MSE walls are overly conservative to take account of the uncertainties associated with corrosion. However, it is impractical to use such overly conservative models for the evaluation of steel reinforcement corrosion in existing MSE walls, which have been built since the 1970s, for asset management purposes. This research focused on evaluating the effectiveness of existing corrosion models of buried steel reinforcements in MSE walls and proposing an improved model that can realistically reflect the expected corrosion of steel reinforcements considering wall fill type, moisture, resistivity, chlorides content, sulfates content, pH, and organic content. Corrosion data compiled from the literature were used in the development of the proposed corrosion model. These data involved corrosion rates and fill properties obtained from numerous MSE walls across the United States. Additionally, corrosion data from two recent MSE walls failures in New York were used to validate the proposed model.

Ashlyn Hannon

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Ashlyn Hannon

Abstract Name: The Only Exception: Colson Whitehead's Portrayal of Modern-Day Slavery Through the U.S. Prison System

"Except as punishment for a crime." These six words are often forgotten, inconspicuously slipped in between the famous lines of the 13th Amendment: "Neither slavery nor involuntary servitude" and "shall exist in the United States." The 13thAmendment was designed to protect Black Americans from future injustice, but this small phrase created a loophole that allows people in power to continue oppressing Black citizens through the use of the prison system. In his novel The Nickel Boys, Colson Whitehead uses the stories of Black boys imprisoned in Nickel Academy to reveal the oppression of Black Americans through the U.S. prison system, which continues the legacy of slavery through systemic racism and generational trauma. The experiences of the boys sentenced to Nickel Academy serve as manifestations of the effects of prison on Black Americans and demonstrates how the prison system enforces the social and economic legacies of slavery. Black people are incarcerated today at disproportionate rates, often because of social conditions Black citizens have been subjected to since slavery, such as poverty and broken families. This is apparent for Black boys at Nickel Academy, since each boy came from a devastating background that made them susceptible to incarceration. During incarceration, inmates in Nickel Academy and today are subject to corruption at individual levels, with abuse from officers, and systemic levels, as prisons use incarcerated individuals as slaves in massive cheap and free labor rings. Even after release, former inmates struggle tremendously to live fulfilling lives and move up the social and economic ladder. In The Nickel Boys, Turner was lucky to escape alive, but

failed to live a happy life as the trauma of prison lingers throughout all factors of his life. Because of racism in the prison system, Black Americans still live out the impacts of slavery generations later.

Patrick Hanrahan

PA - Lafayette College

Discipline: Business and Entrepreneurship

Authors:
#1 Patrick Hanrahan

Abstract Name: The Effect of Free Agency on Franchise Valuation: A National Basketball Association Case Study

National Basketball Association (NBA) executives are troubled by the economic decisions surrounding the free agency market. While having a set salary cap, owners and general managers must allocate funds to at most 15 players on a roster. Deciding who to add to their rosters and at what cost to the team are important questions for squad performance and economic achievement. While framed as a sports-economics problem in this analysis, this paper will aim to outline the relationship between how a new acquisition's cost and characteristics are related to a team's change in value. A variety of metrics indicate that the quantity of 'key' players, those in the highest salary bracket, is correlated with revenue and increased value for the rosters. Expanding on the previously conducted research, this analysis evaluates every free agent signing for the 30 NBA teams since 2013. Looking at over 1,500 free-agent deals, this study will compare the contract details and monetary value with attributed changes in team valuation. The results will be a useful tool in identifying the types of players that will make individual teams the most money, and ultimately, whether or not NBA executives act rationally in an economic framework to maximize their franchise's value. Extrapolating this idea, these methodologies and analysis can be replicated for most business models allowing executives to make better and more informed financial decisions.

Addison Hansen

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Addison Hansen
#2 Priscilla Villaseñor-Navarro
#3 Breanna Lambert

Abstract Name: Empowerment Through Sex Education: Analyzing the Lack of Comprehensive Curriculum in Utah

This research project delves into the intricate web surrounding the lack of comprehensive sex education (CSE) in the state of Utah, employing an intersectional, equity-centered system thinking approach. The researchers, former members of the LDS church and products of Utah's public education system, bring personal experiences to contextualize their study. Their methodology involves primary interviews with recent alumni, healthcare providers, educators, and administrators, supplemented by an extensive literature review and analysis of publicly available interviews.This research provides a thorough analysis, comparing CSE with abstinence-based education. It reveals that Utah's current limited sex education is rooted in a historical context of colonialism, purity culture, and theocratic influence, resulting in detrimental consequences such as

increased rates of queer and gender discrimination, sexual violence, and societal ignorance.The research uncovers the deeply embedded influence of the LDS church on Utah's sex education policies. This further perpetuates purity culture, restricts LGBTQ+ inclusivity, and obstructs discussions on consent. The stakeholder analysis highlights power dynamics, emphasizing the influence of theocratic leadership over lawmakers and educators.The research uncovers an alarming gap between stakeholder perspectives and policy decisions, as evidenced by the widespread support for CSE among parents, health professionals, and teachers, juxtaposed against the theocratic governance prioritizing abstinence education. The researchers propose strategic levers of change, emphasizing the need to challenge the theocratic status quo, engage conservative parents through culturally resonant awareness-raising methods, and empower progressive parents to advocate for inclusive sex education.The research highlights existing interventions, like federally funded programs, advocacy for state policy change, grassroots initiatives, and therapeutic services. Stressing the importance of strategic approaches to accelerate progress in a system gridlocked by theocratic hierarchy. Advocates must navigate cultural values, community building, and strategic engagement with key power players to bring about a transformative shift towards comprehensive sex education in Utah.

Presleigh Hansen

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Presleigh Hansen

Abstract Name: Parental Divorce, Sibling Relationships, and Depressive Symptoms

Parental conflict and divorce can be some of the most adverse experiences in a child’s life. Around 40% of children will experience parental divorce before adulthood and even more will experience seeing parental conflict in their homes. Exposure to parental conflict was found to significantly increase episodes of major depressive disorder. However, positive relationships with older siblings may buffer against the negative effects of parental conflict. Older siblings may be a protective factor for their younger sibling because they are one of the longest standing supportive relationships someone can have. Older siblings have also been found to provide strong emotional support and assistance for their younger siblings. The proposed study plans to investigate if parental conflict will be associated with depressive symptoms and if older siblings may serve as a protective factor reducing the association between parental separation and depressive symptoms. Participants will be 150 undergraduate students for the University of Wisconsin-La Crosse and based on demographic characteristics of this population it is expected to get participants between ages 18-24 being predominantly white women. To examine the hypothesis, will complete an online Qualtrics survey assessing parental conflict, sibling relationships, and depressive symptoms. Multivariate regression will be used to examine the associations among these variables. We expect that people who have experienced parental conflict will be associated with more depressive symptoms. In addition, we predict that the association between parental conflict and depressive symptoms will be weaker when participants report more positive relationships with an older sibling. I plan to conduct a multivariate regression to find a relationship between parental conflict, depressive symptoms, and sibling relationships. This research has the opportunity to highlight that even if siblings do not live in the same environment, they still can create an impact on each other later in life.

Claire Hansen

UT - Utah State University

Discipline: Social Sciences

Authors:
#1 Claire Hansen

Abstract Name: #istandwithukraine: A trend, or a statement?

On February 24, 2022, Russia invaded Ukraine. A long-standing dispute over a border had turned into yet another violent conflict. Feeling the effects of the war, people everywhere had questions, ones that were not being answered by the people in power. They turned, then, to the source of all information: social media. This study employed a cultural studies approach. The theory of cultural studies takes into account how culture influences other facets of society including social media content. Observing culture as it manifests in social media discourse allows for understanding how vastly different people perceive the world. 200 tweets from the time period of February 16-May 16 were collected using the key words “Ukraine”, “Russia”, and “World War 3” as well as the hashtags “#WorldWar3”, ”#UkraineWar”, ”#istandwithukraine”, and “#istandwithputin”. This study concluded by emphasizing that the implications of social media discourse should not be understated or forgotten about and that cultural themes from within social media discourse spread easily, giving them the power to directly shape public opinion on international conflicts like this one.

Cade Hanson

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Cade Hanson

Abstract Name: The History of Native American Betterment in Wisconsin and its Future

Wisconsin is known for its forestry, cheese, and being Midwest nice. What is often overlooked is the history of Native Americans and their involvement in the state. In this project, I focus on how Native Americans historically have worked to better their lives in Wisconsin as well as what are they currently working on and hoping to improve upon in the future. I review existing literature to construct a timeline of Native American involvement and betterment to have a better understanding of their history. By analyzing action plans made by organizations that oversee the eleven federally recognized tribes in Wisconsin, I outline current programs and goals of the organization to predict where the future of Wisconsin Native American betterment will go. I find that tourism has historically been important in Wisconsin and is seen as vital to the future for economic development as well as a teaching tool to build community relations. I also discuss the importance of small business development and start up methods that reservations can use to help keep money coming in and staying on reservations. In addition, since COVID, there has been an increase in programs focused on epidemiology and health within reservations. This research sheds light on a group that is often overlooked and can gain support by having others be more knowledgeable on their situation. Overall, the betterment of Wisconsin Native American lives is dependent on taking advantage of their location as well as working with others outside of the community.

James Harber

CA - University of California - Santa Barbara

Discipline:

Authors:

#1 Kaylin Choe
#2 Ashley McDonald
#3 James Harber

Abstract Name: Cardiothread and Lifesmile Oral Microbiome Medical Device Development in a Community College STEM Undergraduate Research Lab

A model curriculum for undergraduate medicine and biotechnology research produced two medical devices proposals. First, using cell culture methods and 3D printing, the students cultivated a living suture, "Cardiothread", for repair of heart valves. Cardiothread puts the patient's own cells into the newly sutured heart valve for accelerating tissue merging and healing. Cardiothread is designed to be incorporated into a spool on the DaVinci surgical robot and feed a special suture attachment. The second device "Lifesmile" the students developed de novo was based on analysis of twelve of their own supragingival tooth oral microbiomes using Illumina Next Generation Sequencing. The microbiome data revealed two keystone bacteria (Streptococcus sanguinis and Fusobacterium nucleatum) as the primary bacterial species above the gumline. The surface of healthy teeth has an abundance of Streptococcus sanguinis bacteria while unhealthy teeth are overrun with the dangerous anaerobe Fusobacterium nucleatum. The latter has been associated with risk of preterm labor, cancer, and neurological illness. To address the need for a more rapid and portable analysis, the "LifeSmile" point of care testing device was invented. Lifesmile technology isolates DNA from the tooth sample and provides a signal readout on the two bacteria channels using LAMP, CRISPR and FRET Fluorescence techologies. The Cardiothread and Lifesmile projects illustrate the pursuit of relevant tangible research by STEM undergraduates at the Community College in collaborative efforts with community physicians and researchers. This model of instruction is consistent with the aspirational guidelines of the "Vision and Change" goals of the National Science Foundation for develoiping novel open ended research exercises in the entry levels of instruction and the “Project Based Learning” Community College initiatives. The outcomes achieved by the students participating in Lifesmile and Cardiothread include multiple conference awards, high rates of University transfer and degree completion, and employment in research career trajectories.

Tara Harbo

MN - St. Catherine University

Discipline: Visual and Performing Arts

Authors:
#1 Tara Harbo
#2 Jade Lent
#3 Meghan Mason
Jade Lent

Abstract Name: Building a Brighter World: A Young Person’s Guide to Public Health

Despite an abundance of children’s literature in STEM fields, few picture books exist about broad public health topics. Building a Brighter World addresses this gap by presenting social determinants of health, e.g. housing, education, and food access, alongside worldviews for advancing health equity. Using age-appropriate language, paired with illustrated images, the goal of this project is to create a tool that makes public health accessible for a six to eight year old audience. To prepare for the project, we researched books (such as If You Give a Mouse a Cookie and the Baby Scientist series), films (such as Ponyo and Mitchells vs. The Machines), and art references that exhibited a tone and visual language that would help elevate our project’s messages. We also drew from resources created by the Centers for Disease Control and Prevention and the American Public Health Association to guide the public health content addressed within the book. Using the digital drawing program, Procreate, we drafted early designs and storyboards, as well as finalized illustrations before organizing each spread in the layout program, Adobe InDesign. Throughout the process,

our interdisciplinary team of visual artists, writers, and our public health mentor met to discuss visuals and revise each page's text, one scene at a time. As this work unfolded, this structure provided us with the space to explore new ways to introduce complex and relevant topics to a young audience in hopes that they will see themselves as lifelong contributors to health equity. Through dissemination in early childhood courses and library storytime events, this book will spark conversations about how issues of accessibility and discrimination impact health, and encourage younger generations to imagine a brighter future for all communities.

Victoria Harden

PA - Westminster College

Discipline: Social Sciences

Authors:
#1 Victoria Harden

Abstract Name: "We Shall be as a City on a Hill:" Understandings of Nationalism in America in the Post-Cold War Years

Nationalism is a subject of growing interest and significance in American politics and in the world. By studying the arguments and use of language by these three particularly influential scholars of nationalism in the past thirty years (since the end of the Cold War), I hope to gain an understanding of their ideological backgrounds to their intellectual arguments, where they diverge and where they agree, along with how they use the same or similar sources to come to different conclusions on the subject of American nationalism. How do the most influential authors on the subject of nationalism understand it, and what do they think is the best response to it, culturally and politically? Much of the literature on the subject looks at nationalism through history, or studies the ideals and beliefs of nationalists themselves. My work fits into the existing literature as a description and analysis not of nationalists or nationalism itself, but of the most influential scholarly writings on the subject. In this project, I will analyze the arguments and language of Anatol Lieven, Paul D. Miller, and Will Kymlicka in order to develop an understanding of the ideology as they see it. The works I will be studying are, often, not written for a strictly scholarly audience, but also for lay people, helping shape the population's perception of culture and politics. My background in political philosophy informs my thinking on these three influential writers on American nationalism. I will show how Anatol Lieven, Paul D. Miller, and Will Kymlicka use the same information to come to independent conclusions. While their understanding of the term "nationalism" is, broadly speaking, similar, the three come to differing conclusions regarding what Americans should do about it.

Meghana Hariprasad

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Meghana Hariprasad
#2 Morgan Black

Abstract Name: Exploring the Role of CTCF in the Formation of Topologically Associated Domains in Metazoans

In most vertebrate species, genomes are organized in 3D space into topologically associated domains (TADs),

self-interacting genomic regions that facilitate the interaction between cis-regulatory elements and target genes. The formation of TADs has recently been attributed to loop extrusion, specifically through the action of the DNA-binding protein CTCF and the Cohesin complex. In brief, loop extrusion occurs when the Cohesin complex reels chromatin into a loop such that initially distant parts of the chromosome are now in close spatial proximity. The loop extrusion process is interrupted when Cohesin encounters CTCF, allowing for the creation of distinct, self-interacting domains across the genome. Cohesin and related complexes engage in loop extrusion in all kingdoms of life, while CTCF has primarily been conserved in metazoans. In certain species, TAD formation is unexplored despite these species being known to have CTCF. For example, the role of CTCF and Cohesin in TAD structures in many invertebrate species remains unclear. To tackle this question of whether those species can form TADs in the presence of CTCF, we express their respective CTCFs in human cell lines otherwise lacking human CTCF. We will then perform Hi-C experiments, a sequencing-based method to quantify 3D genome interactions, to test for the ability to form TADs. We expect that if CTCF is capable of driving TAD formation in a given species, CTCF derived from that species would form TADs in our assay. However, if TADs are not formed in the presence of a species' CTCF, we can speculate that another mechanism rather than loop extrusion may be responsible for the formation of TADs in that species. We will expand on this work by examining whether CTCF is inherently necessary for the formation of TADs by looking at TAD formation in specific invertebrates where the CTCF factor has been lost.

Kaija Harlow

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Kaija Harlow
#2 Steven Kimble

Abstract Name: Analyzing the Population Genetics of Northern Map Turtles in the Lower Susquehanna River

Reptiles comprise the most threatened vertebrate group on the planet, facing substantial environmental and anthropogenic barriers such as habitat loss and modification, pollution, and human recreation. The Maryland state-endangered Northern Map Turtle (NMT) is threatened by anthropogenic activities and impact (recreational boating and the presence of the hydroelectric Conowingo dam) as well as environmental challenges (increased storm intensity and rapid spread of disease) in the lower Susquehanna River. NMTs specifically face increased levels of these threats due to their use of different sections of the river to optimize survivability; each section used is affected by a combination of the barriers mentioned above. This ultimately impacts population genetic parameters in unknown ways. This project analyzes the population size and delineation of NMTs in the Susquehanna to better understand potential human-induced selective pressures on this species, which will aid in creating informed management decisions to limit future NMT population decline. DNA from field-collected NMT tissue samples was extracted and sequenced to obtain DNA fingerprints. Sequenced data was bioinformatically analyzed to estimate effective population size, population geographic boundaries, and genetic diversity. Results suggest the presence of a single, small NMT population (NE ~ 28 – 57 individuals) that may have recently experienced a population reduction and be susceptible to further decline from deleterious inbreeding. Genetic diversity in this population is comparable to other populations within this species, however, it should continue to be periodically monitored for signs of increased inbreeding.

Taylor Harman

PA - Westminster College

Discipline: Social Sciences

Authors:
#1 Taylor Harman
#2 Deanne Buffalari

Abstract Name: Does Stimulant History Affect the Anxiety-Like Response to Nicotine in Male Rats?

Amphetamine, commonly known as Adderall, is a stimulant frequently prescribed for the treatment of Attention-Deficit Hyperactivity Disorder (ADHD). The use of amphetamine prescription has increased 2.5-fold in a decade and is a largely abused drug. ADHD is diagnosed in 10% of children in the US and is more prevalent amongst boys and younger individuals. Those with ADHD frequently have anxiety and over ¾ of amphetamine users report anxiety symptoms. Additionally, those with ADHD smoke cigarettes at rates significantly higher than their non-diagnosed peers and experience a greater reinforcing effect from smoking. Animal models can be used to understand biology and pathophysiology, while controlling for variables more easily than clinical models. The current study aims to analyze how a history of amphetamine exposure affects the anxiety-like response to nicotine in male rats.Amphetamine exposure was administered via 14 days of repeated injection (4 mg/kg, IP), and nicotine was administered via a single injection (0.1 mg/kg, SC) 15 minutes prior to testing. Behavioral testing on the elevated plus maze (EPM) was conducted to analyze anxiety-like behavior. Time spent in the open arms of the EPM and entries into the open arms of the EPM were measured, and ANOVA statistical testing was conducted to analyze for a significant effect of history of amphetamine and/or nicotine injections, as well as an interaction between the two. Though nonsignificant, results suggest that both amphetamine history and nicotine injection alone may increase anxiety-like behavior. Additionally, nicotine after a history of amphetamine exposure increased anxiety-like behavior, compared to amphetamine or nicotine alone. This study could provide insight into why those prescribed amphetamine are at increased risk of nicotine use, as well as anxiety. Further studies will need to be done to further assess this interaction and help understand this drug treatment with anxiety.

Phoebe Harmon

WI - University of Wisconsin-Eau Claire

Discipline: Humanities

Authors:
#1 Phoebe Harmon

Abstract Name: Reframing Rhetoric: A Study in the Exclusionary Nature of the Rhetorical Canon

The traditional canon of rhetoric, much like the canon of literature, has been exclusionary to many voices of those in minoritized communities, specifically those wishing to voice their experience about being minoritized. I propose a reframing of what many scholars consider to be rhetorical texts and speeches to include more non-traditional mediums. In order to reframe what is deemed “rhetoric,” it is important to first give rhetoric a working definition, which, I argue, is the act of persuasion, which can be carried out through any medium of communication. The beginning of this definition, “the act of persuading,” is agreed upon by many scholars, as it is specifically pulled from the classic rhetorical work of the Greco-Romans. My argument can be seen mainly in the second half of the definition, in which I state that, for a text to be considered rhetorical, it need not be confined to any medium or genre. Historically, much of what is studied in the rhetorical canon comes from either nonfiction, philosophy and/or relatively formal speeches or texts. To truly incorporate voices of those who are minoritized in the study of rhetoric, one must push these bounds by viewing alternative texts, such as graphic novels, paintings, films, poetry, or fiction texts as rhetorical works. To study this exclusion and prorpose ways of incorporating less-traditional rhetorical texts, I believe it is beneficial to first look at the recent shift to reframe the literary canon for guidance. One scholar who touches on one such idea is Emilie Bergman, in her article: “Reshaping the Canon: Intertextuality in Spanish

Novels of Female Development" (1987), which discusses the importance of allowing not only minoritized voices, but allowing for those with intersecting identities to voice their experiences.

Patrick Harmon

CA - California Polytechnic State University - San Luis Obispo

Discipline: Natural and Physical Sciences

Authors:
#1 Patrick Harmon
#2 Cole Sanchez
#3 Jennifer Carroll

Abstract Name: Synthesis of 1,1-diphenylpropan-1-ol via a solvent free mechanochemical Grignard reaction.

While pivotal to the field of organic chemistry as one of the few carbon-carbon bond forming reactions, the traditional method of Grignard reagent synthesis has disadvantages. One main shortcoming is the use of anhydrous diethyl ether as a solvent which is a known neurotoxin, forms dangerous peroxides, and is highly flammable. Recent literature in the use of mechanochemistry in Grignard reactions suggests a more safe and cost-effective synthesis. In this work, the tertiary alcohol, 1,1-diphenylpropan-1-ol was synthesized via a ball mill grinder without the use of anhydrous diethyl ether. The final product was characterized by both infrared and nuclear magnetic resonance spectroscopy. This indicates a successful alternative to the long-established method of running Grignard reactions. The complete results of the synthesis will be presented.

Kaelyn Harms

MT - Montana State University - Bozeman

Discipline: Engineering and Architecture

Authors:
#1 Kaelyn Harms

Abstract Name: Thermally Induced Carbonate Precipitation as a Method to Control Hydraulic Properties in Enhanced Geothermal Systems

To effectively cultivate geothermal energy from natural systems, engineered fractures are hydraulically implemented to improve access of water through a network of channels in the heated rock. The result of manipulating the permeability of a geothermal reservoir in this way is referred to as Enhanced Geothermal Systems (EGS). Through this collaborative research project, Montana State University and Berkeley National Laboratory aim to increase understanding of thermally induced carbonate precipitation (TICP) in the application of influencing permeability in EGS. The implementation of microbially induced calcium carbonate precipitation (MICP) has been widely explored for sealing fractures in the subsurface, for example in leaking oil and gas wells. However, the temperatures present in EGS are too high to support most microbial metabolic functions, leading to the research of thermally induced calcium carbonate precipitation (TICP). Urea, when heated in solution above 100 degrees Celsius can be thermally hydrolyzed to promote calcium carbonate precipitation. Mineral precipitation at hotter temperatures has an application to controlling permeability in the deeper subsurface and EGS. Data has been collected through batch testing of the thermal kinetics of the reaction between urea and calcium chloride at various concentrations (1M and 3M), temperatures (150 to 195 degrees Celsius) and in the presence of granite. Batch testing was performed by filling stainless steel reactors, heating them and pulling them from the oven at various time points to assess

the remaining concentration of urea. The results of the batch experiments were used to design a flow-through, high-temperature granite core sealing test to model enhanced geothermal systems. One core experiment has successfully confirmed the ability of TICP to reduce permeability in a granite fracture, and future testing is anticipated to provide analytical support to the hypothesis. This presentation will describe the analysis of urea hydrolysis and the preliminary data from the core sealing experiment.

Kirsten Harper

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Kirsten Harper

Abstract Name: Black Hair, Women, and Products in Design

This essay explores the intricate relationship between black women, their hair, and the design, uncovering the historical and cultural motives that have shaped this dynamic crossing. From the symbolic richness of tribal hairstyles in the 16th century, exemplified by the Himba women, to the transformative period of the 1900s when black women sought to break free from societal constraints, the narrative traces the evolution of black hair as a powerful expression of identity.The discussion centers around pioneers like Madam C.J. Walker and Annie Turnbo, who revolutionized the hair product industry and navigated the challenges of promoting their products in a society dominated by racial biases and men. The analysis extends to the role of design in shaping the image of these products, with a focus on strategic marketing that propelled brands into the cultural consciousness.Furthermore, the essay highlights the broader impact of black women in design, from product creation to architecture and fashion. It addresses the persisting challenges black designers, particularly women, face in gaining recognition and equitable representation in the design industry.Drawing on contemporary examples and voices from the design community, the essay emphasizes the multifaceted nature of black hair as a source of inspiration, empowerment, and resistance. It sheds light on the complexities of identity and the continued struggles black women face in a design community that often downsizes their contributions. In conclusion, the essay calls for increased awareness and recognition of black women designers' immense talent and resilience, challenging the industry to bridge the glaring gap that persists despite cultural evolution.

Mary Harris

UT - Brigham Young University

Discipline: Social Sciences

Authors:
#1 Mary Harris

Abstract Name: The Impact the of the Arab Spring on Women Empowerment in the MENA Region

Middle Eastern governments typically score at or near the bottom of indices measuring women’s rights and political participation. The Middle East also contains a large saturation of authoritarian regimes. The Arab Spring challenged these regimes' structures as they included vast female participation, but there is little existing research to understand the Spring's impact on opinions of women's participation and empowerment in the region. This study aims to add to existing research on this topic by analyzing Arab Barometer data from 4 questions dealing with opinions of women’s participation in society gatherers before, during, and after

the Arab Spring. I employ difference in difference t-tests to highlight statistical differences in change of opinions before and during the Arab Spring. Additionally, I draw on twenty semi-structured interviews (conducted in Jordan in 2022) to supplement this quantitative analysis in an attempt to identify causation between the Arab Spring and changes in public opinion towards increased women's empowerment. The quantitative analysis illustrates a correlation between the Arab Spring and opinions of women's empowerment, but the shifts of opinions are both negative and positive. The data suggests that the negative impact is connected with the second half of the Arab Spring when the governments were subject to more instability. The interview results suggest a complicated relationship in the minds of Jordanians between the Arab Spring and public opinion of women's empowerment.

Kyra Harris

MI - Wayne State University

Discipline: Social Sciences

Authors:
#1 Kyra Harris
#2 Simone Boyd
#3 Jessica Hamilton

Abstract Name: Identifying the Role of Cyberbullying in Interpersonal Risk Factors for Depression and Suicide: Social Support as a Buffer

Poor mental health and suicide are major concerns among adolescents, especially among racially/ethnically minoritized youth. Interpersonal factors, such as cyberbullying, perceived burdensomeness (PB), and thwarted belongingness (TB), influence risk for depression and suicide. However, limited research examines the relationship between these factors amongst racially minoritized youth, or considers whether social support impacts these relationships. The current study examines whether racial identity and social support moderate the relationship between cyberbullying and both TB and PB. It is hypothesized that a) cyberbullying is associated with higher levels of TB and PB for racially minoritized youth, and b) social support buffers the effects of cyberbullying on TB and PB. The Teen Social Media Experience (TSME) study included a total of 367 adolescents (ages 14-17; Mean=16.02 years; SD=.85), who completed an online survey assessing social media experiences with cyberbullying, interpersonal risk factors (PB and TB), and social support. Linear regressions and moderation analyses were used to examine the current hypotheses. Results indicated that cyberbullying is positively associated with PB (B=5.84, SE=8.12, p<.001), but not TB (B= -.02, SE= .82, p<.05), controlling for depression. Social support is negatively associated with PB (B=-.74, SE=.36, p<.001) but not TB (B= -.04 , SE=.15, p<.05). Neither race nor social support moderated the relationship between cyberbullying and PB (B=-.75, SE=2.7, p<.05; B=-.57, SE=.95, p<.05) or TB (B=-.76, SE=1.36, p<.05; B= .51, SE=.57, p<.05). Results of this study suggest that cyberbullying and social support do influence perceived burdensomeness, which may be an important target for prevention of depression and suicide for adolescents. Findings also advance our understanding of how cyberbullying affects PB and TB to inform possible areas of intervention and suicide prevention.

Yuvika Harsh

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Yuvika Harsh
#2 Cyntanna Hawkins

#3 Kyung-Don Kang
#4 Sam Gary
#5 Gregory Friedman
#6 Anita Hjelmeland

Abstract Name: Inhibition of Acid Ceramidase to Improve Herpes Oncolytic Virus-Based Therapy in Recurrent Glioblastoma

Glioblastoma (GBM) is the most common malignant brain tumor in adults and, unfortunately, patients have a median survival of about 15 months. One mechanism through which GBM cells can avoid cell death is through a dysregulated sphingolipid metabolism, specifically an increased sphingosine-1-phosphate (S1P) and decreased ceramides. Ceramide hydrolyzation by ceramidases produces sphingosine, which is then phosphorylated to S1P by sphingosine kinases. Inhibiting ceramidases to decrease S1P and increase ceramides is a potential strategy for anti-cancer therapy. We published that inhibition of the acid ceramidase ASAH1, via genetic targeting with shRNAs or with the blood-brain barrier permeable drug carmofur, decreased glioma growth and migration. Interestingly, ASAH1 expression in macrophages was recently found to facilitate encapsulation of herpes simplex virus-1 (HSV) in multivesicular bodies, thereby mitigating the herpes disease. These data suggest that ASAH1 inhibition in GBM could also improve the efficacy of oncolytic HSV therapy. We therefore explored the effect of pharmacologic and genetic inhibition of ASAH1 on the ability of oHSV G207 to decrease the growth of GBM cells isolated from patient-derived xenografts. Our preliminary data demonstrated a significant decrease in GBM cell growth upon treatment of cells with the combination of carmofur and G207. Our data also suggested that recurrent GBM xenolines with shRNA knockdown of ASAH1 are significantly more sensitive to G207 in comparison to non-targeting controls. Considering G207 is safe in both adult and pediatric glioma patients and carmofur is used internationally for the treatment of colon cancer, we believe that our findings are highly translational.

Sean Hartmann

IA - Iowa State University

Discipline: Visual and Performing Arts

Authors:
#1 Sean Hartmann

Abstract Name: Exploring Experimental Film Firsthand

The project's primary purpose is to utilize the medium of cinema to reframe and illuminate novel aspects of the human experience by contributing a unique, original work and expanding upon the genre of experimental film. In addition, the project provides hands-on experience to actively explore the medium and utilize and strengthen skills and knowledge relevant to my fields of focus, such as film studies, technical communication, and creative writing. The primary influence and inspiration for the project came from experimental filmmakers such as David Lynch, Maya Deren, Marcel Duchamp, Man Ray, Luis Buñuel, Salvador Dalí, Alexander Hammid, and Terrence Malik. The ongoing research is achieved using an iPhone 14 Pro Max with a 1.33x anamorphic lens adaptor and a Rode shotgun microphone for recording video and audio, Black Magic Design's Davinci Resolve 18 for video editing, and utilized actors for onscreen performances. During my research, I have successfully expanded many of my skills, including writing scripts, directing actors, producing a film production, camera operating, set designing, visual/audio recording and editing, cinematography, film score composition, as well as time, personnel, and resource management. In the future, the project will serve as an example of my technical capabilities within my portfolio and be shared online to contribute to the continuing experimental film conversation.

Mae Hartwell

CA - Occidental College

Discipline: Social Sciences

Authors:
#1 Mae Hartwell

Abstract Name: Genderqueer Impression Management

The research question of this study is: “How do genderqueer (GQ) people in the Los Angeles Metropolitan Area engage in impression management when socializing with cisgender people?” The study is informed by existing sociological theoretical frameworks regarding GQ identity, cisnormativity, stigma, and intersectionality. Related existing evidence includes Spencer Garrison’s (2018) study on authenticating trans identity narratives, Ashley Austin’s (2016) study on genderqueer identities within the context of oppression and invisibility, and Sonny Nordmarken’s (2019) auto-ethnography. While some functions of genderqueer stigma have been identified, there is a lack of research on how genderqueer people navigate and manage such stigmas. This study provides the field of sociology with unprecedented evidence-based research on engagement in impression management from the perspectives of GQ people.Data was collected in June and July of 2023 and consists of 38 in-depth Zoom interviews, each approximately 40 minutes in length. Participants were at least 18, GQ, and living in the Los Angeles Metropolitan Area. Recruitment took place over social media and was supplemented by snowball sampling. The first cycle of coding was open, descriptive, inductive qualitative data coding, followed by a secondary cycle of focused, analytic coding. Codes were then arranged into superordinate and subordinate categories according to their typologies and taxonomies as “touchable concepts” and more abstract sociological concepts. Thematic analysis was utilized to reveal major findings. Findings include that GQ people in the LA Metropolitan Area engage in four major impression management (IM) strategies when socializing with cisgender people: anticipatory, behavior, appearance, and verbal. Participants were found to adjust their physical and verbal presentations in real-time and in preparation of interacting with cisgender people. This proposed presentation will elaborate on the conclusions of this study by explaining and providing examples of the four superordinate and seven subordinate codes that emerged from the data.

Naira Harutyunyan

CA - California State University - Northridge

Discipline: Social Sciences

Authors:
#1 Naira Harutyunyan
#2 Gabrielle Heldt
#3 Sharona Youabian
#4 Tina Galstanian
#5 Kristina Fritz
Gabrielle Heldt

Abstract Name: The Effectiveness of Recognize, Allow, Investigate, and Nurture (RAIN) Meditation on the Subjective Units of Distress Scale (SUDS) Levels of University Students

The purpose of this project was to objectively measure the effectiveness of guided meditation on the heightened stress levels of university students. Mindfulness exercises under the umbrella of Dialectical Behavior Therapy (DBT), such as the Recognize, Allow, Investigate, and Nurture (RAIN) meditation, have

predominantly been employed to improve distress tolerance. The Subjective Units of Distress Scale (SUDS) measures the intensity of internal experiences, including anxiety, anger, agitation, stress, or other painful emotions. Despite this intuitive connection, prior empirical studies have seldom used RAIN and the SUDS collaboratively. We hypothesized that SUDS scores would significantly change over time, and the RAIN group would have the lowest final stress levels. A sample of 60 undergraduates (Mage = 23.27 years; 80% female) were recruited and placed into two groups: experimental or control. Standardization procedures included the time of day, room lighting, temperature, and question administration format. We recorded and presented an original 8 minute RAIN meditation audio narrated by a Certified Hypnotherapist. A two (group: meditation or no meditation) by three (time: SUDS) factorial design was utilized. Participants provided their SUDS levels thrice: after filling out demographics, being primed with captioned images intended to induce stress (null), and the meditation or equivalently timed class lecture. A two-way ANOVA determined a significant effect for time, a significant interaction between group and time, but no significant effect for group by itself. The results supported our main hypotheses, especially because the RAIN group had the lowest final SUDS-levels. The theoretical implications incorporated validating the effectiveness of DBT RAIN by suggesting that this therapeutic approach is effective in managing and alleviating emotional afflictions. Additionally, clinical practitioners may incorporate meditation more prominently into therapeutic interventions, especially for individuals experiencing high levels of distress.

Rand Hasan

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Rand Hasan
#2 Kevin Bicker

Abstract Name: Synthesis and Evaluation of Polyaspartate Peptoid Polymers

Polyaspartic acid and its derivatives, such as peptoid polymers, have garnered attention for their potential as antimicrobial agents due to their biocompatibility and structural versatility. This research project delves into the synthesis and evaluation of novel polyaspartate peptoid polymers, aiming to unveil their antimicrobial potential and shed light on their structure-activity relationships. The primary objective is to explore the impact of these novel polyaspartate peptoid polymers on Pseudomonas aeruginosa biofilms, investigating their potential as disruptors or inhibitors of biofilm formation. Furthermore, an examination of their susceptibility to proteases aims to determine their stability and potential application as protease substrates. Central to this investigation is the comparison between peptide versions of polyaspartic acid and the peptoid versions being synthesized. Elucidating the differences in their structures and properties will provide valuable insights into the tailored design of antimicrobial materials. The study's methodology involves synthesizing polyaspartate peptoid polymers of varying lengths to evaluate their efficacy against microbial growth and biofilm formation. By systematically varying the length of these polymers, the aim is to discern the relationship between polymer structure and antimicrobial activity, thereby contributing to the understanding of structure-function correlations in these materials. The discussion will contextualize these findings within the realm of antimicrobial materials, elucidating their potential implications for combating microbial infections and devising novel strategies for antimicrobial applications. This research endeavors to advance the understanding of polyaspartate peptoid polymers as potential antimicrobial agents, unveiling their structural intricacies and evaluating their efficacy against microbial biofilms, ultimately paving the way for the development of innovative antimicrobial materials.

Mohamed Hassaan

EGY - The American University in Cairo

Discipline: Social Sciences

Authors:
#1 Mohamed Hassaan

Abstract Name: My Body is My Life: A Journey Across Different Spaces

My body tells my story. The story begins with moving from one place to another; two different spaces mapped together with me being the connection. The co-authors and I performed our bodily practices distinctly across the different spaces we inhabited. The paper aims to unpack the complexities of our bodies and how it moves from one space to another. Some of the questions the research raises are : What is a body? How static or dynamic are our bodies? How does mobility and shifting from a space to another affect our internal and external look to our body and how we perceive it? Is that bodily act intentional or is it just a random act entrenched in the bodily routine? How do people use their bodies in a space that is censored and observed and how does the body change in a different space? When are we very aware and conscious of how we articulate and show our body and when do we lose this consciousness? The co-authors and I, through photography and cartography, are mapping our different experiences passing through layers of religion, secularization, sexuality, politics, social class, capitalism, consumer culture, and environmental changes. The research goes on to unpack different questions such as: How and in what space and context do we intend to perform particular acts of our bodies and when do we lose this intention and move to the subconscious? When does one's being become a subject of power? Is it inherently a subject of power or do we build this agency that claims this sort of power? The making and sketching of maps enables generative conversations around place and experience. I use it to make the movement between spaces in conversation with itself and to show the deep personal experience of this movement.

Adna Hassan

MN - University of Minnesota - Rochester

Discipline: Natural and Physical Sciences

Authors:
#1 Adna Hassan

Abstract Name: Going Back to Nature: Comparing the Antimicrobial Effect of Miswak to Commercially Used Toothpaste and Mouthwashes

Individuals' quality of life can be influenced by oral hygienic practices. Poor oral health contributes to disease etiologies including insulin resistance, cardiovascular disease, and neurodegeneration. Oral microbiota colonization begins at birth and is usually established by one year. Over the centuries, a diversity of items have been used for dental care including chewing tree twigs, using animal bone fragments as picks, and homemade rinses. Today toothpaste, toothbrushes, mouth rinses, and dental floss are extensively used. In ancient times, Egyptians chewed Salvadora persica, also known as Miswak, to enhance oral hygiene. Miswak refers to the Arabic word for chewing stick and use of the stick is currently recommended by the World Health Organization. Chewing upon the stick frays the end to form a brush; the mechanical action of using the brush along with the antimicrobial properties are believed to contribute to the betterment of oral hygiene. Methanol and aqueous extracts have shown anti-inflammatory and anti-infectious activity in human subjects. The antimicrobial activity of Salvadora persica intact living branches and store-purchased sticks has yet to be examined in comparison to current commercially employed oral health products. In this study I am to 1) elucidate the antibacterial efficacy of Salvadora persica and 2) elucidate the antibacterial efficacy of commercially available oral hygienic toothpastes and mouthwashes. To carry out this study, I selected 16 species of bacteria and one species of yeast. I will conduct susceptibility testing using standard Kirby-Bauer disk diffusion techniques. I hypothesize that Salvadora persica will deliver greater antimicrobial activity

compared to commonly used toothpaste and mouth rinses. In the dental field, if my hypothesis is supported, this knowledge and agent could be utilized as a preventative measure against oral infections, such as strep infection, avoiding the need for antibiotic use.

Mona Hassanzadeh

CA - California State Polytechnic University - Pomona

Discipline: Interdisciplinary Studies

Authors:
#1 Mona Hassanzadeh
#2 Xiaojun Mao
#3 Olga Griswold
Xiaojun Mao

Abstract Name: The Importance of Heritage Language Maintenance to Cultural Identity

Recent research indicates that heritage language maintenance plays a significant role in a person's cultural identity. However, most studies on this topic have been conducted either outside the U.S or by interviewing parents of young children. Few studies have explored the attitudes of adult bilinguals in the U.S. with respect to their sense of cultural identity as linked to their own heritage language use. In this ongoing project, we attempt to fill this research lacuna. To date, we have interviewed nine adult bilinguals with different heritage languages (Persian, Spanish, Arabic, and Mandarin). The interviewees differed in their levels of connection to their cultural communities, but all were fluent users of their heritage language. Results so far indicate that maintenance of the heritage language is seen as an important link between self and the community—especially in regard to keeping the connection with the elders and to the religious practices and cultural traditions. Furthermore, all participants indicated their plans to maintain their heritage languages in the family by passing them to their children. Given the fundamental connection between heritage language and cultural identity, we propose that mainstream public education should strive for including heritage language maintenance as a key part of the curriculum, especially in a multilingual and multicultural environment of California. Such inclusion is essential in the promotion of equitable and antiracist attitudes in the modern society.

Allison Hastings-Wottowa

DC - American University

Discipline: Social Sciences

Authors:
#1 Allison Hastings-Wottowa

Abstract Name: Rebel Politics: Types of Rebel Political Institutions in the Syrian Civil War

The majority of rebel governance scholarship—the study of rebel regimes—focuses on rebel groups' provision and collection of public goods, including infrastructure, healthcare, and taxation. This project contributes to the field of rebel governance by examining rebel political institutions: bodies responsible for making and enforcing political decisions. It seeks to identify and explain the types of political institutions constructed by the Free Syrian Army (FSA), the Islamic State (IS), and the Syrian Democratic Forces (SDF) between 2011-2019, and what the structures of these institutions reveal about the political ideology of these rebel groups. While the IS has been heavily studied, groups such as the FSA and SDF remain understudied.

Using a typological analysis, this paper compares the three groups, shedding light on previously marginalized cases, while simultaneously adding to the existing scholarship on the IS. The typology developed for this research includes three types of rebel political institutions: executive, legislative, and judicial. For each rebel group, one or more political bodies are identified and explained according to each type. This paper then analyzes what the structure and decision-making processes of these institutions indicate about each rebel groups' respective political ideology. In doing so, it tests existing theories of why and how rebels implement governance to begin with, ultimately confirming that ideology is indeed a key factor in determining rebel governance outcomes. Findings further suggest that rebels with more democratic institutions—such as the SDF's civilian legislative councils—have less revolutionary ideologies in comparison to rebels with institutions rooted in strict military hierarchies—such as the IS. Such revelations are crucial, in light of the fact that all three rebel groups continue to play a role in the ongoing Syrian Civil War—most notably the SDF.

Hannah Hatfield

MN - Augsburg University

Discipline: Business and Entrepreneurship

Authors:
#1 Hannah Hatfield

Abstract Name: The Effect of COVID-19 on Student Achievement Across the US

The COVID-19 pandemic caused a nationwide school shutdown in 2020. This caused students across the country to be out of school for an extended period of time and have to navigate a new style of remote learning. This came with some drawbacks, such as low income students suffering due to not having access to online education as well as some students not receiving the support and supervision at home that they would usually receive from their teachers. Teachers were also facing their own set of challenges, such as having to adjust their teaching practices and falling victim to burnout in some instances (Miyah et al., 2020). In this study, data provided by the National Center for Education Statistics for the years 2019 and 2022 are analyzed using linear regressions to measure the effects of COVID-19 on student test scores in math and reading. The dependent variables are math and reading scores for grades four and eight, and the independent variables include student teacher ratio by state, regional dummies, and per pupil expenditures. In addition, a difference in differences equation was also created examining the impact of how each state handled the COVID-19 shutdown. State governments addressed the shutdown in different ways, which caused some schools to be remote longer than others. Preliminary results show that COVID-19 caused a significant decrease in student achievement scores. Relative to southern states, western and midwest states had a larger decrease in achievement scores. Potential policies could be developed ensuring teachers across the country are receiving adequate training as well as modifying their teaching styles to adjust to post-pandemic education.

Molly Hauf

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Molly Hauf
#2 Ryan Larson
#3 Christopher Uggen
#4 Robert Stewart
#5 Sarah Shannon

Abstract Name: ‘Locked Out’ Broken Down: Gender-Specific Estimates of Felon Disenfranchisement

Felon disenfranchisement is the practice of removing the right to vote from those who have a felony-level criminal record. Scholars have estimated the size of the disenfranchised population overall and have documented its racialized impact alongside disenfranchisement’s consequences for election outcomes and public safety. However, previous scholarship does not account for the gender variation in disenfranchisement between states, examining gender only at the national level. We create estimates of state-specific felony disenfranchisement broken down by gender using state-level data on correctional populations (prison, felony probation, parole, felony jail) alongside demographic life tables tailored to each post-sentence state’s disenfranchisement law. Importantly, our life tables allow recidivism and mortality rates to vary by gender, thereby accounting for gender differences in the life span and reconviction over the life course. We find that, commensurate with gender breakdown in state punishment patterns, male disenfranchisement rates are higher in every state as compared to female rates of disenfranchisement. However, the portion of women who are disenfranchised post-sentence compared with all women who are disenfranchised is significantly higher than the corresponding proportion amongst disenfranchised males. We attribute this difference to the longer life spans of women and generally lower rates of reconviction, as women reach post-sentence status sooner, leave it less often through reconviction, and live longer than men. Further, states with the greatest discrepancy between male and female disenfranchisement rates only disenfranchise those currently confined to prison or jail, indicative of the greater gender disparities in incarceration rates as compared to probation and parole rates.

Olivia Hauser

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Olivia Hauser

Abstract Name: A Systematic Review of the Impact of Stress on Young Adult Women

Stress can be a double-edged sword. On one hand, stress is unavoidable and can often be invigorating and energizing. On the other hand, too much stress can turn into a physical, mental, and emotional burden. In fact, today’s mental health crisis has become a silent pandemic in the lives of young women. In addition to “normal” stressors that we all face, young women are disproportionately affected by mental health issues simply due to all the other inherent stressors and inequalities that come with being a girl or woman in the world today. This study entails conducting a systematic review of peer-reviewed research conducted within the past 5 years focusing on stress and women ages 18-35. Issues related to risk factors, diagnosis, coping, treatment, and long-term impacts were considered. We started with citations from electronic searches and from examination of reference lists of primary review articles using mostly MEDLINE and Psych (n=~1000); retrieving full manuscripts for detailed evaluation; excluding any reviews/commentaries; cross sectional studies; stress is not the only exposure factor; etc. Information was coded, including country, year, study design, study population characteristics, total sample size, stress measurement methods of these studies, and outcome data., resulting in a final sample of 15-20 studies. We will conduct a supplemental exploratory survey about KSU women students (N=50) to compare to the results of the systematic review, especially on how mindfulness and gratitude play a role in decreasing stress. The results better describe stress among young women, particularly about the effectiveness of internal coping mechanisms as young women learn to navigate daily and long-term stressors. Considering the high incidence of reported stress as well as the complex interplay between gender and life events, this study highlights the need for additional research to support gender equality in mental healthcare.

Hannah Hausman

MN - St. Catherine University

Discipline: Natural and Physical Sciences

Authors:
#1 Hannah Hausman
#2 Linda Azizi
#3 Frank Pajonk

Abstract Name: Exploring the Effect of Exosomes and Radiation on Glioblastoma Cancer Cells

Glioblastoma is the most common and aggressive type of brain cancer, with higher incidences in aging adults over 75 and little to no long-term survival or cure. The median survival time under the current standard of care, surgical resection and chemoradiation, is 15-18 months. Glioblastoma tumors consist of multiple cell types, including mature brain cells in cell cycle arrest and cancer stem cells (CSCs) that replenish cancer cell populations. Radiation induces cancerous non-stem cells into a cell fate called glioma-initiating cells, where they begin to express stem-like phenotypes. These glioma-initiating cells proliferate at an aggressive rate and are the reason for cancer recurrence, making them a necessary target for new and more effective therapeutics. This research studies the effect of exposure to exosomes, which are extracellular vesicles that carry proteins and RNA, on CSC conversion. Irradiated glioblastoma cells were exposed to varying concentrations of exosomes isolated from glioblastoma CSCs in vitro. The results showed a decrease in ZsGreen protein expression, a marker for stem-like phenotypes, as exosome concentration increased. Exposure of glioblastoma cancer cells to exosomes post-irradiation decreased the rate of transition to glioma-initiating cells. This suggests that CSC exosomes may signal that stem cells are present, decreasing the need for the formation of glioma-initiating cells. Further research is necessary to better understand the role of exosomes in glioblastoma tumors. However, this result may suggest exosomes as a potential way to delay or reduce the aggressive nature of glioblastoma cancer recurrence.

Abigail Haveman

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Salma Ali
#2 Abbey Haveman
Abbey Haveman

Abstract Name: Investigating Food, Greenspace, and Mental Health Access in Covenanted and Non-Covenanted Communities

Ramsey County, situated in St. Paul, Minnesota, has a long history of racial covenants in housing deeds, which has had lasting effects on resource distribution, leading to disparities in food access, greenspace availability, and mental health services. To investigate these disparities, we used visual and narrative analysis to compare the density of food access, green spaces, and mental health facilities between a covenanted and non-covenanted neighborhood. We then calculated the density of resource access per every 10,000 people. We found that food, green space, and mental health access differed between the Como and Thomas Dale neighborhoods in Ramsey County. Como has fewer grocery stores (0/10,000) and convenience stores (3/10,000) compared to Thomas Dale (4/10,000 and 6/10,000 respectively). Como has a greater density of parks (20/10,000) and mental health (11/10,000) access as compared to Thomas Dale (3/10,000 and 4/10,000, respectively). The study identifies disparities in food access, greenspace, and mental health resources,

emphasizing the need for equitable urban planning, fair funding, and community engagement to create a healthier and more inclusive future for Ramsey County.

Emily Hayden

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
#1 Emily Hayden

Abstract Name: Degradation of Polyfluorinated Substances using nano Zero Valent Aluminum

Degradation of polyfluorinated substances (PFAS) has gained interest recently as PFAS is related to various heath problems and cancers, and does not break down easily in the environment. The carbon-fluorine bond makes them very strong and stable, which allows them to exist for thousands of years without degrading. The current methods for degrading PFAS are costly and require large amounts of energy. Using nano zero valent aluminum (nZVAl) to degrade PFAS is beneficial as it is cost effective and easy to synthesize. Aluminum is capable of forming plasmonic hotspots that generate an extremely large electric field enhancement, creating a small spot of very large temperature for small periods of time. This temperature is large enough to degrade PFAS without needing the amount of energy current methods require. nZVAl has recently shown to be successful at removing contaminants and soluble organic matter from water samples. PFAS degradation is monitored by LC/MS and a fluoride selective ion electrode. A 100 ppb sample of PFOS was completely degraded to below the detection limit of the LC/MS/ This method could lead to improvements of removing PFAS from the environment and can be used at water treatment centers.

Quinecia Hayes

NC - Winston-Salem State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jill Keith
#2 Ryan Fitzgerald

Abstract Name: Investigation of Dopamine Transporter Inhibitors to Enhance the Aging Brain

Dopaminergic signaling in the human brain declines 5–10% every ten years, particularly when associated with age-related cognitive decline. Since dopamine (DA) is involved in regulating synaptic plasticity, which is important for learning and memory, reinstating DA neurotransmission should improve cognitive decline as the brain ages. Importantly, neurological deficits impair mental health, diminish productivity, and decrease social interactions; this leads to a lower quality of life and an unwelcome socioeconomic burden. Since declining brain dopamine signaling during aging is associated with the onset of neurological deficits, the search for selective dopamine transporter (DAT) inhibitors to restore endogenous DA levels and improve cognitive function is the goal of this research. Herein we describe data science experiments performed that involve mining publicly available gene expression data from microarray experiments reported in the National Center for Biotechnology Information (NCBI) Gene Expression Omnibus (GEO) repository (https://urldefense.com/v3/__https://www.ncbi.nlm.nih.gov/geo/__;!!PF9Lxw!4OtG4UGJwerYVTYhY-5dcuxwgCEZgCuPa8SllA-CYV1sRBzz8iLYrKcSfflQR1S57uCRCCh0AAvgOS_gJnSxgD_PRHngovg$). Our strategy may lead to the repurposing of a Food and Drug Administration (FDA)-approved drug to

mitigate the impact of aging on the brain. Thus far, we have uncovered two drugs that warrant further study. In addition we will report the results of ongoing biological studies of diphenylmethoxypiperidines synthesized in our lab in an attempt to uncover DAT inhibitors which show promise in increasing dopamine levels in brain regions associated with cognition.

Chozzyn Hayes

NC - Winston-Salem State University

Discipline: Health and Human Services

Authors:
#1 Chozzyn Hayes
#2 Eboni Hayes
Eboni Hayes

Abstract Name: Investigating the Impact of Covid-19 Among Communities of Color

Despite continued public health surveillance and intervention efforts, there has been a differentiation in the overall impact and health outcomes across people and places in North Carolina. Communities of color (COM) (i.e., Black, Hispanic/Latinx, and Native American communities) have been disproportionately impacted by hospitalizations and deaths due to COVID-19. For example, Black North Carolinians make up 22% of the population and so far, 22% of the people who have died from severe complications of COVID-19 are Black or African American. Data indicate that Hispanic North Carolinians account for about 15% of all cases, despite making up less than 9% of the population. Data (especially data on race/ethnicity, age, gender) is critical to understanding the impact of COVID-19 across the U.S. but also to inform the appropriate response, planning and allocation of resources. Present gaps in surveillance data, point to the need for more inclusive surveillance methods and strategies. To that end, the North Carolina Department of Health and Human Services developed the HBCU Health Equity Data Consortium to assess the differential impacts of COVID-19 on COM. The project is reliant upon key partnerships to support the ongoing activities and future inclusive surveillance initiatives across the state. Participants were adult residents living in a western geographic region of North Carolina. Both probability-based and non-probability-based sampling methods were used. The survey was administered primarily as a web-based survey using Qualtrics with a number of responses collected through hard copy surveys and phone interviews. A $35 visa gift card was offered as an incentive. Surveys were collected from 3333 participants. Preliminary results will be provided in addition to lessons learned regarding community engagement strategies for data collection in historically marginalized populations. Finally, strategies for implementation processes and sustainability for the HBCU Consortium will be shared.

Karin Hayford

WI - University of Wisconsin-La Crosse

Discipline: Natural and Physical Sciences

Authors:
#1 Karin Hayford
#2 Cord Brundage

Abstract Name: Varied central breathing responses to carbon dioxide (CO2) in tadpoles with and without nicotine exposure

When breathing control centers in the human brain sense heightened levels of CO2, they respond by signaling for lung breaths. This response could be affected by the exposure of nicotine on the development of these regions in the brain. For this project we evaluated nerve signals from the brainstems of bullfrog tadpoles that innervate breathing muscles. Tadpoles, like humans, should increase their breathing rate in response to high CO2 (hypercapnic) environments. We are testing whether control tadpoles have the expected response to CO2 and if tadpoles exposed to a moderate amount of nicotine (30 mg/L) for 10 weeks will have the same central breathing response. Two extracellular suction electrodes are placed on cranial nerves (V & VII) in the excised brainstem from control and nicotine exposed tadpoles to measure the lung burst activity between normal (1.5% CO2) and hypercapnic (5% CO2) conditions. The expected response for control tadpoles would be an increase in the breathing rate when exposed to hypercapnic environments. We hypothesize that chronic nicotine during development will not affect normal CO2 breathing patterns but will blunt the response to hypercapnic conditions. This impairment diminishes the capacity of the body to offload CO2. An inability to offload CO2 creates a toxic state (respiratory acidosis). We are exploring the factors that could affect the expected response in the control group as well as the nicotine group. The results could indicate whether tadpoles are a good model organism to study human breathing responses. Abnormal breathing control center responses to increased CO2 could have a role to play in Sudden Infant Death Syndrome (SIDS), therefore future directions for this study could have applications in SIDS research.

Griffn Hayrynen

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

Authors:
#1 Griffin Hayrynen
#2 Souradeep Roychowdhury
#3 Robert Davis

Abstract Name: Numerical and Experimental Investigation of Hydrodynamic Collisions with an Air Table Apparatus

Wet particles, i.e., particles coated with a thin liquid layer, are abundant in a variety of industrial (spray coating and pneumatic transport) and natural processes (eg avalanches and mud slides). To accurately predict the bulk-scale properties of such wet granular flows, it is both interesting and important to examine the microscale dynamics of collisions between two or three spheres. In this research we perform experiments using a pendulum launcher apparatus on elastohydrodynamic collisions (both head-on and oblique) for a dry acrylic sphere impacting another acrylic sphere coated with a thin layer of silicone fluid. An air table apparatus is used to neglect frictional and gravitational forces as assumed in simulations. The problem is governed by an interplay between the particle inertia, material properties of the solids, viscosity of the fluid and the thickness of the fluid film, which determines whether or not particles will rebound after collision. The theoretical model uses numerical methods to combine lubrication theory of fluid mechanics and Newton's second law to model the collision between two wet spheres. There are two primary objectives of this investigation. Firstly, to determine the wet coefficient of restitution and how it depends on the particle Stokes number—a dimensionless number that indicates the ratio of the particle inertia force to the viscous force (controlled by pendulum). Secondly, to get quantitative agreement with theoretical models of (Davis and Sitison 2020, Davis 2023) for non-zero rebound velocities. Preliminary investigation shows good qualitative and quantitative agreement with our theoretical model including observations of all possible outcomes: stick rotate, stick rotate separate and contact bounce.

Susan Hayward

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Susan Hayward

Abstract Name: Implementing Wayfinding and Color Theory into School Design to Create an Engaging Experience for Students

Current higher education facilities are outdated and hard to navigate because there isn't enough clear direction. This causes students and guests to have difficulty finding where they are going, especially in larger schools, which is a safety concern. Specific colors are shown to improve test scores, and help neural function, as well as many other things, this is why usage of color theory is important for school design. This project aims to explore how wayfinding strategies and color theory can improve the physical and mental well-being of the school's daily users. Through reviewing articles, conducting case studies, holding interviews, and touring vocational schools the agriculture learning facility was designed to enhance safety and learning outcomes by applying wayfinding and color theories. The patterns and color palettes using green, yellow, and purple were utilized in corresponding hallways, common areas, and classrooms to emphasize specific learning goals by improving comprehension, promoting problem-solving, and gathering the attention of the students. The school's colors of blue and orange are used in central areas to instill a strong sense of school pride while improving neural function, boosting creative thinking, and promoting precision and focus. The inclusion of signage that showcases which classes are down each hall helps orient users who may be color blind and therefore can't see the corresponding colors of the hallway. Clear wayfinding designs are intuitive and nonverbal to help the users access various spaces within the building. Changes in the materials and colors help to orient users in the space. Longer sightlines are implemented to encourage curiosity and exploration, which can reinforce a user's mental map of the facility. In conclusion, implementing these wayfinding and color theory techniques into the facility's design will improve the users' physical and mental well-being, which is required for a successful learning environment.

Yiduo He

NY - Colgate University

Discipline: Social Sciences

Authors:
#1 Yiduo He

Abstract Name: Waterways as Highways: Community-Driven Urbanism at Noh K'uh and the Mensäbäk Basin

Studies on the Preclassic Maya reveal that social organization—the ways people interact and relate to each other—is often reflected by patterns of movement in the urban landscape. However, little is known about how people moved in the urban space of Noh K'uh, a Late Preclassic (400 BC-AD 250) city in Chiapas, Mexico. This paper first presents the discovery of four new archaeological features through the generation of a slope map in the Geographic Information System (GIS). Least Cost Path (LCP) analysis is then employed to reveal two key themes. First, the randomness of movement patterns on the landscape suggests the lack of a centralized approach to urban planning. In other words, there was no central authority that imposed rigid control over movement and infrastructure through the construction of a road system. Second, waterways played a key role in facilitating ancient traffic. Complementing the existing body of knowledge about Noh K'uh, LCP analysis sheds light on the existence of a corporate society that strategically utilized its urban space as a means of reinforcing communal identity and collective governance. In addition, the potential use of the water system to facilitate accessibility and social integration in the larger Mensäbäk Basin reveals a

unique approach to regional urban planning among Maya cities in the Late Preclassic, a period marked by population growth and increasing centralization.

Kyle Heard

CT - Eastern Connecticut State University

Discipline: Health and Human Services

Authors:
#1 Kyle Heard
#2 Paul Canavan
Paul Canavan

Abstract Name: Lower extremity isokinetic assessment of a NCAA Division III swim team; comparing previous lower-extremity injury status, swimming style, and grade class

Introduction: Lower extremity muscular strength, power, and endurance have been shown to significantly contribute to swimming performance, propulsive forces of swimming, and knee pain and injury risk factors. Purpose: The purpose of this study was to determine if a relationship between lower extremity muscular strength, strength balance (quadriceps vs hamstrings) and swimming styles, grade class, previous lower-extremity injury, and gender exists. Thirty NCAA Division III swimmers of differing injury status, gender, academic class, and swimming styles completed an isokinetic evaluation of the lower extremities. Methods: The swimmers were tested for knee extension-flexion isokinetic strength at 60 degrees per second for 5 repetitions and endurance at 180 degrees per second for 20 repetitions. Results: Swimmers with knee pain or injuries prior to isokinetic evaluation exhibited lower muscular strength of the quadriceps and hamstring muscles than swimmers with no previous knee pain or injury (p=0.048, p=0.025, p=0.012). No significant differences in isokinetic performance between first-year and upperclassmen swimmers (p> .05). Swimmers of both swimming styles showed greater right quadriceps strength levels than swimmers of primarily symmetric or asymmetric styles (p=0.02), with left quadriceps muscle strength trending in the same direction (p= 0.076). Results demonstrated three athletes with > 20% difference in strength from left to right quadriceps femoris (knee extension) and five athletes with > 20% difference in strength from left to right hamstrings (knee flexion). Resolving possible issues found in the lower extremity muscle groups could lead to increased propulsion and swimming performance. Conclusion: The data found in this study highlights the need for attention to lower extremity muscular strength analysis in the potential prevention of injury, rehabilitation, and improved sports performance in a Division III men's and women’s swimming program.

J'Taelii Heath

OK - Langston University

Discipline: Health and Human Services

Authors:
#1 J'Taelii Heath

Abstract Name: Piperine Reduces the Inflammatory Effects of Cigarette Smoke on Immune Cells: Implications of Multiple Sclerosis Pathology

Multiple sclerosis (MS) is a chronic inflammatory disease that affects the central nervous system, commonly referred to as the brain and spinal cord. Inflammation causes demyelination of the nerves leading to neuronal damage and disability in patients. Inflammation, demyelination, glial activation, and oxidative damage are

authenticated markers for MS. Smoking cigarettes is a lifestyle factor with severe health consequences. Smoking increases the susceptibility to developing MS and worsens the disease prognosis with severe health consequences for the general population. Cigarette smoke has over 4,000 chemicals that cause abnormal cell responses and tissue damage in the lungs, which drives pathology in MS. Our lab has shown that MS patients who smoke have elevated levels of S100 proteins in the blood. S100s are damage-associated molecular pattern proteins (DAMP), which drive severe inflammation in the central nervous system of MS patients. Black pepper (Piper nigrum) contains 5%-9% of the bioactive alkaloid, piperine, which may have neuroprotective, anti-inflammatory, and antioxidant properties. The goal of this project was to determine if piperine reverses the inflammatory effects of cigarette smoke. To test this hypothesis, we assessed piperine's in vitro effects on human peripheral blood mononuclear cells (PBMCs) cultured in cigarette smoke extract (CSE). Specifically, we cultured PBMCs with either 0%, 20%, or 40% CSE in the presence or absence of increasing concentrations of piperine. In the absence of piperine, CSE induced PBMCs to secrete the inflammatory DAMP, S100A9. Strikingly, we found a dose-dependent reduction of S100A9 by piperine in PBMCs cultured with either 20% or 40% CSE. This data provides evidence of a novel anti-inflammatory mechanism of piperine that inhibits DAMP release by immune cells induced by CSE. Our study gives cellular experimental evidence, that although it can be challenging to quit smoking, black pepper components can mitigate the detrimental inflammatory effects of smoking.

Leah Hed

MN - Minnesota State University - Mankato

Discipline: Social Sciences

Authors:
#1 Leah Hed
#2 Ellie Schindle
Ellie Schindle

Abstract Name: The Correlation of Political Beliefs, Religious Beliefs, and Pseudoscientific Beliefs

Many types of medicine or medical treatments are considered pseudoscience, meaning that their effectiveness is not supported by scientific findings, although they may claim to influence mental and physical health. It is a common and controversial topic of conversation. Belief in pseudoscience can have a massive impact on society, leading people to endorse treatments that have no basis in science. It is our goal in the current study to analyze the correlation between political beliefs, religious beliefs, and pseudoscientific beliefs. Previous research shows Republicans as more likely to listen to their top political authorities as well as show a decline in adherence to the COVID-19 guidelines and increased belief in false information about COVID-19, which was associated with their pseudoscientific beliefs. Similarly, previous research suggests that people associated with right-wing beliefs support conspiracy theories more than their left-wing counterparts, in particular that younger right-wing males and those less satisfied in life show a high correlation in their belief of conspiracy theories. In our current study, we measure participants' pseudoscientific beliefs about various alternative and complementary medical approaches, as well as their political affiliation and religious beliefs. To collect data necessary to test our hypothesis, participants are given an online survey to complete via Qualtrics. Preliminary analyses of the data collected so far (N = 91 college student participants) suggest positive correlations between religiosity, endorsement of conservative political views, and belief in some types of medical pseudoscience. We will continue to collect data and in spring 2024 prepare a poster presentation with the goal of presenting at NCUR. We hypothesize that those who are religiously affiliated will also show stronger pseudoscientific beliefs and have a right-wing political perspective.

Amanda Heffernan

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Amanda Heffernan
#2 Maureen Vandermaas-Peeler
#3 Stephanie Abbazia

Abstract Name: “This green tomato does not look ready to pick!”: Children’s learning and engagement in gardening and cooking

Research has shown that gardening is an engaging activity with benefits for young children’s learning, including cognitive and social development. Using a mixed methods approach, the aims of this study were to observe children’s learning and social interactions during gardening activities in preschool and to facilitate home-school connections through a cooking activity at home using seasonal ingredients. A photovoice methodology was incorporated to gain an understanding of children’s interests and perspectives. Children used child-friendly digital cameras while in the garden and during the cooking activity at home. The participating preschool included one teacher and 10 four-year-olds, and one parent/caregiver from each household completed the informed consent and survey of typical gardening and cooking activities. Data sources included researchers’ video recordings of children’s interactions in the garden, the children’s photographs at school and home, and the parent surveys. Qualitative analyses included in-vivo coding and a “sort and sift, think and shift" approach developed by Maietta and colleagues (2021). Emergent themes from these analyses included 1) children’s inquiry and discovery; 2) interest in and knowledge of nature; 3) aesthetics and perspective-taking; and 4) social interactions. Inquiry and discovery were evident through children’s questioning, finding and harvesting vegetables, and developing agency in using the cameras. Children demonstrated knowledge of nature through identification of plants and animals (e.g., finding a beetle). Aesthetics and perspective-taking included close-up angles (e.g., a sunflower drooping in the garden or the ingredients in the cooking activity) and photographs incorporating light and shadow. Social interactions were captured in photos of cooking with parents and siblings and peer interactions in the garden. Overall, the photovoice method enabled a deeper understanding of children’s curiosity and perspective-taking. Implications of these findings for preschool teachers and families will be highlighted.

Brody Hegge

WI - University of Wisconsin-La Crosse

Discipline: Natural and Physical Sciences

Authors:
#1 Brody Hegge
#2 Steven Verrall

Abstract Name: How to calculate the proton rms charge radius

The proton’s charge radius is a highly contentious issue. The most accurate experimental method involves carefully analyzing a proton’s muonic orbitals. Such a system is called muonic hydrogen—where the lone electron of a neutral hydrogen atom is briefly replaced by an unstable muon. This was first achieved by Pohl et al. in 2010. The most precise muonic determination of the proton rms charge radius is 0.84087 fm, with an uncertainty of about 460 parts per million. This result was published by Antognini et al. in 2013. Prior to these muonic hydrogen experiments, the consensus proton rms charge radius was about 4% larger with an uncertainty of about 1%. This had mostly been determined by analyzing a proton’s electronic orbitals and by electron scattering experiments. The 2010 and 2013 muonic hydrogen analyses ignited the proton charge radius puzzle. In 2022, a re-analysis of older experimental electron data determined a proton rms charge radius consistent with the smaller muonic value. Even with the experimental resolution of the proton charge

radius puzzle, a purely theoretical calculation has remained elusive for over a century. This project solves this century-old physics problem. It will be shown how to perform a purely theoretical calculation of proton rms charge radius that is entirely consistent with the most accurate experimental determination. This will be done by further developing the ground-state quantum vortex (GSQV) proton model published by Verrall et al. in 2023. This ground-state model seamlessly merges with the well-established chiral effective field theory and lattice quantum chromodynamics at higher energies. It extends the standard model of particle physics without conflict and without adding higher dimensions. Polar charge-exclusion zones are a keyfeature of the GSQV proton model. This charge geometry enables proton rms charge radius to be accurately calculated from proton Compton wavelength.

Ethan Heggem

MT - Montana Technological University

Discipline: Engineering and Architecture

Authors:
#1 Ethan Heggem
#2 Amirhosein Riahi
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Abstract Name: Biochar Adsorption for Carbon Capture and Sequestration from Local Biomass Sources Utilizing Low-Frequency, High-Amplitude Vibrational Mixing

Biochar materials provide reliable and renewable technologies for the capture of greenhouse gases such as Carbon Dioxide (CO2). Greenhouse gas emissions produced from human activities are a major contributing factor to global warming and climate change. According to the emission-reduction goals in the Paris Climate Agreement, annual greenhouse gas emissions released into the atmosphere must be reduced 45% by 2030 and eliminated by 2050. The use of Carbon capture and sequestration (CCS) processes aims to capture and store this atmospheric carbon dioxide within biological materials such as biochar. Biochar particles provide a high specific surface area to adsorb gaseous CO2 via direct air capture, but the kinetic rates of adsorption must be optimized in order to make this technology an efficient and viable solution. This study demonstrates using low-frequency, high-amplitude (LFHA) vibrational mixing of CO2 onto biochar to improve these kinetic rates of adsorption. Tests were conducted on hemp feedstock biochar samples exposed to various mixing conditions using a LFHA vibrational mixer. Variable mixing parameters included sample mass, mixing time, and vibrational intensity. Our research found that peak average CO2 uptake on the samples achieve 58% higher adsorption quantities of CO2 than previously recorded values using non-vibrational methods. Additionally, the kinetic rates measured using first-order pseudo second-order pseudo models are improved from 0.13 min-1 to 0.15 min-1 and 0.002 min-1 to 0.007 min-1, indicating the adsorption reactions take place more rapidly.

Helena Heiberger

AL - University of North Alabama

Discipline: Natural and Physical Sciences

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Abstract Name: Elucidating the Pathogenicity of Missense Variants in the Nucleotide-Binding and Transmembrane Protein Domains of ABCG5 Associated with Sitosterolemia

Consuming vegetables poses a challenge for individuals with sitosterolemia, a rare autosomal recessive genetic disorder characterized by heightened intestinal absorption and decreased biliary excretion of plant sterols and cholesterol. Pathogenic mutations in the ABCG5 and ABCG8 genes have been found to result in sitosterolemia. ABCG5 and ABCG8 form the ATP-binding cassette transporter protein ABCG5/ABCG8 that functions to efflux plant sterols and cholesterol from the liver and small intestine. This study seeks to characterize the missense swaps G91E, F399C, R419C, and R419G regarding level of pathogenicity. These variants were selected based on specific placement within the functional domains of ABCG5. Pathogenicity scores were compared to two pathogenic variants using Mutation Assessor, MetaLR, REVEL, CADD, PolyPhen, and SIFT. ConSurf predicted the amino acid position of each missense swap to be conserved with some being buried, structural, or exposed. Molecular dynamics simulations revealed deviation in the movement of the variants with respect to the wild-type. Our results suggest that the variants are pathogenic regarding sitosterolemia. These findings contribute to the understanding of genetic factors influencing sitosterolemia and underscore the importance of further investigations to elucidate the clinical implications of these variants for improved diagnostic and therapeutic strategies in managing this rare genetic disorder.

Hattie Heiland

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
#1 Hattie Heiland
#2 K. Maude Ashby
#3 Kristin Hogquist

Abstract Name: Determining the Effect of Type I and Type III Interferons on Thymic Selection

Autoimmune diseases are initiated when the immune system mounts a response directed against host tissues. Although autoimmune diseases impact an estimated 50 million Americans, little is known about precisely how the immune system becomes dysregulated to cause disease. The thymus is an organ specialized for T cell development and selection, and plays a crucial role in generating an immune system that is safe for the host. During thymic selection, progenitor T cells with unique TCRs undergo two types of selection; positive selection functions to eliminate T cells that do not bind host MHC complexes, while negative selection works to eliminate potentially harmful T cells that recognize self antigen with high affinity. Both of these processes result in elimination of T cells with unwanted specificity through apoptosis. Curiously, interferon cytokines - which have major impacts on both T cells and antigen presenting cells - are produced constitutively in the thymus. Little is known about the effect of interferons on thymic selection. In an effort to understand how Type I (alpha/beta) and Type III (lambda) interferons impact the elimination of unwanted T cells, we utilized a flow-cytometric assay to detect apoptotic cells in mice deficient in interferon receptors. In these experiments, detection of active caspase 3 (only present in cells that are undergoing apoptosis) and CD5, a marker of TCR signaling, were used to distinguish cells undergoing positive or negative selection. We observed higher levels of negative selection in interferon receptor deficient mice than the wild type. These data suggest that thymic interferon impacts the number of cells that are killed through apoptosis during negative selection. These findings have important implications for our understanding of immune tolerance to self-antigens.

Michael Heim

AL - University of Alabama at Birmingham

Discipline: Engineering and Architecture

Authors:
#1 Michael Heim
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Abstract Name: INVESTIGATING THE EFFECT OF PRO-LONGED TENSILE STRAIN ON THE VASCULAR ENDOTHELIAL GROWTH RECEPTOR 2 AND THE MECHANICAL MEMORY OF ENDOTHELIAL CELLS

Recent studies have shown that vascular endothelial cells (ECs) are mechanically sensitive to strain. Vascular endothelial growth factor (VEGF) and the VEGF receptor 2 (VEGFR-2) on ECs are critical regulators of angiogenesis, which is necessary for cancer progression. Strain occurs in the tumor microenvironment (TME) because of highly contractile cancer-associated fibroblasts (CAFs) deforming the extracellular matrix. On VEGFR-2, Y1054/Y1059 is a phosphorylation site necessary for full kinase activation, while Y1214 can be activated via mechanical stimulation. Cells have a mechanical memory, which is the ability to react to a mechanical stimulus and then adjust phenotype to control future cell behavior. We hypothesize that a mechanical memory is observable via changes to phosphorylation of VEGFR-2 at Y1054/Y1059 and Y1214 when ECs are exposed to prolonged tensile strain treatment in combination with exogenous VEGF treatment. We studied this by using the FlexCell (FX-6000T) system to treat samples with cyclic strain at 9% and 0.3Hz for 0hr, 24hr, or 72hr. The strain treatment was designed to mimic CAF induced matrix distortions and respiratory rates. We utilized immunofluorescent staining and Western blotting to look at VEGFR-2 phosphorylation.The strain treatments somewhat decreased phosphorylation levels in ECs in immunofluorescence studies and Western blots, indicating the effects of strain and a strain memory can potentially alter prolonged activation of VEGFR-2. Specifically, 24hr strain treatment increased the phosphorylation levels of VEGFR-2 at Y1054/Y1059 when no exogenous VEGF was added compared to the ECs that were not strained. An observed decrease in total VEGFR-2 after 72hr strain treatment and exogenous VEGF compared to strained cells that did not get VEGF may represent enhanced activation; after the receptor is activated, it becomes internalized and degraded to prevent feedforward signaling. These results demonstrate the importance of considering the mechanics of the TME when designing anti-angiogenic therapies in cancer.

Zarindokht Helforoush

FL - Florida Institute of Technology

Discipline: Natural and Physical Sciences

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Abstract Name: Modeling Sandstorm Frequency in Africa

Sandstorms can pose significant risks to human safety. Predicting sandstorms allows authorities to issue warnings and take precautions to protect people and would allow people to take preventative measures. This research aims to implement a model to predict the frequency of sandstorm incidents. A combination of multiple factors, including wind speed and direction, temperature, humidity, and the availability of loose sand or dust, can impact sandstorms. These conditions can vary widely from one region to another and can change

rapidly, making it challenging to predict when and where a sandstorm will occur. The Sahel region experiences numerous dust events each year. Many sandstorm incidents in this region impact public health, infrastructure, agriculture, and transportation. Hence, this research is focused on the Sahel region and West Africa. Because the response variable, the monthly frequency of sandstorms, is an integer value, a negative binomial model was used to implement a count model to predict monthly sandstorm frequency. The optimal combination of predictors was selected by comparing the goodness of fit of different models using AIC. The predictors that were identified significant to predict sandstorm frequency include wind direction at 10-meter resolution, Inter-Tropical Discontinuity mean difference, dew point anomaly, wind speed 700 hectopascals, wind speed 850 hectopascals, interaction of wind speed 850 and wind direction 850, interaction of wind speed 700 and wind direction 700, and precipitation with negative impacts on the dust days, while drought index, and the interaction between wind speed 10m and wind direction 10m had a positive effect on the prediction of sandstorm frequency. The proposed model demonstrates promising results and provides a strong foundation to investigate the impact of climate factors in triggering sandstorms in North Africa. Our future research will be focused on improving this model using remote sensing.

Grace Helmke

HI - Chaminade University of Honolulu

Discipline: Humanities

Authors:
#1 Grace Helmke

Abstract Name: Climate Monstrosities in Native American Literature

Native American peoples have a long history of violence brought upon them by European colonizers. It is a past that has created scars so deep that its effects still occupy the lives of their ancestors. Native American writers have tended to depict the conjunction of the past and future by reflecting events that have changed the indigenous experience and existence. In science fiction’s sub-genre of climate fiction, Native American writers often choose to reflect significant historical events in futuristic writings through the depiction of monsters, or villainous beings, as allegorical figures for colonizers. The methods I used involve the research and understanding of the allegorical literary device, as it is central to the notion that these fictional characters are meant to be representative of the colonizers. I have also utilized the research of Grace Dillon, who coined the phrase “indigenous futurism,” in order to understand the history behind different forms of indigenous futurist writings, as well as the trends that seem to be displayed regarding the content and literary devices utilized. In analyzing two comics and one novel, I found that Native American climate fiction narratives are often a reflection of colonialism. The authors seemed to replicate the invasion, settlement, and destruction of the colonizers on Turtle-Island, and shift it to the future. The monsters that roam the land are visions of destruction and greed. Their objectives center around the annihilation of the indigenous peoples, and their presence often involves the destruction of the environment around them—similar to the European colonizers' timeline and intentions. However, no matter what turmoil the indigenous groups are confronted with, they always rise against the villains to victoriously take back their land and culture, usually with a woman leading the charge.

Madeline Helms

KS - University of Kansas

Discipline: Interdisciplinary Studies

Authors:
#1 Madeline Helms

Abstract Name: The Effect of Judaism on Politics in Israel.

The project examines the influence of Judaism on politics in Israel. The Nation-State law states, “The state of Israel is the nation-state of the Jewish people, in which it actualizes its natural, religious, and historical right for self-determination.” (“Israel's Basic Laws,” 2018). Religious communities in all countries affect the government and politics, Israel is especially affected by religious communities due to the religious history of the land and the people. The data in the project will include census data, personal opinion polls, and literature covering religion and politics in Israel. Using a mixed approach allows for a broader understanding of the political climate in Israel concerning religion. Israel was created based on religion and showing the connection between religion and politics through a mixed approach will allow a more nuanced view of the country. The research could reveal a shift in the government towards theocracy rather than a democracy with an emphasis on the Jewish population as opposed to the whole population. The position of several academics is pro-Israel or anti-Israel, and I will give a nuanced conversation about the support of the Jewish people in their right to self-determination without disenfranchising the minority groups inside Jewish society and Israeli society.

Tyler Hendee

WI - University of Wisconsin-Platteville

Discipline: Engineering and Architecture

Authors:
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Jayden Trocke

Abstract Name: Microscale Fiber Alignment in Composite 3D Printing

Innovations in 3D printing of fiber reinforced composites have created great interest in both professional and hobbyist applications. In these composites, different microfiber fillers, such as glass and carbon fiber, are used to optimize tensile strength, heat transfer, impact toughness, and electrical properties, over those provided by a polymer-based filament material. This performance enhancement is most pronounced when the reinforcing fibers are aligned along desired directions, which is difficult to achieve with traditional, radially symmetric 3D printer nozzles. We propose a passive method to control fiber orientation during the printing process, using a different nozzle geometry. In particular we describe the fabrication of a fiber re-orienting modification to a traditional nozzle, which is made from single-crystal silicon using photolithography and anisotropic etching. We discuss the physics and engineering challenges involved in implementing this approach into traditional 3D printers, and the results of testing on polylactic acid filaments reinforced by carbon-fiber and fiberglass fillers.

Tyler Henderson

GA - Morehouse College

Discipline: Social Sciences

Authors:
#1 Tyler Henderson

Abstract Name: Gender Dynamics and Viewer Engagement in Professional Wrestling: A Study of Male Audience Engagement

Professional wrestling has enthralled its millions of international fans with its unique blend of athleticism and theatrical storytelling. Beneath this captivating world, complex gender dynamics in wrestling have received limited scholarly attention. World Wrestling Entertainment (WWE), a historic company notorious for its transformative impact on professional wrestling, has faced criticism for discriminatory depictions and derogatory epithets portrayed by their on-screen personalities, particularly affecting women wrestlers. The pivotal moment in addressing these issues was the 2017 Revolution of Women, led by the Four Horsewomen, a group of then emerging female wrestlers. While this watershed moment symbolized industry efforts to address long-standing gender-related problems, sexist attitudes towards women in professional wrestling persisted.This study aimed to explore the intricate relationship between gender dynamics and male viewer engagement in professional wrestling. More specifically, male engagement levels were examined during matches where female wrestlers competed against one another and matches where females acted as valets to male wrestlers (a supporting ringside role). I speculated that the young adult Black male participants would exhibit higher engagement during matches with female wrestlers. A disguised-observational design was employed. The independent variable was the role of a female in a wrestling match (wrestler or valet). The dependent variable was the engagement of two groups of young adult Black males. Thirty male college students (N=30), aged 17 to 23+, were selected using non-probability convenient sampling from an all-male HBCU institution in the American South. Participants were divided into two groups: Group A watched a female vs. female wrestling match, while Group B watched a male vs. male wrestling match with a female valet. Data collection is still in progress. This research contributes to the understanding of evolving roles of women in the industry and the ongoing challenges in achieving equality and recognition.

Keanu Henry

MN - College of Saint Benedict/ Saint John's University

Discipline: Natural and Physical Sciences

Authors:
#1 Keanu Henry
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Abstract Name: The role of cellular antagonists in some human conditions- Cold Defense

Specialized receptors on the outside of cells facilitate temperature management in humans and a cold response(shivering and vasoconstriction) can be detrimental to their recovery. Thermoregulatory defense mechanisms of shivering occur at about 1˚ C below systemic vasoconstriction and so are considered to be a “last resort” response. If treatments can be applied that alter this level of last-resort response, this would help treat human conditions like neurogenic fever, cardiac arrest, and neonatal ischemic encephalopathy. Previous research has shown that certain agonists block shivering and cold-defense metabolic stress in rats and can induce a torpor-like response in the same species (torpor is a short-term reduction of metabolism). This study tested the hypothesis that the cold-defense threshold of the agonist molecule (N6 cyclohexyl adenosine or CHA) can be reduced. Rats were kept in temperature-controlled enclosures at 29 ˚ C with the same light/dark regimes. The next day, rats were injected with the agonist, and the temperature was reduced in increments from 28˚ C to 4˚ C. (8˚C increments from 28˚C to 16˚C and then 4˚C increments after that). Each temperature was maintained for 30 minutes. The cold defense was assessed by measuring the rate of O2 use and escape behaviors. Results show that the agonist (CHA) lowers the induced cold defense from 16°C to below 4°C. These results suggest that treatment can minimize the time to reach the target temperature without a cold-defense response (shivering and vasoconstriction).

Ethan Hensel

WI - University of Wisconsin-Whitewater

Discipline: Social Sciences

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Abstract Name: Native Sovereignty: An Analysis of the Legal Rights and Challenges of the Bad River Band Regarding Enbridge Pipeline 5

The Bad River Reservation was established in the 1854 Treaty of Lapointe. Located in northern Wisconsin, the reservation houses 500 miles of rivers and streams, as well as 38 miles of Lake Superior shoreline. The Bad River watershed has immense ecological and cultural value. It also houses Line 5, a pipeline that spans 645 miles across the upper Midwest, first constructed in 1953. The pipeline moves approximately 22 million gallons of crude oil and natural gas daily. Line 5 has been the subject of intense, meaningful environmental and tribal discourse in recent years. Opponents of the pipeline contend that the unique geography of the region indicates that an oil spill is probable, and they argue that the effect of such a spill would be catastrophic. Enbridge's proponents have strongly challenged these claims. A complex legal discussion highlighting the nature of tribal sovereignty has emerged from this conflict. The issue is currently being litigated in the state court system; however, Enbridge has posited another solution. They have proposed a relocation project that would fully remove the pipeline from the reservation borders. Opponents of the relocation project assert that while this relocation project would no longer be on tribal land, it would continue to impact the watershed. This project analyzes the legal rights and challenges of the Bad River Band. By researching the development of Anishinaabe tribal rights, environmental concerns surrounding Line 5, and precedent and jurisprudence surrounding native sovereignty, we can understand the conflict in context.

Kira Hensley

KS - University of Kansas

Discipline: Social Sciences

Authors:
#1 Kira Hensley

Abstract Name: The Evolution of Transatlantic Data Sharing Frameworks through Legal Challenges

After the Snowden revelations, data sharing became a contentious topic in Europe sparking a multipart judicial review of the legal frameworks governing it. This project aims to track the evolution of the EU-US data sharing policy due to legal challenges from the Schrems I and II court rulings. While prior research discusses singular cases on data privacy or sharing, this paper combines the use of both cases and the examination of the frameworks to give a more fully developed analysis of the frameworks' pertinence to EU-US data sharing. Moreover, previous scholars discussed the legality of data sharing in relation to intelligence sharing programs but never tracked the change through official legal frameworks. This paper will analyze both the Schrems I and II court cases in addition to the three main frameworks governing EU-US data sharing to look for changes and/or similarities to wording about the 7 original principles. Then, comparing the analysis from all three frameworks, this paper concludes about the legal validity and implications of the most recent framework. The legal prose of the original principles may have become more complex because of an increase of more stringent boundaries and clarity about the processing of personal data. As the world continues to develop technology, the need to share data will grow congruently with it; thus, the framework governing data-sharing between the US and the EU sets standards for both businesses and intelligence

agencies effecting security relations, the definition of privacy rights and how the American and European economies interact.

Nayomi Her

MN - St. Catherine University

Discipline: Business and Entrepreneurship

Authors:
#1 Nayomi Her

Abstract Name: Not All Asians are 'Crazy Rich': Differences in the Returns to Education of Asian Americans

For over 62 years, the model minority myth has concealed the diversity of Asian Americans in both cultural diversity and economic disparity. One of the largest issues that has been covered up is the substantial income disparity among Asian Americans. This paper delves into an investigation of labor market returns to education across five distinct Asian ethnicities, utilizing the latest decennial census data and employing Ordinary Least Squares multivariate regressions. Past research has found lower returns to education for Asian Americans compared to white people while holding for the attainment of higher education. In this analysis, an emphasis was put on Southeast Asian ethnicities, which have been under-researched in the context of Asian American economic experiences. Additionally, attention is given to Asian ethnicities positioned at the higher end of the median household income spectrum. The findings reveal compelling insights into the varied impact of higher education on income across diverse Asian groups. I find that Cambodians with bachelor's degrees experience the largest additional returns to their education. On the other hand, Japanese women who hold bachelor's degrees exhibit very small returns to their educational attainment. The benefits of attaining a bachelor's degree differ notably by ethnicity within the broad Asian category, further endorsing the importance of disaggregating data on Asian Americans to identify and address disparities. My research unveils the disparities in labor market returns among different Asian ethnicities, something that would not be uncovered with the typical analyses by race and ethnicity. This provides policymakers and stakeholders with the opportunity to bridge labor market gaps and increase educational equity amongst Asian Americans.

Madeline Herbrechtsmeier

WI - University of Wisconsin-Parkside

Discipline: Natural and Physical Sciences

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Abstract Name: Microwave-Assisted Synthesis of Fluorescent 8-aryl-7-deazaguanines

Nucleotides are the molecular building blocks of DNA. The aim of this project is to design fluorescent nucleotides that mimic their natural counterparts. These compounds can be used to study the structure and function of nucleic acids. Microwave-assisted conditions were adapted to our previously published synthesis of 8-aryl-7-deazaguanines via cyclocondensation of phenacyl bromides with 2,4-diamino-6-hydroxypyrimidine in refluxing 1,4-dioxane. A notable advantage of this synthesis is the ability to assemble 8-aryl-7-deazaguanines in one step with minimal work up. However, the prolonged reaction time required to

achieve satisfactory yields (24–96 hours) presents a major drawback. The aim of this study was to perform a cyclocondensation reaction of 8-aryl-7-deaazaguanines via microwave reactor to decrease reaction time. Upon microwave irradiation at 150–200°C, 8-aryl-7-deazaguanine products were obtained in high yield above 90% and within a reduced reaction time of 15–60 min. The second aim was to synthesize 8-heteroaryl substituted 7-deazaguanines not explored in our previous work and characterize via UV-fluorescence spectroscopy. Three new fluorescent 8-aryl-7-deazaguanines were produced and characterized, confirming our original hypothesis that compounds of this class are typically fluorescent, regardless of aryl substituent.

Katherine Herlihy

CA - California Polytechnic State University - San Luis Obispo

Discipline: Natural and Physical Sciences

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Abstract Name: Ring-opening Regioselectivity of Benzofused Cyclopropane Derivatives

Our research is focused on determining ring-opening regioselectivity of benzofused 1-arylbicyclo[n.1.0]alkane derivatives. Cyclopropanes are highly strained structures frequently used in drug development. Understanding their reactivity improves their reliable application in organic chemistry research. Our studies aim to understand how varying the ring size (n) influences the rate and direction of bond fragmentation. The target cyclopropane derivatives can be prepared by a four-step synthetic pathway. Heating these compounds in acidic conditions (AcOH, pTsOH, or HCl) induces the ring opening. Gas chromatography-mass spectrometry (GC-MS) and proton nuclear magnetic resonance (NMR) are the primary instrumentation tools for following the ring opening reaction. Our analyses track reaction progress over time and determine major and minor products for each reaction. The goal of the investigation is to optimize the conditions for these ring-opening reactions and to exercise control over the direction of fragmentation.

Maria Luiza Hermann

PA - Duquesne University

Discipline: Engineering and Architecture

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#4 Miranda Poklar
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#6 Kimberly Williams
#7 Bin Yang

Abstract Name: Developing Low-cost 3D Printed Microscope for Imaging Cell-laden Droplets in a Cell Culture Incubator

Cell culture incubators provide a suitable environment for culturing cells. Many studies require monitoring cell growth throughout the incubation process. Conventional microscopes are not designed to work in the tight and moist space within an incubator. Imaging cells outside the incubator presents a challenge in monitoring the continuous growth of the same cell group. Dedicated incubator microscopes have been developed to overcome this challenge. However, these microscopes are often expensive. Our study aims to reduce this limiting factor by developing a low-cost microscope using inexpensive components and 3D printing. We tested our incubator microscope by imaging and tracking alginate droplets encapsulated with human pluripotent cells (hPSCs). hPSCs have a remarkable proliferation potential and capacity to differentiate into multiple cell types within the human organism. The incubator microscope was configured in an inverted fashion to facilitate live-cell imaging. We incorporated a tunable lens for electronic focusing. A 45-degree mirror to redirect the light towards the camera and make it more compact. Image acquisition was controlled by a Raspberry Pi single-board computer. A white LED was used as illumination source. The microscope was packaged into a 3D printed case. Waterproof tapes were used to cover gaps, minimizing the effects of the moist environment. Cell-laden alginate droplets were generated using air-jetting bioprinting technique under 4L/min airflow and with 2.0% alginate. Droplets were transferred to a 12 well-plate filled with cell culture media for cell culture and imaging. Imaging lasted for 48 hours. The incubator functioned as expected during imaging. The temperature and moisture did not seem to affect its performance. Incubator imaging showed many cell activities within the droplets over the 48 hours, including growth, division, and movement. In conclusion, we demonstrated that our low-cost incubator microscope is a viable solution to imaging and studying the growth dynamics of cells in an incubator.

Mayra Hernandez

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
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Abstract Name: Using the Long Beach Wound Score as a Primary Assessment Tool to Predict Prognosis of Diabetic Foot Ulcers

Accurately assessing diabetic foot ulcers (DFU) is vital for proper wound care or intervention, however minimal assessment tools exist. This research tests the Long Beach Wound Score (LBWS), an innovative objective wound scoring system aiming to accurately assess the severity of a wound in different care facilities, including outpatient care, and inpatient care with severe cases. The LBWS seeks to provide a tool for initial evaluation of a wound and determining proper care. The LBWS consists of 5 assessments including appearance, size, depth, sepsis, and perfusion, assigning each a maximum of 2 points. A 10-point scale was generated, with 10 being the best outcome. Previous research on LBWS effectiveness for inpatients was compared to its performance for outpatients in two facilities over a 12-month period, a government facility and a private hospital. Effectiveness was measured by predicting patient outcomes at an initial assessment and the accuracy of those predictions in a follow-up appointment. After comparing initial assessments using the LBWS and actual outcome, the positive predictive values for outpatients were 94.7% for the private facility and 95.5% for the government facility. Accuracy of the assessment was 80.4% for the private facility and 80.0% for the government facility. Among different outpatient institutions, the results remained relatively equal, which was also the case when comparing the data to previous inpatient data.The LBWS demonstrated its reliability in wound assessment with high positive predictive values and accuracy. The scoring system was effective in different healthcare facilities, demonstrating its versatility. Based on results for the 5 different factors of a DFU, better management and care could be administered. After patient follow-up, the LBWS could quantify Minimal Clinical Important differences by monitoring whether the severity of wounds improves with interventions. It could also compare interventions for effectiveness, through Comparative Effectiveness Research.

Daisy Hernandez

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Daisy Hernandez
#2 David Verhoeven

Abstract Name: Exploring the role of the secondary RNA structure in the regulation of the M2-2 gene in RSV

The respiratory syncytial virus (RSV) infects the lungs and primarily affects infants, older adults, and immunocompromised individuals. However, less is known about RSV biology than other respiratory viruses like influenza. The current study aims to explore the role of secondary RNA structure in regulating the M2-2 gene in RSV. The secondary RNA structure has not been extensively explored in RSV despite the importance it may have as other viruses, like the influenza virus, have shown secondary structures to be critical to their replication cycles. Here, we hypothesized that a secondary structure 160 base pairs upstream from the M2-2 start site is critical but only in a transcript spanning from the F gene to the M2-2 gene rather than on the M2 bicistronic transcript itself. Using M-fold RNA structure prediction software suggests that the structure at 160 bases upstream from the M2-2 start is present but only in the F/M2-2 transcript and not the M2 bicistronic. Using Scan-Fold on 3000 different RSV strains confirms that this structure is not present in the M2 transcript. To confirm the prediction software, we developed four transcripts: a M2-2 with a 10 base pair upstream start site, a 260 upstream start site, a 160 base pair upstream start site, and a transcript spanning from the F gene into the M2-2 gene. Transfection studies will allow us to further determine which transcript controls M2-2 translation and followup studies using RNA SHAPE analysis are planned for further verification. Understanding the pathogenesis of this significant pathogen might provide additional knowledge to aid in the development of vaccines or therapies for RSV.

Valentina Hernandez

MN - Hamline University

Discipline: Social Sciences

Authors:
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Abstract Name: How Does Past Police Discrimination Impact LGBTQ+ Psychological Well-Being at Large Pride Events?

The Gay Games were founded in 1982 to create safe spaces for LGBTQ+ athletes/spectators to gather and/or compete. While the Gay Games aim to create safe spaces for LGBTQ+, we don’t know how discrimination impacts attendance and/or enjoyment at the Gay Games. In 2023, the Gay Games are happening for the first time in Latin America in Guadalajara, Mexico, giving us a unique opportunity to examine discrimination against LGBTQ+ and its effects on psychological well-being among an under-examined population of Pride participants. Considering police presence at large events, as well as frequent discrimination of LGBTQ+ by law enforcement, tensions exist about these officers who one would believe would be there to protect LGBTQ+ events. This brings me to my research question: how is past police discrimination associated with psychological well-being among Gay Games athletes/spectators and LGBTQ non-attendees from Mexico. Using cross-sectional data from over 100 Mexican Gay Games attendees and LGBTQ non-attendees

collected in November and December 2023, I will conduct a 2-way ANOVA to determine the effects of two independent variables–police discrimination and participation in the Gay Games–on psychological well-being based on the responses from the WHO-5 scale. We expect Mexican Gay Games participants who have experienced police discrimination will be less likely to experience psychological benefits during the Gay Games than those who did not. We also expect that there will be an interaction effect where non attendees experience lower WHO-5 score, regardless of discrimination experience, compared to the other participation groups. It is expected that this research will describe how supposedly safe spaces are affected by previous experiences with discrimination. This research can show how beneficial it will be for officers to collaborate with LGBTQ+ communities in order to help create a more positive, safe environment at major Pride events.

Lauren Hernandez

AZ - Embry-Riddle Aeronautical University

Discipline: Natural and Physical Sciences

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Kaita Hayashibara

Abstract Name: Bed Bug Movement Response to CO2 with Implications for Unmanned Ariel Vehicle Systems

In the last decade, there has been increasing research interest in the coordinated use of multi-unmanned ariel vehicles (UAVs), as modern aerospace systems recognize the advantage of networking many small and simple agents working together. Biologically inspired design has been used in the past to successfully create a variety of swarm algorithms. Previous biological research has focused on the behaviors of ants and bees. Bed bugs were proposed as a novel source of inspiration because their behaviors exhibit many of the desired characteristics of UAV swarm performance. The common bed bug, Cimex lectularius L., (Hemiptera: Cimicidae), is an ectoparasite that lives among vertebrate hosts, most commonly humans. Bed bugs aggregate based on several host attractants, with CO2 being the most attractive host cue that elicits the most movement. Bed bugs demonstrate sophisticated group decision-making while considering these criteria. Their responses to these factors can be quantified by recording their movement patterns based on a CO2 stimulus. Various CO2 concentrations were allowed into an enclosed testing arena through ports at the end of the apparatus. Responses to CO2 were recorded for individual and grouped bed bugs, based on gender and hunger status at every 305 mm within the testing arena. It was hypothesized that the collective decision-making movement process of bed bugs can be observed because their olfactory system will detect CO2 and aggregation pheromones. Preliminary results show that bed bugs that are 610 mm from the CO2 source will travel shorter distances, much faster, and with more angular movement, compared to bed bugs with no CO2 source. This research will not only help improve on bed bug behavior and pest management practices, but UAV swarm system designs will benefit from algorithms that are created from these bed bug movement patterns that will allow for better coordinated movements and decision-making.

Emily Hernandez

FL - Florida International University

Discipline: Health and Human Services

Authors:
#1 Emily Hernandez

Abstract Name: Acute Leukemia in Hispanic Children and Health Disparities in South Florida

Research has demonstrated various health disparities affecting the outcomes of Hispanic patients with leukemia including access to healthcare, socioeconomic status, incidence, and mortality. These disparities have indicated a significant negative impact on health outcomes including decreased survival, higher incidence rates, as well as, treatment-related mortality of Hispanics within the United States. The objective of this study is to assess the extent of health disparities that affect the health outcomes of Hispanic pediatric patients with AL in South Florida. The researcher intends to retrospectively analyze patient medical records from the oncologist group at XYZ Children's Hospital from 2012 to 2022 by investigating the participants and their health outcomes through 5-year survival, incident, and mortality rates in terms of treatment-related mortality. This study will be observing health disparities including insurance status, type of insurance, access to treatment as well as preventative medicine through primary care visits and socioeconomic status based on place of residence. The researcher hypothesizes that health disparities will have a negative impact on health outcomes for Hispanic pediatric patients with AL within South Florida. This study can help providers understand how health disparities affect their patients and work towards the improvement of healthcare policy to alleviate the effects that occur within the Hispanic population. Providers can also create treatment plans considering the evaluation and management of the patient's needs. These findings can also serve to help shape health policies that prevent barriers caused by social determinants of health.

Veronica Hernandez

CA - University of California - San Diego

Discipline: Social Sciences

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Abstract Name: Impact of COVID-19 Related Anxiety in Adults with Schizophrenia

The COVID-19 pandemic has led to disruptions in daily life and heightened anxiety in many segments of society. Due to symptoms of asociality and physical comorbidities commonly associated with people with schizophrenia (PwS), PwS might be at heightened vulnerability to these pandemic-induced disruptions and anxiety. While there is potential for PwS to have increased psychological vulnerability during the COVID-19 pandemic, relatively few studies have assessed its impact and associated anxiety in PwS. Using data collected in 2021 and 2022 from a longitudinal study of PwS and non-psychiatric comparison participants (NC), we examined levels of COVID-19 related anxiety and impact on PwS and NC. Specifically, we did this by analyzing results from participants' responses on two questionnaires: the COVID-19 Impact Scale (CIS) and COVID-19 Anxiety Scale (CAS). Both questionnaires were completed by 120 participants (56 PwS, 64 NC). Our participants were closely matched on gender between groups, though our PwS sample had significantly less years of education and more participants from marginalized racial/ethnic groups than our NC sample. In ongoing analyses, using data from the same participants that completed the COVID-19 Exposure Questionnaire, we will compare the degree of COVID-19 exposure and vaccination between PwS and NC, and explore the interrelationships of anxiety, impact, exposure, and vaccination. Analysis of COVID-19 Exposure Questionnaires is ongoing. We hypothesized that PwS would have higher COVID-19 related anxiety and report greater impact than NC participants. We also hypothesized that PwS would have lower rates of exposure and vaccination than NC. Our analyses to date have shown that PwS does not have

significantly higher COVID-19 related impact based on the responses collected on the CIS; however, our analyses of responses collected on the CAS showed that PwS have significantly higher COVID-19 anxiety than NC. Results of ongoing analyses on exposure and vaccination will be presented.

Javier Hernandez

TN - Middle Tennessee State University

Discipline: Business and Entrepreneurship

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Abstract Name: How Marketing Influenced the Top 20 Box Office Films 2022

Hollywood filmmaking is a billion-dollar industry, yet there needs to be new research regarding how marketing can impact box office success. This research project identified marketing themes that assisted film success and investigated how specific marketing tactics can hinder a film's success. Films that rank in the top 20 at the box office are identified as the most financially successful for that year. The goal of this research project is to identify marketing strategies that are successful at increasing ticket sales and film awareness. We identified the total domestic revenue, opening weekend figures, ratings, and themes to understand if and how the marketing campaigns were successful. Themes were identified from interviews with marketing professionals in the film industry. "Can you provide examples of successful guerilla marketing tactics used for films in 2022?" This is just one of the questions asked to help better understand trends within the top 20 box office films 2022. The goal is to have this research published in a marketing journal. By publishing this research in a journal, the discussion regarding film marketing and its potential to increase future box office revenue success can be continued. Additionally, new directions for continuing this research will be revealed.

Rosaura Hernandez

TX - Texas A&M University - Kingsville

Discipline: Health and Human Services

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#1 Rosaura Hernandez
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Abstract Name: An Observational Study on the Relationship between Stress Levels and Human-Animal Bonds Based on the Perspective of People Who Have Companion Pets

The purpose of this study was to identify differences in stress levels based on the perspective of people living in the United States who have companion pets regarding human-animal bonds, aiming to investigate gaps in human-animal bond implementation in the social work profession. Human-animal bonds are formed between animals and humans through natural or ongoing interactions. The researchers conducted an online survey, shared through social media platforms, and distributed paper flyers amongst adults. Using a Likert survey design, a quantitative measure was assigned to each question, ranking the participants' experience in stress levels before and after bonding with their companion pets. The researchers hypothesized implementation of human-animal bond into the social work field as a strength-based tool could aid clients therapeutically as a supplemental component towards an established treatment plan. Relying on memory and self-report, the researchers found statistically significant differences in stress levels correlated to human-animal bonds and

stress levels. Participants who had companion pets experienced lower stress levels after bonding with their companion pets, and reported an increase of stress levels if they did not have companion pets. This research identifies key areas on the implementation of human-animal bond interventions lacking in social work practice. Universities and institutions could be interested in the data collected from the research for the consideration of applying the subject of human-animal bond as an interdisciplinary study in social work programs. Such application could include elective courses in the universities, to better prepare students in applying systematic approaches into the field.

Monica Hernandez

OK - University of Central Oklahoma

Discipline: Social Sciences

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Abstract Name: The War on Vulnerability: Feminism, Love, and Overcoming the Domination of Patriarchy

What does a society look like when our father's are abundant with love? As bell hooks' writes in The Will to Change, the value of a father's love goes up the more scarce it becomes. This dynamic props up the foundation that our patriarchal complexes come from. It forces people of all ages, all genders, to work underneath the strain of fear in hopes of capturing a shimmer of love and escaping the wrath of patriarchy. This matrix of domination forces society to uphold and perpetuate restricitve values of gender expression and identity through means of Patriarchal Survival. Through the investigation of early models of masculinity and it's curation of values such as: Avoiding Femininity, Homophobia, Restrictive Emotionality, Aggression, Non-Relational Attitudes Toward Sexuality, and Seeking Achievement and Status, the model of fear that patriarchal masculnity operates on becomes much more transparent in our everyday lives. This model thus forces us to be hyperaware of our percieved vulnerability due to risk of becoming a target of domination, shame, violence, and oppression. The history of masculinity is well-documented, but rarely thought of as a subject of importance in many feminist circles. People of all demographics engage with patriarchy, but few can identify the subliminal ways it ingrains itself in our culture, our words, and our actions. Feminist scholarship provides the opportunity for society to expand their understandings of intersectional feminism, patriarchy, and how gender solidarity can prove itself as a productive tool in achieving a truly equitable feminist society, especially when we foster the foundation for change. By examining the history of masculinity, as informed by bell hooks and Dr. Robert Levant, one can precisely learn how to identify the ways in which one consciously and subsconscioislly engages with and or promotes toxic patriarchal masuclinity within themselves.

Bryant Hernandez

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

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Abstract Name: Surface Modification of Austenitic Stainless Steels

The service life of stainless steels can be extended by surface modification. In this study, a vapor deposition process was used to modify the surfaces of different austenitic stainless steels. The effect of the coating process parameters on different austenitic stainless steels was investigated. The relationships amongst the coating temperature, time and the alloy composition were the focus of this study. The microstructure and thickness of the aluminide coatings were characterized using optical and scanning electron microscopy. Identification of surface phases was carried out using X-ray diffraction. Conclusions will be drawn in regard to the relationship between coating characteristics and the stability of the austenitic steels.

Sara Hernández

COL - EAFIT University

Discipline: Social Sciences

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Abstract Name: Legal Education for the Conservation of Urban Streams. The Case of "La Volcana" Medellín, Colombia

The research question posed is: By what legal instruments and pedagogical methods can urban watersheds be protected and conserved within the framework of Sustainable Development Goal 11 concerning Sustainable Cities and Communities? This project originates from evident pollution in streams, where the utilization of existing legal safeguards by people is not often observed, likely due to limited awareness. Consequently, a legal manual is intended to be developed to empower communities in the application of legal instruments for the defense of streams.The occupation pattern in the Metropolitan Area of Valle de Aburrá, characterized by a transition from rural to urban sectors with poorly planned human encroachments such as channeling and domestic wastewater discharge, has led to watershed contamination. This contamination poses public health risks by catalyzing various diseases while damaging ecosystems.The study is focused on the polluted La Volcana stream, prompting action from EAFIT University's Law and Environment Group. The methodology adopts a positivist epistemological lens, collecting observable facts and data through techniques inherent to the Social Sciences and Law, complemented by interdisciplinary contributions from fields like sociology, biology, and psychology.Expected outputs include the identification of contaminants in La Volcana and the creation of a legal protection manual for waterways, aiming for improved coordination between local public and environmental authorities, with replicability across other Valle de Aburrá streams. The discussion of results will take place in the context of urban environmental management, evaluating the proposed legal instruments against the Sustainable Development Goals and their transferability to other metropolitan areas. Emphasizing the symbiotic community-watershed relationship and advocating behavioral shifts towards sustainable water stewardship will be key focal points of the discussion. The overarching goal is to empower communities in the endeavor to address rampant watershed pollution through legal remedies.

Jose Herrera

WI - University of Wisconsin-Parkside

Discipline: Social Sciences

Authors:
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Abstract Name: An EEG Investigation of Sleep Quality Memory and Executive Function.

Memory consolidation happens during both non-rapid eye movement (NREM) and rapid eye movement

(REM) stages of the sleep cycle. Inadequate sleep can impair memory processing and other cognitive functions. This experiment expanded on previous research by correlating several measures of sleep quality (rather than a single measure of sleep duration) with memory and executive function. The purpose of this experiment was to determine if 7 variables of sleep quality (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction) are correlated with performance on a recognition memory task and two tasks of executive function. A second purpose was to determine if physiological markers of successful memory retrieval differ among individuals as a function of their sleep quality. Participants completed a computerized auditory or visual memory task that was divided into study and test phases. During the study phase, 256 pictures or sounds were presented one at a time and participants were asked to commit them to memory. During the test phase, studied stimuli were randomly presented with new stimuli. Participants were asked to indicate via a button press whether each stimulus was "old" or "new." EEG signals were recorded via a 32-channel Brain Vision system while participants completed the task. After the memory test, participants completed a digit span task, a trails-making task, and the Pittsburgh Sleep Quality Index. The results indicated behavioral and physiological effects of sleep quality on long-term recognition memory and executive function. The results of this study will improve our understanding of the connections among sleep quality, memory, and general cognitive ability and will allow a better understanding of the relationship between sleep and general cognitive ability.

Lydia Hershey

MA - Bridgewater State University

Discipline: Social Sciences

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Abstract Name: Vulnerability to Toxic Masculinity: How Politics, Employment, and Religion Relate to Men’s Gender Role Discrepancy

The present study examined men’s individual and societal perceptions of masculinity and how they relate to demographic variables. When men’s individual perceptions of how masculine they are do not line up with what they believe society’s perceptions of masculinity are, it creates gender role discrepancy (GRD). Previous research has found that GRD is positively correlated with mental illness (Macdonell Mesler et al., 2022), but what’s missing from the literature is an examination of how GRD varies across demographic groups. Through this research, we discovered how some groups of men are more vulnerable to GRD than others. This study examined individual perceptions, societal perceptions, GRD and their relation to political affiliation, employment, religion, and age. We recruited a sample of 227 people that identified as men and we distributed an anonymous online survey with questions about masculinity, mental health, avoidant coping, and demographics. After examining the data, for political affiliation, we found that Democrat men endured the most GRD compared to Independents and Republicans. We also found that Republicans individually felt the most masculine and Democrats felt the least masculine. Republican men viewed society as more masculine than Independents and Democrats. For the employment demographic, we found that unemployed men felt individually less masculine than men employed full-time and part-time. Additionally, the data revealed people who are religious have less GRD than men who are somewhat religious or have no religion. For age, there was not a statistically significant correlation for GRD, individual beliefs, or societal beliefs about masculinity. This research is aimed at uncovering which groups of men experience more gender role discrepancy and thus offers new insight into where future research should be focused to assist men who are more vulnerable to mental health problems.

Liana Marie Heshiki

OK - Southern Nazarene University

Discipline: Health and Human Services

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Abstract Name: Competitive Female Athlete Knowledge of and Experience with ACL Injury Prevention

The rates of ACL injuries among female athletes have increased dramatically over the last decade. These injuries often require surgery and up to a year or more of recovery and rehabilitation. Furthermore, many athletes are unable to return to the level of competition they were at before their injury. Studies have shown that injury prevention programs help decrease an athlete's risk of ACL injury by strengthening the body and teaching movements that prepare the body to subconsciously react and protect itself from major injuries. However, further study shows female athletes lack knowledge of these injury prevention programs. A survey titled, Female Athlete Knowledge Base & Past Experiences with Knee Injuries was sent to college and high school coaches of female athletes ages 18 and older. Results showed female athletes have a general understanding of ACL injuries due to the injury's prevalence and the athletes' and/or their teammates' past experiences sustaining these injuries. Although these participants show knowledge of ACL injuries, the majority of subjects have never participated in an ACL IPP, and 86.2% are not currently participating in any specific ACL IPPs at all. The results from this survey can help clinicians, coaches, and athletes further understand not only the success of ACL IPPs but also the specific areas in which competitive female athletes lack knowledge or awareness. Additionally, these results can help clinicians and coaches develop more individualized prescriptions of IPPs based on what the results say about specific athletes' knowledge, understanding, and involvement.

Madyson Hetsler

OH - University of Findlay

Discipline: Natural and Physical Sciences

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Abstract Name: The Prevalence of Tetracycline-resistant E. coli as a Correlative to Land Usage, Nutrient Levels, and Resistance Profiles in the Blanchard River Watershed

Tetracyclines are an important antibiotic group that have been implemented in livestock, agriculture, aquaculture, and medicine since their establishment. The use of tetracyclines in human medicine has greatly decreased in recent years due to the development of resistance, but tetracyclines remain one of the most used antibiotics in livestock production. There is evidence of a significant association between tetracycline consumption and the presence of tetracycline-resistant E. coli isolated from livestock. These resistant microbes are harbored within the livestock but also released into animal fecal waste. With current fertilization practices as well as continued issues with leeching in watersheds, there is a need to monitor in vivo aquatic systems, especially those in agricultural areas, not only to monitor the prevalence of tetracycline-resistant E.

coli but also to develop more succinct and effective monitoring and management guidelines. The Blanchard River serves as an excellent model system suitable for monitoring antimicrobial-resistant microbe sustainability within a highly agricultural area that serves as a contributor to the Lake Erie basin. Previous research has determined that the river provides a suitable habitat for antibiotic-resistant microbes including tetracycline-resistant E. coli as all 116 sampling sites harbored resistant populations. Four AOCs (Areas of Concern) were identified to harbor multi-drug-resistant microbes including MRSA and tetracycline-resistant E. coli. These AOCs were tested to determine correlations between land usage, nutrient levels, and resistance profiles.

Sithmi Hewage

IA - Iowa State University

Discipline: Natural and Physical Sciences

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Abstract Name: Study of the effect of ionic liquids in plant DNA extraction

High-quality plant genomic DNA extraction is a crucial component of plant biomolecular analyses such as genotyping, sequencing, mutation screening, and plant pathogen detection. Conventional plant cell lysis and DNA extraction methods require large amounts of plant sample mass, which is not feasible in DNA analysis of rare, native plants and plants with high archeological importance. The miniaturized matrix solid-phase dispersion (MSPD) approach featuring ionic liquid (IL) and magnetic ionic liquid (MIL) solvents is a simple and rapid method that was developed to isolate genomic DNA from milligram fragments of plant tissues. The MSPD approach shows advantages in applications such as forensic science, early detection of plant pathogens, and phylogenetic studies involving ancient plants, highlighting the significance of expanding this approach. The IL and MIL solvents used in the method play a major role in this approach's success, particularly for plant tissues rich in polyphenols and polysaccharides such as Lemon balm and Bur oak. It is hypothesized that the chemical structure/composition of the solvents affects DNA extraction and enrichment, as the cation component of the solvent directly interacts with the DNA during dispersion using the MSPD approach, and the anion affects qPCR, which is used for quantitative and qualitative DNA analysis. qPCR compatibility was tested by carrying out reactions for plant genomic DNA with a series of ILs from a training set, and the trihexyl(tetradecyl)phosphonium bis(trifluoromethylsulfonyl)imide ([P6,6,6,14+] [NTf2-]) IL by comparing their cycle of quantification values. Successful amplifications for the tested hydrophobic ILs suggest that they are qPCR compatible, and further optimization will be carried out for hydrophilic ILs. This project seeks to identify the mechanistic variables of IL cations and anions that give rise to DNA enrichment and permit the solvents to be compatible with direct qPCR analysis.

Aubrey Hewitt

OK - Cameron University

Discipline: Humanities

Authors:
#1 Aubrey Hewitt

Abstract Name: The “Same Old Shit”: Seeing Jean-Michel Basquiat’s Artworks Through His Black Vision

Ancestry and skin color tell artists they are African Americans, but what about their art signals it as uniquely African American? My essay explores Jean-Michel Basquiat's artwork and pinpoints what makes his creations African American. I investigate how Basquiat, emerging from the street art scene with SAMO©, rose to prominence in the art world, challenging societal norms and addressing prevalent issues like capitalism, racism, and police brutality. Delving into Basquiat's prolific career, my analysis focuses on key paintings such as Irony of Negro Policeman, King Zulu, and Riding with Death to unravel the artist's distinctive perspective as an African American creator. The assertions of Black writers such as W.E.B. Du Bois and Henry Louis Gates, Jr. are the lenses through which I interpret Basquiat's works. Basquiat uses African American rhetoric such as irony and signifyin(g) to address societal contradictions and racial complexities. His struggle with double-consciousness and artistic double aims enable his art to showcase the Black creator's dual struggle to create and elevate his race in a predominantly White society. My analysis also examines Basquiat's foreshadowing of his untimely death and draws parallels with other influential Black figures who prophesied their own demise. Examining multiple aspects of his artistic endeavors, my essay underscores the enduring relevance of Basquiat's messages, emphasizing how each work serves as a timeless reminder of the persistent challenges in racial relations.

Saba Heydari Seradj

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Investigating somatosensory innervation of adipose tissue

Upward trends in the prevalence of obesity and type 2 diabetes have underscored the need for research aimed at enhancing our understanding of adipose tissue. Adipose tissue plays a key role in maintaining whole-body metabolism and communicates bidirectionally with the central nervous system (CNS). Conventionally, the brain-fat crosstalk involves sympathetic fibers of the CNS sending efferent signals and adipose tissue communicating its metabolic state to the brain by secreting hormones. Although sympathetic innervation of adipose tissue has been extensively studied, due to a lack of specific manipulation tools, the presence and physiological relevance of somatosensory innervation from dorsal root ganglia (DRG) remains controversial. To address this challenge, we developed viral and imaging strategies to manipulate sensory nerves in an organ-specific manner. By visualizing the entire axonal projection from DRG soma to subcutaneous adipocytes, we demonstrated that adipose tissues have robust sensory innervation. Functionally, selective ablation of these neurons enhanced thermogenic and lipogenic transcriptional programs in fat, suggesting that sensory innervation acts as a brake on sympathetic activity. Furthermore, we have shown that subcutaneous fat receives abundant innervation from Piezo2-expressing neurons. Interestingly, Piezo2 loss of function recapitulates transcriptomic changes observed in ablation of fat-innervating sensory neurons. Our work challenges the canonical view that afferent signals from adipose tissue are primarily mediated by secreted hormones and motivates further research about somatosensory innervation of fat.

Gabrielle Hildebrand

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

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Abstract Name: Investigation of Attention Bias Variability in Social Anxiety Disorder

Attentional bias (AB) towards threatening cues has been studied as a primary cognitive mechanism of social anxiety disorder (SAD). However, research shows varying results for AB, raising the question whether AB is a static phenomenon. In recent literature, a concept of Attention Bias Variability (ABV) was proposed to explain the dynamic and fluctuating nature of AB towards and away from threat. A few studies have found that ABV was linked to anxiety-related disorders, but little is known about the relationship between ABV and SAD symptoms. This study investigated the link between SAD symptoms, AB, and ABV. Based on a diagnostic interview, participants were divided into a social anxiety disorder group (SAD), or a non-socially anxious group (NSA). Participants completed self-report questionnaires, as well as a dot-probe task with pairs of neutral and threatening facial stimuli. AB indices were calculated using the conventional method, and two recently developed ABV computation methods. An independent t-test was conducted to compare variables between groups. A Pearson's correlation analysis was conducted to examine the relationship between AB(V) and SAD symptoms in each group. Results showed that individuals with SAD displayed higher attentional vigilance toward threatening stimuli compared to the NSA group. Although ABV scores were not significantly different between groups, ABV indices showed differing patterns of association with SAD symptoms across groups. Naim et al. (2015)'s ABV index score was linked to SAD symptoms (e.g., fear of negative evaluation) in the SAD group, whereas Zvielli et al. (2015)'s index score was associated with anxiety sensitivity for social situations in the NSA group. Findings indicate that the sensitivity of ABV in associating with SAD symptoms may vary depending on the ABV computation method and diagnostic status of SAD. Further research is required to replicate the current findings and identify the most reliable method to compute ABV.

Syrena Hilgendorf

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Discipline: Natural and Physical Sciences

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#4 Julie Ostrander

Abstract Name: Mechanisms of Breast Cancer Cell Death by Mammalian Orthoreovirus

Estrogen receptor positive (ER+) breast cancer is one of the most commonly diagnosed types of breast cancer in the United States and can recur and metastasize 10-20+ years after initial diagnosis. Novel therapeutic strategies are needed to prevent recurrence and metastasis. A possible solution is mammalian orthoreovirus (MRV), a replication-competent natural oncolytic virus. The mechanisms of MRV-induced death are not well elucidated. Our studies aim to explore the different cell death pathways elicited by MRV, and our goal is to explore the effects of MRV in the ER+ breast cancer cell line MCF7 using inhibitors of apoptosis, necroptosis, and the NFκB pathway. We have studied the effects of different inhibitors using cell viability assays and western blotting. Our preliminary results indicate MRV promotes apoptotic cell death in MCF7 cells and that IKK inhibition enhances MRV-induced cell death. Our ongoing research aims towards testing different doses of inhibitors and adjusting the time course experiments in our cell viability assays. Furthermore, we are performing cell fractionation experiments to understand how MRV affects the NFκB

pathway using cytoplasmic and nuclear extracts. We anticipate these results will provide insights into the pathways associated with MRV-induced death.

Shamiah Hill

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Shamiah Hill

Abstract Name: Ketamine-Assisted Therapy and its Accessibility to Communities in Georgia

Ketamine therapies, clinics, and resources are unobtainable to those most in need of their potential benefits due to the barriers of price, availability, and clinic location. This is proven through the recent ketamine drug shortages, the biased locations of ketamine clinics in high-income areas, and the excessive costs of ketamine. Demographic and geographic data has been collected from ten ketamine clinics to compare the greater access that certain communities have over others in the state of Georgia. The research techniques used are the collection of quantitative data and qualitative data from clinics in Georgia to analyze ketamine costs and treatment protocols in the context of geographic and demographic information. In addition, a rhetorical analysis of ketamine patent products will be conducted to further illustrate the presence of barriers associated with limiting access. When research is completed, it is expected that communities in most need of ketamine treatment will be excluded through its inaccessibility. This research will bring awareness to the effects of ketamine shortages and its impact on many communities in Georgia and beyond.

Makenna Hill

OK - Cameron University

Discipline: Humanities

Authors:
#1 Makenna Hill

Abstract Name: The Myth of “Beauty”

Some say that beauty is in the eye of the beholder. But what happens when the beholder is not in control of the definition of “beauty” prescribed to them by mythologists? Major brands in the beauty market reinforce the theory outlined in Mythologies by Roland Barthes through advertisements that signify an underlying message of what beauty should be to sell their products. This essay explores how Barthes’ theory of myth can be used to evaluate the beauty industry. Previously, the beauty industry was mainly directed toward women exclusively. The author proposes that stagnant perspectives of gender in the beauty industry are based on societal views of the terms “woman” and “beauty” which had at one point fallen victim to becoming myth when a new level of signification was added. Slowly but surely, the beauty industry is becoming more inclusive as old myths about who can participate in the industry are changing along with definitions of beauty. The author of this paper explores how Barthes’ theory of Mythologies is present in the beauty industry at different levels. These levels include looking at how advertisements focus on specific products and the myths they create, how the concept of “beauty” is itself a myth, and lastly, how the concept of “woman” is a myth. Each of these ideas are reflections of how Barthes’ theory of myth pervades all aspects of culture and how certain myths are interconnected. The author also argues for the importance of educating the public about how myths can be used to sell products in the beauty industry.

Reagan Hill

AZ - Northern Arizona University

Discipline: Health and Human Services

Authors:
#1 Reagan Hill
#2 Michelle Hall
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Michelle Hall

Abstract Name: Fun with Foods Nutrition Intervention with Mr. Blaine's Summit High School Class

Project Purpose: The central purpose of our intervention was to improve the nutritional knowledge, self-efficacy to make healthy dietary choices, and sense of community connectedness of our target population through evidence-based interactive, educational, and observational activities.Background: Our intervention targeted students at Summit High School in Flagstaff, Arizona, to increase their nutritional knowledge. Nearly half of students in our target population come from low socioeconomic backgrounds, which increases their risk of food insecurity. Food insecurity is linked to poor health outcomes, such as depression, cognitive development problems, anemia, diabetes, obesity, and hypertension.Methods: We worked with students in Mr. Blaine's physical education class at Summit High School over a 3-day period in which we spent an hour and a half with them each day. Our main activities included a nutrition education PowerPoint on day 1, a Jeopardy game on day 2, and on day 3, a cooking demonstration accompanied by a mindful eating exercise, as well as distribution of the class cookbooks that our team curated using meaningful recipes provided by the students on day 1.Conclusions: We evaluated the effectiveness of our intervention by conducting pre- and post-intervention surveys via Qualtrics and a game of Kahoot to measure learned knowledge. Of the 5 students who participated in both the pre-and post-Kahoot activity, we calculated an average increase of 32.5% in nutritional knowledge. Of the 8 students who completed the pre-and post-intervention Qualtrics surveys, participants scored 60% or higher regarding community connectedness and self-efficacy. An implication from these aspects of our research is that overall nutritional knowledge, self-efficacy in making healthy dietary choices, and a sense of community connectedness increased over the course of our intervention.

Sophie Himmel

PA - Lafayette College

Discipline: Social Sciences

Authors:
#1 Sophie Himmel

Abstract Name: The Right to Sex (Education): The impact of Christian activism on Constitutional religion clause jurisprudence through sexual education

When Dobbs v. Jackson overturned Roe v. Wade in 2022, questions of reproductive autonomy at the Constitutional level became more critical than ever, including the question of teaching reproductive health in public schools. This research seeks to understand the influence of Christian activists on sexual education in American public schools and any implications on the interpretation of the religion clauses in the United

States Constitution.I will begin by constructing a historical understanding of both Christian beliefs around sex as well as the developement of the sex education movement. Through this method, I will be able to contextualize the eugenicist and homophobic roots of both the early Protestant sex education movement and the later Evangelical Christian abstinence-only sex education movement to emphasize how these ideologies are reinforced by any relevant federal policies and jurisprudence throughout the 20th century. I will conclude the historical background with the 1996 Social Security Act, which has since granted over two billion dollars in federal funding to Evangelical abstinence-only sex education programs in public schools. I will then analyze a series of Supreme Court cases dealing with sex education and the religion clauses in public schools through the historical lens of the sex education movement and Christian activism.I hypothesize there will be a visible shift in the late 20th century interpretations of the First Amendment religion clauses. I will track this shift through today to create a framework for understanding how future sex education cases may be handled as a result of the existing jurisprudence. Finally, I will argue that the jurisprudence discussed in this research codified the pathologization of any non-White, monogamous, heterosexual sex, shaping an exclusionary Constitutional personhood and created a Christian religious super-right.

Simon Hinmon

CA - University of the Pacific

Discipline: Humanities

Authors:
#1 Simon Hinmon

Abstract Name: From Honeybees to the Feasts: The History of Mead

The History of Mead is complex for such a simple alcohol made up of only honey, water, and yeast. Despite its simplicity, mead has been an important drink throughout Eurasia as early as 7,000 B.C.E. Through its age and use of natural fermentation, historians are still unsure on its origins due to the theory of multiple discoveries and knowledge transfer through multiple civilizations. Through its presence, mead was used for survival, religion, culture, and class in its respective locations and time. People of the Neolithic used the drink to satisfy their sweet tooth and enjoy. Classical Civilizations believed it to be mysterious and as the 'nectar of the gods'. Vikings and Celts also saw mead as the drink of the gods, and had grand feasts within their mead halls. Anglo-Saxons would write poetry of mead and battles. Ancient Indian Civilizations would write them in their old sanskrit texts. The Welsh used mead as a symbol of their people and nation in the creation of the United Kingdom. The British would lastly use it as a way to display wealth and class through recipies such as those from Sir Kenelm Digby. Today, mead is still easily acceptable and made, with myself creating three batches of regular mead, vanilla mead, and cinnamon mead and having others taste test the drink. Mead has remained steadfast in its use through the ages and will remain as the drink of the gods and the drink for the people.

Jayda Hinrichsen

MN - University of Minnesota - Rochester

Discipline: Humanities

Authors:
#1 Jayda Hinrichsen
#2 Kauthar Al-Khiqany
#3 Jessica Ha
#4 James Ford

Jessica Ha
Kauthar Al-Khiqany

Abstract Name: Historical Perspectives on the Treatment of Mental Illness at Rochester State Hospital

This project investigates the institutional treatment of mental illness in the late 19th century by examining untapped manuscript patient records on patients who died during their treatment at the now-defunct Rochester State Hospital (Minnesota). More broadly, the study sheds light on the state of mental diagnosis and therapy during the custodial phase of mental hospitals in the United States. We analyze the digitized archival sources, looking for particular themes and terms and place them in a broader historical context. This document analysis focuses on what these patient cases tell us about the era and similarly what presumptions and viewpoints about mental health are embedded in the documents. Additional published primary sources including superintendent reports and newspaper articles help crosscheck and contextualize the manuscript material. While the Minnesota Historical Society in St. Paul, MN contains hundreds of these patient records, we have limited our scope by focusing on the 76 patients who died during their treatment and were buried in a cemetery whose location is still unknown. In sum, this study contributes to historical understanding of the treatment of mental illness in the United States on the basis of patient records from the 1880s; it gives voice to the "lost" patients and potentially ignites interest in finding their gravesite and honoring their lives; and it could inform ongoing debates about the merits of community-based mental health care versus inpatient hospital care.

Kylah Hinton

UT - Weber State University

Discipline: Social Sciences

Authors:
#1 Kylah Hinton

Abstract Name: "Why did he do it?"–A Look at Rape Myth Acceptance and Media Influences

There is an obvious tie between rates of rape myth acceptance and the rates of rape and sexual assault. Because of this, an importance has been placed on discovering why these rape myths exist and what can be done to combat them. The aim of this project is to evaluate the influence of media on rape myth acceptance, and whether there is a significant effect in the way women are presented and perceived on how willing people are to accept, or reject, victim blame ideologies. This type of study has been done in the past, but with the ever changing political and social environment in the United States, continued research and discussion on this topic is crucial. This between groups experimental design aims to analyze the relationship between media exposure (music videos) and rape myth acceptance, as well as the influence of sexual conservatism and sexist beliefs on the acceptance of rape myths. Participants will be exposed to one of four music videos: two of the videos illustrate either benevolent or hostile sexist beliefs, one displays women in an empowering way, and one is a control. Data collection began on October 31, 2023 and is ongoing. Data collection will be completed and analyzed by the time of presentation.

Kayla Hoang

CA - University of California - Irvine

Discipline: Interdisciplinary Studies

Authors:

#1 Kayla Hoang

Abstract Name: Nailing the Business: Intergenerational Influences of Vietnamese Manicurists in Orange County

My research brings into focus the immigrant niche of Vietnamese women in the nail industry, specifically within Orange County, to explore how Vietnamese perceptions of gender and culture affected their domination of the nail industry throughout generations. It examines different intergenerational perspectives and factors influencing first, second, and third generations of Vietnamese-American women following this career, especially because younger generations in the business are more likely to be American-born with different opportunities compared to previous immigrant generations. This study contributes towards understanding the development of Vietnamese communities in the US and Vietnamese cultural perceptions of gender and labor shaping this ethnic niche. I study these experiences through conducting oral history interviews with two nail salons in Orange County's "Little Saigon," as well as one nail salon school in the area, to find various intergenerational perspectives and backgrounds related to the nail salon industry. These interviews cover questions related to Vietnamese perceptions of gender roles and work experience in shaping this ethnic niche, and examine Vietnamese women from different age groups and levels of the nail salon, including owners, technicians, and customers. Commonalities in interviews with older generations included being more raised by Vietnamese cultural emphasis on nail work being a flexible, simpler career fulfilling a "woman's role" to allow women to come home and take care of family, while results with younger generations included the prevalence of nail schools and salons within Orange County and its prominent Vietnamese population provided a familiar and accessible means of earning money.

Maggie Hoang

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

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#1 Maggie Hoang
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#6 Shawn Chen
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Abstract Name: Battery As iNtegrated Structure High Endurance Experimental UAV, Robotics

The current state of Unmanned Aerial Vehicles faces a critical challenge that limits the ability for extended flight times. Drones relying on electric power sources must pause their flight to intermittently recharge, resulting in disturbance of their ongoing mission and extending their mission time drastically. To enhance the flight and mission duration of UAVs, developing a quick-charge power station will provide extensive flight time and eliminate long charging disturbances during ongoing missions. Our solution to reduce UAV's mission time is designing the Robotics Ground System (RGS), which provides a safe location for the drone to autonomously land and have its battery swapped efficiently compared to basic charging hours. Powered with renewable energy, the system creates a solution to lengthen the flight endurance of drones. The design of the RGS consists of three sub-systems: Ground Control Station (GCS), Battery Vending Machine (BVM), and Battery Transfer Pod (BTP). The GCS is designed with 7x7 AR modular blocks that the drone's camera will detect to land. Once landed, the robotic arm from the BTP will autonomously extract the battery from the drone, traveling on a short rail to relocate the battery to an open chamber on the BVM. The BVM, which can store up to 8 different Li-Po batteries, will rotate its carousel to dispense a fully charged battery for the arm to

grab and return to the stationed drone. This process reduces the drone's mission time by eliminating long hours of charging by replacing batteries within 2-minute intervals. With shorter mission times, drones complete tasks for society quicker and more efficiently.

Stephanie Hoang

CA - Chapman University

Discipline: Natural and Physical Sciences

Authors:
#1 Ishaan Shah
#2 Jerry LaRue

Abstract Name: Hot Electron Chemistry on Bimetallic Titanium Nitride Core-shell Nanoparticles

The increase of CO and CO2 pollution has become a prevalent global climate issue. CO pollution can be mitigated by converting CO or CO2 into CH3OH (methanol) through catalysts. Plasmonic photocatalysis can be used to assist in creating green fuels. Our plasmonic photocatalysts are bimetallic transition metal core-shell nanoparticles. These nanoparticles' unique optical and catalytic properties contribute to their photocatalytic abilities that efficiently generate hot electrons for use in excited state chemistry. This project focuses on bimetallic core-shell nanoparticles with Titanium Nitride (TiN) as the core metal. As of now, ruthenium (Ru), rhodium (Rh), and nickel (Ni) have been used as the shell metal. The TiN/Ru and TiN/Rh nanoparticles (NPs) are synthesized using reflux reactions, washed using a centrifuge, and characterized using Scanning Electron Microscopy (SEM), Energy-dispersive x-ray spectroscopy (EDS), Transmission Electron Microscope (TEM), and Ultraviolet Absorption Spectroscopy (UV-Vis). Characterization of the synthesized bimetallic core-shell NPs depict favorable size, shape, and elemental distribution. The photocatalytic efficiency of the bimetallic core-shell NPs will be assessed through the combustion of oxygen and CO oxidation and hydrogenation reactions using a reactor chamber equipped with mass spectrometry and Raman spectroscopy in the near future. Through the use of bimetallic core-shell nanoparticles, we aim to understand their properties and use these promising catalysts to assist in creating renewable fuel.

Ella Hoch Robinson

DC - American University

Discipline: Social Sciences

Authors:
#1 Ella Hoch Robinson
#2 Seo-young Silvia Kim

Abstract Name: Developing a Population Frame of Ranked-Choice Voting in the US: Preliminary Analysis and Methods

Our research delves into the evolving landscape of ranked-choice voting (RCV) in the United States, aiming to address a lack of consistent and comprehensive data on RCV elections. Much current research on RCV elections focuses on individual races or jurisdictions rather than comparing the nature of RCV elections nationwide. To address the lack of data and analysis of RCV elections, we constructed the first complete population frame of RCV elections in the US. From this pool, we collected detailed data on a random sample of RCV elections, offering detailed insights into variables like rounds, candidates, and ballot order. Our methodology involved meticulous examination of sample ballots, official results, news reports, and election

codes to determine election format and data reporting practices. Our analysis reveals that only about 35% of RCV elections necessitate more than one redistribution of votes, challenging the assumption that RCV consistently leads to multi-round contests. Notably, we identify a robust relationship between the number of candidates and the rounds required, suggesting strategic implications for campaigns in RCV elections.The study also underscores the challenges associated with collecting comprehensive data on RCV, exposing reporting inconsistencies and highlighting the need for standardized election data reporting methods across the US. We advocate for the establishment of national RCV standards to enhance transparency and accessibility in data reporting. We also evaluate our proposed method for consistently counting RCV rounds based on the number of times votes are redistributed between candidates. By creating the first complete population frame of RCV elections in the US, and offering a comprehensive analysis of our data, we provide valuable insights into the dynamics of RCV contests. As RCV gains prominence, understanding its implications for democratic processes becomes imperative, making this study a crucial step towards more informed public policy.

Lillian Hodges

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Lillian Hodges
#2 Emma Doucet
#3 Christopher Wittenborg
#4 Brandon Scott Pruett

Abstract Name: Advancing Golgi Isolation Techniques in Postmortem Cortex for Enhanced Precision in Schizophrenia Research

Schizophrenia is a severe psychiatric disorder associated with high rates of disability and early mortality. One of the major molecular findings in postmortem schizophrenia cortex is the disruption of protein modification and trafficking to the synapse. The Golgi apparatus is imperative in protein modification and transportation, making it a key focal point for studying disrupted cell processes in schizophrenia. However, the most commonly used methods in cell fractionation fall short in achieving optimal Golgi isolation. Our research explores the optimization of Golgi isolation in postmortem dorsolateral prefrontal cortex brain tissue by transitioning from a previously unsuccessful standard cell fractionation protocol to an immunoprecipitation method utilizing magnetic beads. The aim is to achieve separation of Golgi from other cell constituents, enhancing the purity of Golgi fractions. In the past, markers pertaining to the Golgi appeared in the same fraction as synaptic markers when analyzed, leading to an investigation into the usefulness of alternate approaches. Immunoprecipitation using magnetic beads with attached antibodies recognizing transmembrane proteins specific to the Golgi has been successful in isolating Golgi in previous animal studies. Our current goal is to translate this approach for studies involving human postmortem brain tissue in conjunction with our previous cell fractionation approach. The efficacy of this approach will be assessed through western blot analysis measuring markers of Golgi and other cellular components in order to provide insights into the successful isolation and identification of Golgi-specific proteins. This methodological shift holds promise for advancing cell fractionation techniques in human postmortem brain tissue, offering improved precision and reliability in Golgi-related studies.

Samuel Hodgson

MI - Hope College

Discipline: Natural and Physical Sciences

Authors:
#1 Samuel Hodgson
#2 Janaa Ward
#3 Jennifer Blake-Mahmud
Janaa Ward

Abstract Name: Why sex matters with climate change: Eco-physiological difference between sexes in a sexually mobile plant species

Climate change has led to increased temperatures, heavier precipitation, more frequent and severe droughts, and abnormal heating and cooling events. All of these add stress to plants. Previous research has shown that the added stressors more adversely impact plant species with separate sexes. Many separate-sexed plants are agriculturally important, including cannabis, spinach, ginkgo, and asparagus. Understanding how the different sexes function may help us predict how climate change may impact males and females differently. To do this, we study a plant species known as striped maple. Striped Maples are mainly separate-sexed trees, native to northern Michigan, an understory species, and have environmental sex determination. (ESD) Environmental sex determination means each plant in the species has the genetic information to be male and female and a cue from the environment dictates which sex is expressed. Individuals may change sex from year to year based on these environmental cues. These attributes above make striped maples a perfect study species to examine sex-based differences in physiology. We traveled to five field sites in northern Michigan and took demographic information on more than five hundred trees. For over a hundred of those trees, we measured photosynthetic rate, growth, stress levels, and light exposure to look for physiological differences between the sexes. Notably, this lab has found females have significantly lower growth rates and photosynthetic rates than males and trees that are not flowering. These data are consistent with the idea that there is a substantial cost to reproducing as a female, suggesting that females may be disproportionately affected by climatic stressors. As female is the preferred sex in many separate-sexed agricultural species (e.g. hops, holly, and kiwi, among many others), we might expect these crops to be negatively affected in the coming years.

Mary Hoette

IL - Quincy University

Discipline: Mathematics and Computer Science

Authors:
#1 Rajé Alleyne
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#3 Mary Hoette

Abstract Name: TellX: Disaster Response Drone

In times of crisis after an earthquake, many search teams do not have the manpower or time to go through the rubble efficiently enough to rescue initial survivors. Some people may survive the beginning tremors but be stuck under debris and die before they are found. This has been the case for hundreds of people in earthquakes recently, such as those in Morocco and Turkey. Our drone helps search, identify, and pinpoint survivors and communicate with rescue teams to begin the operations that will end in the victims' discovery and recovery. Our project uses the Tello drone[1], which connects to the user's electronic device via Wi-Fi. Our drone is able to fly to locations that have been affected by an earthquake and take a quick stationary aerial glance at the situation. Any movement will be detected by the electronic device. It will then fly to that specific area and use its image detection to see if there is a person stuck there. If there is, it will send a message with a GPS pin back to the electronic device, which then notifies the rescue team of the location of where to look. It will also send a picture of what the drone detected to be reviewed by people of the research

team, ensuring there are minimal false positives. If there is not a person there, it will continue its search. Due to its small size and ability to get both aerial and ground views, the drone can search rubble that human search teams are not able to search. Our poster demonstrates the functionality of the drone in simulated destroyed areas.

Adelia Hoff

AZ - Embry-Riddle Aeronautical University

Discipline: Natural and Physical Sciences

Authors:
#1 Adelia Hoff
#2 Hillary Eaton

Abstract Name: Suicide Rates and Risk Factors in Yavapai County, Arizona: 2017 through 2023

Suicide mortality rates in Yavapai County, Arizona are almost double that of the rest of the state and over double that of the rest of country. This study collected mortality data from January 1, 2017 through July 1, 2023 and examined it for trends to determine at-risk demographics. Mortality data was primarily collected from the Arizona Department of Health Services and population data was collected from the 2020 U.S. Census. After collection, data was analyzed for applicable trends, including what percentage of total decedents comprised specific demographics and which demographics were more likely to commit suicide.A total of five hundred and forty-two (542) decedents were reported in the time frame. It was found that most decedents were male, over 55 years old, and committed suicide with a firearm. The next most common methods were suffocation and poisoning. While veterans did not compose a majority of decedents, they were found to have a higher rate of suicide than non-veterans. Veterans make up around 11% of Yavapai County's population but were around 26% of suicide mortalities.There were no obvious trends based on the time of year, and outside of a small increase in suicide deaths in June 2020, there did not appear to be any obvious connection between the COVID-19 pandemic and overall suicide rates in the county. During 2020, however, there was both an increase of suicide of people aged 25 to 34 and a decrease in people aged 55 and older. While the increase of suicide mortality rate in younger demographics may be attributable to stressors of the pandemic, the reason for the decrease of suicide mortality rate in older demographics is unclear. Further research recommendations include expanding the timeframe of the data and obtaining data on more demographic categories.

Hailey Hoffman

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Hailey Hoffman
#2 Joshua Lord

Abstract Name: Impact of Ocean Acidification on the Foraging Behavior of Mud Snails

Mud snails are important and abundant scavengers in soft-sediment habitats along the Atlantic coast. They use their chemosensory abilities to detect food cues, but it is possible that this ability will be diminished by ocean acidification in the near future. Acidification affects cue-sensing ability of some fish and invertebrates (while others are relatively unaffected), and previous research found that mud snails struggled to sense

predators in acidified water. This study investigated the foraging behavior of mud snails under increasingly acidified conditions. Time lapse photography was used to observe snail movement as they searched for food under control and acidified conditions. ImageJ was used to track the snails, map their routes, and calculate their foraging efficiency. This method allowed us to visualize foraging behavior and observe ocean acidification impacts in a new way. Contrary to what we believed, the mud snails were more efficient under acidified conditions. However, they also moved at a slower rate than the control group. It is noteworthy that the differences in foraging efficiency between the acidified and control group was very small along with the differences in speed. Our findings suggest that the foraging behavior of mud snails will change slightly under more acidic conditions, however there may need to be a larger drop in pH for them to significantly alter this behavior. If snail foraging is reduced under future ocean conditions, it could lead to a shifting ecological role for this abundant gastropod.

Cedar Hofstetter

CA - California State University - Fullerton

Discipline: Education

Authors:
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#2 Jasmine Suastegui
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Abstract Name: What is Equity-minded Active Learning?

The Teaching Equity-minded and Active Mathematics (TEAM) Tool is a research-backed classroom observation tool used to aid instructors in reflecting on their instructional practices towards adopting more equitable and active learning strategies into their classroom instruction. Given the increased calls for active learning and equity-minded instruction, our research team inquired about how faculty actually define the two terms and what teaching strategies they used to enact equity-minded active learning in their classrooms. In this poster, we share the reported definitions and strategies from one-on-one interviews of mathematics faculty members who have all expressed a desire and commitment to greater equity and active learning in their classroom instruction. We compared faculty's reported definitions and strategies to the teaching practices and strategies defined in the TEAM Tool. While over half of the reported strategies overlapped with the teaching practices listed in the TEAM Tool, seven of the eight TEAM Tool strategies that were not mentioned by the faculty related specifically to equity-minded instruction. This may indicate that the active learning strategies may be easier to enact than the equity-minded strategies. In addition, faculty reported strategies that were not represented on the TEAM Tool. Our findings indicate that we can continue to improve the teaching practices listed on the TEAM Tool to incorporate more practical ways for instructors to engage in equity-minded active learning. Further, an updated TEAM Tool will help us to stay current as we continue to support professors transitioning their teaching to improve student learning.

Karen Hoggan

UT - Weber State University

Discipline: Education

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#3 Adia Migliori
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Jonathan Harr
Adia Migliori

Abstract Name: Sodium to Potassium Ratio Is Associated with Increased Blood Pressure in Males but Not in Females

BackgroundElevated blood pressure (BP) is a significant risk factor for cardiovascular disease. The effects of high sodium (Na) on BP are widely recognized. However, potassium (K) intake is also a factor in hypertension. Recent studies show that the Na/K ratio consumed may be more predictive of hypertension than solely sodium intake. This study examines the association between the Na/K ratio and BP in males and females.MethodsWe utilized a cross-sectional design to evaluate self-reported diet records for 73 male and 183 female students. Sodium and potassium intake were calculated using Diet and Wellness Plus, and BP measurements were taken. Partial correlations were conducted between systolic (SBP) and diastolic blood pressure (DBP), and the following variables: Na, K, and Na/K. SBP means were compared between high sodium consumers and low sodium consumers with the same Na/K ratio using independent samples t-test.ResultsNeither male nor female participants' SBP or DBP were associated with Na or K intake (p>0.05). However, an increased Na/K ratio was associated with higher SBP in males (r=0.254, p=0.29), but not in females (r=0.04 p=0.79). When the Na/K ratio was paired, participants consuming over 3000 mg of sodium had higher SBP (121.1 ± 12.9) than those who consumed less than 3000 mg (115.9 ± 10.7, p=.004).ConclusionsIn males, the Na/K ratio was predictive of increases in blood pressure. This was not seen in females. Although the Na/K ratio seems to be more predictive of this parameter, within the same Na/K ratio, having lower Na consumption was associated with lower SBP. This illustrates the complex interaction between BP regulation and nutrition, emphasizing the significance of lowering sodium intake and maintaining a balanced Na/K ratio for optimal heart health.

Emma Hoisington

OK - University of Central Oklahoma

Discipline: Business and Entrepreneurship

Authors:
#1 Emma Hoisington

Abstract Name: Rape Kit Testing and the Becker Rational Crime Model

Rape is considered to be the most underreported crime, with lasting effects that impact the wellbeing and livelihood of victims. Despite this underreporting, the US has a nationwide backlog of untested Sexual Evidence Kits (commonly known as Rape Kits). I study the incidence of sexual violence and rape through the Becker "rational crime" model which states that increased probability of detection should have a deterrence effect that reduces potential offenders propensity to commit a criminal act. From 2008 to 2023, there have been huge efforts by many jurisdictions across the country to clear the evidence backlog and process all held rape kits. This poster discusses the relationship between the rate of rape kit processing and reported instances of rape using precinct-level data from the Department of Justice.

Andrew Hokanson

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Andrew Hokanson

Abstract Name: Plant exploration in central Honduras: Collecting and conserving maize landrace diversity

Food security in the coming decades is a global concern. Expanding the area of cultivated land to feed the growing global population is an unsustainable approach. High-yielding and climate resilient crops must be developed to satisfy this demand. Germplasm conservation is an important factor in promoting global food security, as it is the fundamental resource used by plant breeders to develop high-yielding cultivars with resistance to biotic and abiotic stresses. The purpose of this project is to enhance the diversity of tropical maize germplasm in international genebanks. Despite its geographic proximity to the regional center of diversity in Guatemala, maize germplasm from Honduras is underrepresented in extant collections. The proposed collection locations complement prior collections, focusing on the department of Comayagua, Honduras, which is underrepresented in the existing USDA and International Maize and Wheat Improvement Center (CIMMYT) landrace collections.Collection locations were determined using a landrace gap analysis and consultation with technical advisors from the Honduran agricultural research organizations ASOCIALAYO and FIPAH. Samples of the germplasm collected and regenerated will be deposited in the genebank of the U.S. National Plant Germplasm System (NPGS), the Zamorano University germplasm collection, and the in situ collections of NGOs. Furthermore, the proposed efforts place an emphasis on capacity building for germplasm conservation within Honduras by assisting with the regeneration of existing ex situ collections and strengthening professional relationships between Honduran NGOs, small-holder farmers, Zamorano University, Iowa State University, and the NPGS.

Kendall Holcomb

UT - Utah Valley University

Discipline: Natural and Physical Sciences

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#4 Barbara Suassuna Schincariol
#5 Geoffrey Zahn
Annette Lewis
Barbara Suassuna Schincariol

Abstract Name: Does Greater Phylogenetic Distance Affect Competition Outcomes in Fungal Communities?

Fungi have played a critical role on Earth due to their diversity and decomposing ability. Fungal communities, particularly saprotrophic fungi, compete for resources and assist in organic matter decomposition. However, the role of phylogenetic relatedness on competitive interactions in fungal communities has not received much attention in research. The concept of phylogenetic overdispersion explains that species within a community tend to be less related than expected by chance. Similarly, Darwin's naturalization hypothesis suggests that taxonomically distinct invaders might experience reduced competition and resistance. In this study, we chose three different saprotrophic fungal species: Aspergillus niger and Fusarium keratoplasticum (from the same family), and Pleurotus ostreatus (from a different phylum). These species were chosen based on decomposition abilities and phylogenetic distances based on the ITS region of DNA. These species were cultured and placed in seven combinations to assess their ability to decompose and compete as individual fungal populations and as combined communities (e.g., A, B, A+B, B+C, and A+B+C). Each species was placed near a sterilized piece of paper such that competition was evaluated by analyzing the paper coverage in Petri dishes over three weeks. Each Petri dish was analyzed individually

based on the average percentage of paper covered and, within combined communities, the percentage of paper each species covered. Interactions between each species and the percentage of the paper covered was recorded for further analysis. Assessing paper coverage allows for individual species' abilities to decompose and compete to be seen. We hypothesized that decomposing and competitive abilities would be the strongest with A. niger. Despite the fast growth rate of A. niger individually, preliminary results suggest that it was outcompeted when paired with other species. This research highlights the potential nuances in fungal interactions dictated by phylogenetic relationships, shedding light on the principles of phylogenetic overdispersion and Darwin's naturalization hypothesis.

Laura Holden

GA - University of Georgia

Discipline: Natural and Physical Sciences

Authors:
#1 Laura Holden
#2 Johnathan Mayfield
#3 Dr. Lance Wells

Abstract Name: Tetratricopeptide Repeat Domain Variant of O-GlcNAc Transferase Casual for a Congenital Disorder of Glycosylation

The OGT gene encodes for the enzyme O-GlcNAc Transferase that is essential for human and most multicellular organism's life and is responsible for the addition of O-GlcNAc onto target cellular proteins. The O-GlcNAc modification plays a role in numerous processes and diseases including diabetes, cancer, neurodegeneration, and neural development. Previously reported mutations in the N terminal Tetratricopeptide Repeat (TPR) domain of OGT have been found to cause X-Linked Intellectual Disability (XLID). More recently, clinicians have identified 3 mutations in the C terminal catalytic domain of OGT. We hypothesize, based on molecular modeling, that the enzyme will not be able to efficiently bind the sugar nucleotide and transfer O-GlcNAc to proteins. Thus, the variants will alter the O-GlcNAc levels on intracellular proteins. To test this hypothesis, we will express the variants, T570A, Y835C, and A952V, in human cell lines to better understand the effects of the mutations in comparison to our positive control, wildtype, and negative control, catalytically inactive K852M. We have created plasmids via site-directed mutagenesis to express the recombinant OGT enzyme variants. We will use western blots to assess the levels of O-GlcNAc normalized to the amount of recombinant OGT expressed in mammalian cells. This can help us better understand the role that these mutations play in the intellectual disability phenotype. By understanding how the variants alter O-GlcNAc levels and enzyme function, potential therapeutics can be created, and we will better understand the role these mutations play in the phenotype of this form of CDG (Congenital Disorder of Glycosylation).

Helaena Holjes

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Helaena Holjes
#2 Natasha Woods

Abstract Name: Hidden connections: investigating shrub expansion into grasslands

Shrub encroachment is occurring in ecosystems worldwide however, it is particularly detrimental for barrier islands because they migrate and resistance posed by shrubs could result in island fragmentation. One of the abotic drivers for shrub encroachment on Hog Island, Virgina is warmer winter temperatures. Instead of shrubs dying back they expand into grasslands. Biotic factors may also be important for shrub encroachment. What is currently unknown is the role of grasses in facilitating increased root infection of mycorrhizal fungi, a vital organism for increasing nutrient uptake by plants in nutrient poor environments. A hoop house experiment was set up to determine the extent to which grasses facilitate the growth of seedlings of Morella cerifera, a native shrub, by increasing contact with grass roots. Grass roots are associated with mycorrhizae fungi which could increase the root infection of M. cerifera. Control M. cerifera seedlings were grown with contact with grass roots and experimental seedlings were grown isolated from grass roots. The growth metrics were height, biomass, and canopy area. After seven weeks the average height growth for the control group was 5.24 (±0.50 cm) and the average height growth for the treatment group was 3.56 (±0.47 cm). The seedlings with access to grass roots grew significantly taller than seedlings isolated from M. cerifera roots (p<0.05). The average canopy area for the control group was 87.73 (±1.61 cm) whereas the treatment group was 85.93 (±2.50 cm). These differences were not significantly different meaning that the plants are growing taller but not wider. This could be due to competition with grasses for light. Grasses appear to have a positive effect on shrub growth potentially impacting their encroachment into grasslands.

Shria Holla

KY - University of Kentucky

Discipline: Business and Entrepreneurship

Authors:
#1 Shria Holla
#2 James Ziliak
#3 Bradley Hardy
#4 Elizabeth Krause

Abstract Name: Stalled Progress? Five Decades of Black-White and Rural-Urban Income Gaps

We examine the contribution of the U.S. tax and social safety net to ameliorating racial and geographic household income gaps. Using nearly five decades of data from the Current Population Survey Annual Social and Economic Supplement, we make a comparative assessment of after-tax and transfer Black-White and rural-urban household income gaps in relation to similar gaps based solely on household earnings. Our results paint a mixed portrait of economic progress of Black and rural households relative to their White and urban counterparts over the last 50 years. The tax and transfer system in any given year provides substantial redistribution to low-income Black and rural households, which has resulted in a narrowing of level gaps over time. However, those same level gaps have been exacerbated in the upper tail of the distribution, suggesting the tax code does not undo the underlying economic forces pulling White and urban incomes apart from Black and rural households in the top half of the distribution. This is borne out in the stagnation of rank positional gaps across race and geography.

Natasha Holland

CO - University of Northern Colorado

Discipline: Social Sciences

Authors:
#1 Nat Holland

Abstract Name: Silent Killer - Exploring the Epidemic of Loneliness on American College Students

Post-covid American society is currently experiencing what national officials have declared a public health crisis. This research aims to explore the impact of America's Epidemic of Loneliness and Social Isolation on college students by identifying awareness, stigma, and salient perceptions. Research spanning the last several decades has converged revealing the vast and significant health and well-being outcomes associated with social isolation and loneliness. A lack of social connection and the loneliness it inflicts has been linked to many adverse and dire consequences for individuals and society. Loneliness has the potential of shortening life expectancy by 29%. Time spent connecting socially has been declining for decades and has now plummeted to record-breaking lows. Unbeknownst to many, the increasingly widespread loneliness epidemic is likely impacting most of the population and infecting every level of society. Approximately half of Amerians self-reported loneliness prior to covid, with the current generation of young people being among the most adversely affected. A mixed methods, longitudinal design will be used to study a large group of undergraduate college students from a western university. Two surveys will be conducted on the large target population and one interview on a smaller portion of the group. Instrument development will derive from the Stigma of Loneliness Scale which incorporates UCLA's Loneliness Scale. Scaling and multiple choice will be used in surveys. The surveys will implement a test-retest strategy intended to evaluate the potentially mitigating role of awareness. At the end of the first survey, awareness will be provided in the form of current data released by the US government related to the loneliness pandemic. Approximately a 4-6 week interval will occur prior to the subsequent survey. To gain greater insight, individual interviews will be conducted shortly after the second survey on a small group of the participants using mostly open-ended questions.

Wisdom Holland

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Wisdom Holland

Abstract Name: Emotional Intelligence Among College Students

Prior research has shown that emotional intelligence is significantly important for college to have in order to cultivate healthy social skills that play a role in relationships. This current study explores emotional intelligence among college students. This study has two objectives: (1) to examine the effect of appraisal of own emotions on utilization of emotions. (2) to explore how appraisal of others' emotions and emotional regulation affects a college student's social skills. It was hypothesized that appraisal of others' emotions and emotional regulation would significantly predict social skills. Emotional intelligence was measured by the Emotional Intelligence Scale (Copper et al. 1998). The sample included 59 college students from a Christian university. A simple linear regression and multiple regression test were used to analyze the data. The study found that appraisal of own emotions does significantly predict utilization of emotions (b1= .32, p<.05). The findings also revealed that appraisal of other's emotions and emotional regulation plays a significant role in determining a student's social skills. (p<.05). We concluded that emotional regulation significantly predicts social skills controlling the appraisal of others' emotions. These findings can help universities implement more personable ways for students to engage with other students to foster those relationships as well as access to more support resources.

Madeleine Hollenbeck

NC - Elon University

Discipline: Humanities

Authors:
#1 Madeleine Hollenbeck

Abstract Name: Museums and Ritual Objects: Examining Curatorial Practices and Reanimating Religious Art

Placing religious objects in museum and gallery spaces limits the ways these objects are experienced and transforms their meanings, shifting them from their particularized religious contexts into works of art expected to adhere to narrowly defined assessments of aesthetic or art historical value. As part of a multi-year research project, I had plans to curate an exhibition that would re-contextualize ritual art. The exhibition would be informed by a process of re-animation, which involves displaying the objects in a way that aligns with their original function and uses phenomenological approaches to engage a visitor's conscious and unconscious experience with the art. While developing the exhibition, however, I was invited to collaborate on an event that would take place in our university's multifaith space on the occasion of their tenth anniversary. This opportunity shifted the trajectory of my exhibition and required a community-engaged model for curatorial work rather than a traditional model. Collaboration required that I gather feedback on the ways the objects were displayed, which then informed a second re-installation of this exhibition. I will present specific examples from this exhibition that sparked new conversations based on community feedback; including a Yaka divination board juxtaposed with a medieval sacramentary, and Judaica displayed alongside objects associated with Islamic prayer. This process clarified that community co-curation is essential when working with ritual art in a cross-cultural context. While presenting its own challenges, community co-curation ensured the decentering of a singular voice, engaging a wider range of perspectives, and a more successful display of the similarities and differences between works of diverse religious traditions.

Landon Holley

OK - Cameron University

Discipline: Natural and Physical Sciences

Authors:
#1 Landon Holley
#2 Susmita Hazra

Abstract Name: Analyzing Ionospheric Drift Using Ionosonde Data

The environment in the top layer of the Earth's atmosphere, which we call the ionosphere changes from hour to hour and from day to day due to its interaction with Sun. As a part of this research, we are studying ionospheric drift velocity at different latitudes and times using ionosonde data. We are using the data for stations ranging from -30 deg latitude to +30-degree latitude. Our initial analysis shows drift velocity could go up to 150 m/s. We have found the highest changes in velocity happen before or after sunrise, and sunset. Also, drift velocity changes nearer the equator region. Further analysis has revealed that the seasonal variation of drift does affect drift velocity and that the greatest drift velocities seem to be during the summer months of the upper hemisphere and in the winter months of the southern hemispheres. The magnitudes found at the Santa Maria station in December reach higher velocities relatively consistently across the month, reaching a maximum velocity of 49 m/s. The results of this research project will be important in terms of space plasma studies and space weather predictions, which play a significant role in radio and satellite communication as well as GPS navigation.

Grace Holley

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Grace Holley
#2 Jared Wilson
#3 Camila Pena
Jared Wilson
Camila Pena

Abstract Name: From Patterns to Polygons: A Recontextualization of Historic Relics Through Digital Technologies

Bridging the divide between history and the modern world is what this research project aims to achieve at its core. We were able to achieve a partnership with the National Historic Landmark, Sloss Furnaces in Birmingham, Alabama. We worked with Sloss Furnaces to archive wooden foundry patterns from the early 20th century using 3D technologies as well as our combined knowledge and proficiencies. This project permits interdisciplinary collaboration, preservation of historic relics, and educational outreach on many fronts. During our time in Birmingham, we took our Ein Scan 3D scanner and began the process of scanning the patterns Sloss Furnaces has accumulated in their facility. We were able to render a total of 12 digital scans during our first trip and plan to continue to pursue a complete digital archive. Once we returned to Kennesaw, we began the restoration of the pattern files through digital modeling practices. The immediate outcome of this project will produce files of scanned wooden patterns that will be 3D printed and digitally archived. By taking these wooden patterns that have degraded over time and restoring them digitally through advanced technology, like mesh repairing in Virtual Reality, Sloss Furnaces has been given the opportunity to preserve, use, and bring awareness to irreplaceable pieces of history. Since the making of these wooden patterns is a practice of a bygone era, the patterns are in a state of disrepair and can no longer be restored in the fashion that they were originally. Our efforts of preserving them digitally allow for these to be used in educational programs, metal arts programs, and historical record keeping. To our knowledge, this distinct preservation process is not being practiced, therefore, we hope to create a new dimension of learning opportunities for all visitors to Sloss Furnaces.

Braedyn Hollingsworth

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Braedyn Hollingsworth
#2 Jeffrey Leblond

Abstract Name: Chemotaxonomy of the Dinoflagellate Togula britannica as Based on Sterols and Galactolipids

Dinoflagellates are one of the largest groups of algae that encompass marine and freshwater, and photosynthetic and heterotrophic taxa, which are found in almost every water body on earth. On a monthly basis in phycology journals, newly identified taxa are reported, often after morphological and/or phylogenetic study. Even though it’s the most longstanding method for identifying dinoflagellates (and other algae), identification of new species based only on morphology could be inaccurate and misleading because of convergent evolution of truly different dinoflagellate species toward a particular cellular shape. Previous identification of the dinoflagellate Togula britannica was accomplished using a combination of morphology

and phylogeny, leading to its separation from the genus Amphidinium, which shares morphological features. However, there are other tools, namely chemotaxonomic characterization of various lipids such as chloroplast-associated galactolipids and membrane-associated sterols, that can serve as a valuable complementary method in identification of dinoflagellates as based on morphology and/or chemotaxonomy. To this end, we have obtained an isolate of T. brittanica which has not been characterized phylogenetically nor chemotaxonomically and have performed chemotaxonomic characterization of these lipid classes. Identification of its sterols has shown compounds commonly associated with certain species of Amphidinium; these include 4α-methyl-5α-cholest-8(14)-en-3β-ol, 4α-methyl-5α-ergosta-8(14),24(28)-dien-3β-ol (amphisterol), and 4α-methyl-5α-ergosta-8,14,24(28)-trien-3β-ol. However, characterization of its galactolipids has shown C18/C18 (sn-1/sn-2) polyunsaturated fatty acid-containing major forms of mono- and digalactosyldiacylglycerol that are uncommon to Amphidinium, which generally possesses C20/C18 major forms. Phylogenetic characterization of this isolate is still ongoing. T. britannica is an alga that has had ambiguity surrounding the phylogenic and chemotaxonomic tree since its discovery. Our objective is to provide resolution for whether this particular isolate of T. britannica is chemotaxonomically separate from the genus Amphidinium.

Tyhlar Holliway

LA - Louisiana State University, Baton Rouge

Discipline: Social Sciences

Authors:
#1 Tyhlar Holliway

Abstract Name: Analysis of Miranda Rights Comprehension: Using Lawyer-Based Instruction Amongst High School Students

Previous research studies conclude that high school students waive their Miranda Rights at enormous rates. Ultimately, teenagers do not comprehend their Miranda Rights leaving them both vulnerable and susceptible to physiological coercive interrogation attacks during interrogation. This research paper explores this identified gap in a method that is easy to interpret, while also providing high school students with the opportunity to gain information about Miranda Rights. The research question constructed and investigated is: How will implementing lawyer-based instructional sessions in high school classrooms assist in improving student knowledge of their Miranda Rights, while also boosting retention of the information after time has lapsed? This research paper uses a quasi-experimental design study in conjunction with a repeated measurement design to demonstrate the beneficial effects of high school students receiving instruction on their Miranda Rights by a lawyer presentation. Initially, four hypotheses were constructed and in the end, all hypotheses were supported. The statistical findings concluded that students in the experimental group performed significantly better than the control group in the post-test assessment. In addition, the research findings revealed that high school students found learning about their Miranda Rights from a defense attorney useful and valuable.

Dwight Holloway

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Dwight Holloway
#2 Kaelyn Dobson

#3 Sarah McClelland
#4 Jill Pruetz

Abstract Name: Food Fights: Feeding Competition in male Mantled Howler Monkeys (Alouatta palliata)

Food quality plays a big part in the activity budget and fitness of Mantled Howler Monkeys (Alouatta palliata) and may contribute to a higher frequency of food competition. Data was collected at Camaquiri Conservation Initiative (CCI) to study howler monkeys' feeding behaviors in three different trees (fruit, flowers, and leaves). Over the course of seven days, focal sampling at five-minute intervals was conducted. Additionally, all occurrence data was collected between intervals to catch missed behaviors that did not occur on my set intervals. These observations were conducted on the first male howler monkey seen in the group. The distance to the nearest monkey was recorded once the focal male mantled howler monkey was identified. This was done to determine if there were any signs of feeding competition when the distance to the nearest monkey was less than one body length. The data also showed that 100% of aggression seen was observed only in leaf trees, contrary to what I believed would be the case. So, what we can take away from this is it might not only be the quality of the food resources that are important to mantled howler monkeys but also the spatial distribution and abundance of the food source. If the distribution of food is more even, it is not efficient for the individual to defend resources. Whereas if there is more patching of resources, the individual could expend less energy defending resources and, in turn, display more instances of aggressive behavior (Strier, 2016). In summary, our results did not support our hypothesis but showed that there are more variables to feeding competition, like the distribution of resources and the efficiency of defending resources.

Kathryn Holloway

VA - Longwood University

Discipline: Social Sciences

Authors:
#1 Kathryn Holloway

Abstract Name: The Influence of Race on the Vietnam War Draft in Prince Edward County, Virginia

African American men were drafted for the Vietnam War at disproportionate rates as related to their population size and white counterparts. By 1965, in the midst of war, African American men accounted for 31% of the ground combat population, and 24% of fatal casualties, while only making up ~12% of the U.S population. This disparity came as a consequence of the composition of local draft boards and Project 100,000. By the end of the war, 246,000 men had been drafted under Project 100,000, with 41.2% of them non-white. Additionally, local draft boards failed to represent the demographics of their communities. In Oct 1966, only 1.3% of local draft board members were black, out of 16,636 members. My research question will examine how race influenced the Vietnam War draft in Prince Edward County, Virginia. Prince Edward has an extensive history of civil rights struggle, seen through the 1959 public school closure, following Brown vs. the Board of Education. The battle for public education among black students of the community significantly impacted the perceived qualifications for military service, thus perpetuating the Project 100,000 narrative. Previous literature has primarily displayed a national focus, however my research narrows the historical scope and provides insight into the community structure. The research relied on primary sources, such as oral histories with African American veterans and draft board documents. Sources were gathered on a local level, through local organizations, public records, and community members. The composition of the local draft board and the significant history of racism in Prince Edward County led to the disproportionate draft of African Americans in Vietnam. By analyzing the experience of local African American veterans in Vietnam, this study communicates the persistence and consequences of racism in the 20th century.

Benjamin Holmes

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Benjamin Holmes

Abstract Name: Anime and Lo-fi: Cross Cultural Connections

Both anime and lo-fi hip hop have become ubiquitous in the pop culture vernacular, yet neither have had much scholarly effort devoted into how they became so rooted in our pop culture. Furthermore, the two are associated with each other in terms of their place in pop culture as well as how they are presented aesthetically. This research study aims to find the reason why these two different art forms from two distinctly different cultures found each other, and how they became intwined in the eye of American pop culture, as well as the aesthetic and thematic connections the two share.

Lauryn Holroyd

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Lauryn Holroyd

Abstract Name: Impact of Excessive Screen Time on Childhood Development

Objective:The aim of this evidenced-based research project is to educate parents on the impact of excessive screen time on childhood development in an effort to provide alternatives that will enhance the cognitive development and wellbeing of young children. Purpose: Previous research acquired made a mark on the importance of screen time and its deficits related to the outcomes of childhood behavior, maturity, and physical wellbeing. The consensus of many studies follows the idea that recognition of the advantages and disadvantages of screen time may fall directly upon the caretakers of the child. The review of literature states the importance of education and mindful mediation to be recognized in order to improve childhood development. With such, parents and caretakers need adequate education regarding the negative impacts of excessive screen time and age-specific alternatives to ensure the adequate cognitive development and wellbeing of their child. Method: Use of the evidenced-based practice design includes a pre-test and post-test strategy to identify the change in parental knowledge following education on childhood development, screen time, and age-related interventions to promote positive childhood development. Expected Results and Relevance: Implementation of mediation and education related to decreased screen time will increase the parent's knowledge and provide a framework for additional education and further studies related to excessive screen time in childhood development.

Micah Holston

GA - Kennesaw State University

Discipline: Interdisciplinary Studies

Authors:

#1 Micah Holston

Abstract Name: Hypersonic-Borne HEMP Threat Analysis, Wargaming Scenarios, and the Breakdown of Mutually Assured Destruction Doctrine

Borne by Chinese hypersonic glide vehicle, a High-altitude Electromagnetic Pulse (HEMP) weapon detonated in the atmosphere over the continental U.S. eviscerates the American electrical grid for 4-10 years, incurs trillions of dollars in damage, and results in the death of up to 90% of Americans within a year, all according to the Congressional EMP Commission's report and multiple DHS/DOD/DOE studies. As "competition below the threshold of war" which also happens to nullify America's war-waging capacity, Electromagnetic Pulse (EMP) assaults place the United States in an awkward quandary, without electricity, communications, or viable retaliatory options. Existing detection dragnets strain to track hypersonic glide vehicles and, due to various EMP scenarios, if the lights were to suddenly flicker off, there may remain uncertainty as to the perpetrator's identity. Even once America eventually attains hypersonic parity with China and Russia, due to the nuanced nature of hypersonic HEMP warfare (especially when launched from the Sino-Russian border), traditional mutually assured destruction and deterrence paradigms fatally fissure and ultimately implode. Ensuring an equitable outcome – where China's electrical grid is equally inoperable – is simply unfeasible considering the first-strike nation's intrinsic advantage, ambiguity in launcher's intent, the truncated timeline for response (when compared with traditional ICBMs), and China's unique manufacturing and policy positioning which allow them to weather EMP reprisal essentially unphased. This presentation unpacks the geopolitics, game theory, and rocket science surrounding asymmetric hypersonic HEMP warfare, detailing how mutually assured destruction paradigms fail, and offers a three-pronged solution to the existential threat facing America.

Nicole Holt

MT - Montana State University - Bozeman

Discipline: Health and Human Services

Authors:
#1 Nicole Holt
#2 Miranda Margetts

Abstract Name: Investigating Rural Mountain-West Patient Care Experiences Surrounding Diagnoses of Müllerian Anomalies

The purpose of this research was to examine the patient experience of those diagnosed with Müllerian Anomalies (MAs) in Montana. MAs are congenital uterine anomalies that occur in about seven percent of the female population and can cause pelvic pain, prolonged bleeding, and sub- and infertility. Patients with MAs often require specialized care throughout their lives.For this research, thirteen patients from across the rural Mountain West were interviewed, and their responses to all questions asked were analyzed to determine key themes. Both audio recordings and written transcriptions of the interviews were used. An analysis using quantitative methods was used for all interviews, and four of these interviews were analyzed using qualitative methods. In the quantitative analysis, several key themes were identified. An interesting theme is that, due to the shortage of providers specializing in MAs in the Mountain West, as well as the rurality of the area, 61.5% (n=8) of patients experienced long travel distances to access care, with the average distance being 175.5 miles. Additionally, 76.9% (n=10) of patients experienced difficulties in regard to health insurance, mainly due to insurances not covering fertility treatments that were necessary due to the MA. In the qualitative analysis, the topics most frequently discussed by patients were miscarriage and infertility, both of which are associated with MAs. Patients also frequently discussed how their diagnosis and treatment affected their mental health, as well as how providers did not inquire about their mental and emotional well-being.The findings will contribute to a broader understanding of the patient experience in Montana and inform strategies to enhance care and support for those with MAs. This research aligns with ongoing projects aimed at

improving healthcare for rural women with complex gynecological conditions and identifying health information gaps for patients with MAs.

Nicole Holt

MT - Montana State University - Bozeman

Discipline: Health and Human Services

Authors:
#1 Nicole Holt
#2 Miranda Margetts
#3 Alyssa Grimshaw

Abstract Name: An Investigation of the Availability and Suitability of Patient-Centered Material for Patients Diagnosed with Müllerian Anomalies

Müllerian Anomalies (MAs) or congenital uterine anomalies, affect around seven percent of women and cause pelvic pain, prolonged bleeding, and sub- or infertility. MAs are considered a Difference of Sex Development, and women with these diagnoses are categorized as a National Institutes of Health Sexual and Gender Minority (SGM) population.Preliminary work conducted by our team revealed that the Internet is the primary source of information for MA patients. There is limited online educational information for this population, and the available content varies in consistency and patient-centeredness. The National Library of Medicine created the Health Education Materials Assessment Tool (HEMAT), which consists of a yes/no checklist to determine the suitability of written online information. We administered this test for online MA patient information, thereby identifying challenges to be addressed in creating content for this population. The Flesh-Kincaid calculator - which uses syllable count, word count, and sentence length - was used to further assess materials and determine the level of education required to comprehend the content. The online material assessed was obtained from sources in the Network of the National Library of Medicine Region 4, as our funding was specific to that region.The vast majority of online sources did not pass the HEMAT, demonstrating their unsuitability for patients. Out of the thirty-one sources provided by clinics in Region 4, only nine passed the HEMAT. The reasons for failure included the lack of definition of medical terms and the use of visual aids that did not enhance comprehension and engagement. The results from the Flesch-Kincaid calculator revealed only seven of the eighty materials assessed were written at a reading level that could be comprehended without a college education.These results highlight that access to suitable online education materials is an additional burden faced by members of this health disparity population.

Chase Holyoke

MA - Bridgewater State University

Discipline: Social Sciences

Authors:
#1 Chase Holyoke

Abstract Name: Capitalism and Optimism: Economic Factors' Effect on Feelings of Personal Achievements

With housing prices on the rise and wages at a standstill, college students may experience a bleak future ahead of them. These students look to graduation and they should be expecting the celebration of a lifetime milestone, but for some this ceremonious event just doesn’t hold the same weight as it used to. The primary objective of this study was to observe the economic factors that may affect the optimism and feelings towards

personal achievements of Bridgewater State University undergraduate students. This study used Qualtrics online surveys advertised through school emails sent by professors, physical fliers and posting on the Bridgewater State Community app through the Fall 2023 semester for collection of data. The independent variable, feelings towards economic factors in the U.S, was captured through questions asking respondents their feelings on topics such as the housing market and job market through ordinal levels of measurement. The dependent variable, feelings towards personal achievements, was captured through questions asking respondents their feelings towards college graduation and their future. The analysis for this study utilized Qualtrics cross tabulation tools in order to run Chi-Square goodness of fit tests in order to test the statistical significance between the two variables where p-values of .05 and below marked significance. Findings indicate that students who reported very poor feelings towards the U.S. housing market and job market held strong statistically significant relationships with those who reported uneasy feelings towards being a college graduate, regretting not attending a trade school and seeing a college degree as the only way out of school among other revelations. Findings call for greater support not only by schools but U.S. policies in order to help those most in need to foresee an achievable path towards financial success.

Ella Homan

MN - St. Olaf College

Discipline: Natural and Physical Sciences

Authors:
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Zachery Nevala

Abstract Name: Galectins 1, 3, and 9: Role in Pregnancy Immune Suppression and Parallels in Cancer

Immunosuppression is vital in pathophysiology of cancer, pregnancy, and related pregnancy complications. Pregnancy is a normal, biological process that can be studied as a model which mimics the immunosuppressive pathways of cancer. Pregnancy complications like Villitis of Unknown Etiology (VUE) and Chronic Histiocytic Intervillositis (CHI) consist of the breakdown of immunotolerance which can help identify the mechanisms involved in cancer immune evasion and targets of immunotherapy.Cancer systemically shifts the immune response to an immunosuppressive tumor-supportive microenvironment. This is analogous to pregnancy as it is unfavorable for the immune system to attack the fetus. In pregnancy complications, we see a shift from TH2/M2 to an induced immune activation response, TH1/M1.Galectins, part of the lectin superfamily, extensively studied in pregnancy, play a role in the immune suppression of cancer. These proteins decipher information encoded by glycosylation machinery via a conserved carbohydrate recognition domain (CRD) which translates to proper cellular function. Dependent on the cancer, and tumor microenvironment, the upregulation of certain galectins is associated with both immune activation and suppression. In pregnancy, galectins are recognized as an important factor in establishing immune tolerance at the feto-maternal interface, resulting in successful pregnancy.To understand the microenvironment in pregnancy and cancer, multi-plex immunofluorescence (MxIF) was utilized on pregnancy and tumor slides. Multiple tumor and trophoblast cell lines were cultured and treated with galectins with various in vitro assays. ELISA and flow cytometry were utilized to measure cytokines and cell surface markers, respectively.MxIF demonstrates that immune tolerance pathways at the feto-maternal interface and tumor microenvironment are similar in the upregulation of galectins and CD206 in both normal pregnancy and cancer as opposed to Th1/M1 upregulation in pregnancy complications and lymph nodes without tumors. In vitro assays suggest that galectins promote Th2 and M2 upregulation in T-cells and macrophages, respectively.

Ariel Homayoonfar

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Ariel Homayoonfar

Abstract Name: The Enduring Power of Fairy Tales

Despite the passage of time, the stories presented in fairy tales have persisted in the minds of both children and adults. People often feel personal connections to these stories, recognizing aspects with which they can identify or from which they seek advice. My project explores how these connections are built over an innate psychological scaffolding that is fundamental to the human experience. This idea was popularized in the early 20th century by Carl Jung, a Swiss psychiatrist and psychoanalyst. He describes archetypes, or universal symbols or patterns that are present in the collective unconscious of all humans. The story of Beauty and the Beast was originally written in 1740 by Villeneuve for young adults of the French middle class and aristocracy. Since then, the story has been rewritten countless times across many countries, languages, and genres. Despite the many variations, several aspects of the tale persist. These enduring aspects are integral to the story itself, representing Jungian archetypes and their associated interactions with one another, labeled archetypal patterns. These archetypes manifest themselves throughout different renditions of the story from the lens of masculinity and femininity. Differences in the written actions of characters may provide insight regarding accepted gender norms at the time, or opinions of them. These depictions can be compared with those of today, where feminism has been most impactful and masculinity is very much in its own phase of reconstruction.My project examines these themes through a study of Jungian archetypes, as well as previous works concerning their relation to fairy tales, and specifically Beauty and the Beast. In addition to textual and literary analysis, the project will explore the perspectives of philosophers and psychologists- through both interviews and published material- to use perspectives from these disciplines to fund new ways of approaching this issue.

Qianhui Hong

CA - California Institute of Technology

Discipline: Interdisciplinary Studies

Authors:
#1 Qianhui Hong
#2 Qianying Wu
#3 Na Yeon Kim
#4 Ralph Adolphs

Abstract Name: Understanding Pupil Response Patterns in Autism

Autism Spectrum Disorder (ASD) features atypical social and emotional processing, which can be reflected in the pupil dilation response (PDR) to external audio-visual stimuli. This project aimed to quantify how different features in naturalistic movies affect pupil dilation using an eyetracking dataset collected in 22 healthy controls and 13 high-functioning ASD participants. In particular, we extracted changes of the pupil diameter at a high sampling rate (600 Hz) while participants were watching 18 sounded, short YouTube movies. After data preprocessing and normalization, we found that the pupil diameter is affected by various factors in the movie, including lighting, changing of scenes, sound volume, emotion arousal, etc. Compared to the control group, the ASD group in general has greater dilation when the emotion arousal is high and

when a new human subject appears. These preliminary findings can thus form the basis of fine-grained future analysis that will comprehensively characterize the importance of different features in inducing atypical pupil dilation patterns in ASD.

Yerahm Hong

PA - University of Pennsylvania

Discipline: Natural and Physical Sciences

Authors:
#1 Yerahm Hong
#2 Amishi Mahajan
#3 Harley Haas
#4 Sophie Liebergall
#5 Sanghee Yun
#6 Amelia Eisch
#7 Ethan Goldberg

Abstract Name: Investigating Pattern Separation Ability in an Epileptic Mouse Model of Dravet Syndrome

Dravet Syndrome (DS) is a severe childhood neurodevelopmental disorder caused by a deletion of the SCN1A sodium channel gene. Phenotypically, DS is characterized by behavioral features of autism spectrum disorder (ASD), treatment-resistant epilepsy, developmental delays, intellectual disabilities, and motor dysfunction. The heterozygous Scn1a+/- mutant mouse strain encapsulates some of these key clinical features of DS in humans. Previous studies have demonstrated that the hippocampal dentate gyrus (DG), critical to learning and memory, is pathological in DS. Pattern separation, the ability to discriminate similar memory episodes, is housed within the DG; this ability, enhanced in ASD, has not previously been studied in Scn1a+/- early postnatal mice nor in DS patients. Thus, we investigated pattern separation ability in DS mice and hypothesized that Scn1a+/- mice with ASD phenotypes will have enhanced pattern separation compared to their wild-type (WT) counterparts. In order to test this hypothesis, we utilized the Spontaneous Location Recognition (SLR) behavior test, which assesses a mouse's ability to pattern separate based on its innate interest in exploring novel locations. This test involves distinguishing differences in the locations of objects between "sample" and "test" arena setups. Marble burying, elevated plus maze (EPM), and open field (OF) tests were conducted alongside SLR to assess locomotion and anxiety. Results so far show no significant difference in the ability of WT and Scn1a+/- mice to pattern separate. Interestingly, mice overall performed the worst on the easiest SLR memory tasks. Furthermore, males showed more anxiety and females displayed hyperactivity relative to their male counterparts. These data suggest that there may not be behavioral abnormalities present in the Scn1a+/- mice, but instead that a sexual dimorphism may be present. Data analysis remains ongoing, and current efforts to correlate cellular-level DS pathology to its behavioral features are in hopes of finding a mechanistic cure to this disorder.

Elisabeth Hood

TX - Southern Methodist University

Discipline: Social Sciences

Authors:
#1 Elisabeth Hood

Abstract Name: Factors Influencing Romantic Partner Preferences

Over the past decade, the number of individuals in romantic interethnic relationships has grown, as well as the percentage of Americans who approve of romantic interethnic relationships. Despite these trends, social and behavioral research still indicates an existing stigma surrounding romantic interethnic relationships. This research seeks to identify the factors that contribute to attitudes on romantic interethnic relationships. Specifically, we investigate the influence of gender, race, and racial ideology on participants' attitudes towards romantic interethnic relationships. Fifty participants from diverse backgrounds completed a comprehensive survey on their personal and romantic history, and twelve of those participants were selected for semi-structured interviews regarding their survey responses. Initial analysis of participant responses indicates general acceptance of romantic interethnic relationships, but also concerns regarding cultural differences. Insights such as these are helpful in understanding attitudes towards romantic interethnic relationships on both a personal and social levels.

Elisabeth Hood

TX - Southern Methodist University

Discipline: Social Sciences

Authors:
#1 Elisabeth Hood

Abstract Name: The Weight of Our Behavioral Immune System: The Relationship Between Pathogen Disgust and Weight Stigma

In today's society, weight stigma is just as prevalent as stigma against ethnic outgroups and the LGBTQ+ community. Despite growing numbers of obese and underweight individuals, stigma towards these individuals is at an all-time high. A 2020 study by Dawydiak and colleagues investigated the role the Behavioral Immune System plays in stigma, citing pathogen disgust as the primary catalyst of stigmatization. The current study replicates the methods used by Dawydiak et al. (2020) to investigate if pathogen disgust predicts stigma towards obese and underweight individuals. Using the Three Domains Disgust Scale and the AQ-27, we gathered data from 23 participants regarding their stigmatization of four types of individuals described in vignettes: an obese individual with Binge-Eating Disorder, an obese individual with no eating disorder, an underweight individual with Anorexia Nervosa, and an underweight individual without an eating disorder. Results of this study revealed no statistically significant relationships between pathogen disgust and weight stigma. However, our study does add to the complex conversation surrounding the Behavioral Immune System and how it is socially informed.

Lila Hopkins

MD - Morgan State University

Discipline: Social Sciences

Authors:
#1 Jana Duckett

Abstract Name: Social Media Visual Framing of Missing White Woman Syndrome: A Visual Frame Analysis of #LaurenCho #JelaniDay, #DeneeshaKyle, and #GabbyPetito

Lila HopkinsJana Duckett Ph.D. American media outlets can influence, educate, raise awareness, and shape public attitudes (Bullock, Wyche & Williams, 2001). Media plays a significant role in reflecting and

influencing societal values (McLuhan, 1964), while also in framing what should be important or discussed within a society (McCombs & Shaw, 1993; Tankard, 2001). Due to the racist underpinnings of American society, there has always been a disproportionate emphasis and outrage on the disappearances of White individuals versus their non-White counterparts (Conlin & Davie, 2015; Jeanis & Powers, 2016)). In recent years, the over-saturation of emotional news stories about the disappearances of Caucasian American women has come to be characterized and defined as missing white woman syndrome or MWWS (Slakoff & Fradella, 2019; Sommers, 2016). Framing can be understood as both a "macro-construct and micro-construct" that charges the constructivist relational dynamic between media and its audience (Sheufele & Tewksbury, 2007) however there is a dearth of studies examining how this occurs across social media platforms. The cultural phenomenon to be explored in this project is the variances of social media coverage surrounding the media coverage of four individuals during the first week following the official announcement of their disappearance: Lauren Cho, a Korean-American woman; Jelani Day, an African-American man; Deneesha Kyle, an African American woman; and Gabrielle Petito, a White woman—more precisely the contrasting media coverage of missing persons of color versus a White person. Using Rodriguez and Dimitrova's (2011) visual framing analysis framework this study analyzed the photographs associated with over 4 million social media posts in Meta. The findings indicate a typology of visual frames in social media that represent a contrast in connotative and ideological meaning; more specifically a diminishment of perceived innocence and empathy for missing persons of color compared to the ideological visual framing of morality of a white woman.

Giovanna Horta

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Giovanna Horta
#2 Patricia Estes

Abstract Name: Cecropin Antimicrobial Immunity in Drosophila Flies with Silenced Single-Minded Neurons

All organisms need effective communication systems to coordinate metabolism between organs and maintain energy homeostasis. Surprisingly, many metabolic regulatory pathways are conserved between humans and fruit flies, and flies are a tractable model organism that can be used to explore the relationship between the microbiome, energy balance, and immunity. We study the function of a centrally located neural lineage in the fly that expresses a transcription factor called single-minded (sim). Flies with silenced sim neurons have a shorter lifespan than wild-type flies and develop a biofilm on their food during their short lifespan. It is hypothesized that flies with silenced sim neurons have a compromised immune system as they age compared to wild-type flies and, therefore, a reduced response to microbial infections. Innate immune responses in Drosophila include the production of Cecropin (antimicrobial peptide), regulated by the Toll and Imd immune pathways needed to fight off infection. Cecropin fights off gram-negative bacteria and fungi infections. Therefore, the purpose of this research is to understand the role of sim neurons in microbial immunity, targeting the relationship between Cecropin gene expression, fly genotypes, and consequent death. For this, RNA was isolated from adult wild-type Canton S. flies and flies with silenced sim neurons of different ages (0, 2, 5, 7, and 10 days), and CecropinA expression was quantified and monitored using RT-qPCR. CecropinA expression was low on days 0 and 2 in both genotypes, but expression increased significantly on days 7 and 10 in the wild-type flies, but not the flies with silenced sim neurons. Further research is needed to replicate these results, and the preliminary data suggests that silencing sim neurons affects the expression of Cecropin in flies, increasing their susceptibility to infection. These results suggest that sim function may be needed for energy balance, immune responses, and overall health.

Ella Hosse

TN - University of Tennessee

Discipline:

Authors:
#1 Ella Hosse
#2 Lily Caldwell
#3 Kimberly Mitchell
#4 Xiaopeng Zhao
Lily Caldwell

Abstract Name: Co-designing and Building a Friendly Robot To Ease Dementia

Alzheimer’s disease and related dementias (ADRD) present significant challenges for both individuals affected and their caregivers, underscoring the necessity for innovative interventions. There are approximately 55 million older adults in the world living with AD (Alzheimer’s Association, 2022). Our project, the "Friendly Robot to Ease Dementia" (FRED), endeavors to address various challenges through a human-centered design approach by leveraging cutting-edge artificial intelligence (AI) and robotics techniques. FRED will assist with cognitive enrichment and physical activity to improve daily living and quality of life for persons with ADRD and their care partners.Central to our methodology was the active involvement of the ADRD community, engaging individuals with ADRD and their caregivers (n=12) in a participatory focus group. During this collaborative process, we developed two distinct user interfaces for FRED, which were crafted to accommodate varying cognitive and physical abilities within this population.After utilizing a "thinking aloud" protocol with prototypes of both interfaces, invaluable insights emerged. These insights were pivotal in refining the user experience, ensuring FRED's interfaces facilitated effective and natural interactions between users and the robot.Within our presentation, we'll showcase how the participatory group's feedback guided the creation of FRED's new UI designs, tailored to diverse ADRD needs, highlighting their positive responses that demonstrate the potential to significantly improve the quality of life for individuals with ADRD and their caregivers.

Alexandra Houston

AZ - Embry-Riddle Aeronautical University

Discipline: Social Sciences

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#4 John Woodman
Alexus Marquez

Abstract Name: Utilizing a Comprehensive Database to Investigate the “Gold Standard” of Police Trainings Concerning Interactions with Autistic Individuals

Previous research suggests that the current law enforcement (LE) training curricula on encounters with individuals with autism spectrum disorder (ASD) are inconsistent and unstandardized. Moreover, very little is known about the long-term effectiveness of these programs. The purpose of this research was to characterize the range of training protocols currently offered to LE and apply best practices to produce an improved version of an existing program. Training programs were identified, and a comprehensive database was created containing critical characteristics, such as training modality, length, and content. An examination of the data revealed common trends as well as gaps throughout the manuals. The findings were then applied to

revising and improving Dennis Debbaudt’s Autism Risk & Safety Management program, which was chosen due to its wide adoption and scope. Since our review indicated that this training did not contain an interactive activity, we developed and piloted a novel problem-based learning exercise (PBLE) focused on communication-based learning and critical thinking. This was then delivered to local LE, who also completed pre and post-test measures of autism knowledge and self-efficacy. The training received positive feedback and engagement, however, a major limitation to our ability to gather longitudinal data on training efficacy is that LE agencies do not routinely identify or track encounters with autistic people. This leaves a major gap, as the ideal method for examining training effectiveness is to determine, post-training, if encounters involve fewer incidents of unnecessary escalation, use of force, and other negative outcomes. We found that no training protocol identified is linked to the type of outcome measure that would best determine if training is ultimately effective. The implications of our research call for a common practice when tracking autistic encounters with LE, such as coding systems or standardized documentation, so that researchers can address this issue.

Miles Howard

NY - Long Island University

Discipline: Business and Entrepreneurship

Authors:
#1 Miles Howard

Abstract Name: Pura Vida Reimagined: Technology as the New Frontier for Costa Rican Prosperity

In Costa Rica, an innovative model of cooperatives has flourished, anchored in the "Pura Vida" spirit that reflects a relaxed, community-centric lifestyle. Originating in the agriculture sector, and controlled by local stakeholders, Costa Rican cooperatives have historically played a key role in amplifying local economies, nurturing community development and increasing market access for marginalized areas. Although it has brought great benefit to local communities, these cooperatives confront challenges which modern technology could help address, opening the door for technology to be a catalyst for unleashing the next phase of Costa Rica's social and industrial revolution. This research project aims to assess how technology can be utilized by cooperatives to improve project impact, accelerate community progress, refine current operations, and widen market access for local communities. Conducted via a three-month internship with a local tech cooperative in San Jose, Costa Rica, from September to November 2023, this transdisciplinary qualitative case study utilized interviews, surveys, archival research, and participant observations. Its findings suggest that Costa Rican culture, while central to national and social identity, may impede ambitions for business growth, leading to a society which is slow to adapt to new opportunities and technological advancements. Furthermore, the study shows that there is a gap in education about the true potential of such technology to enhance ‘Pura Vida’, causing reluctance in some individuals to embrace change. This resistance highlights the need for a fundamental shift in mindset to unlock new economic, social, and accessibility dimensions in Costa Rican society. In this way, the strategic application of technology within cooperatives emerges not just as a tool for economic and social advancement, but as a vibrant manifestation of the 'Pura Vida' ideals, uniting modern innovation with the enduring values at the heart of Costa Rican life.

Hayley Howard

LA - Baton Rouge Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Hayley Howard

Destiny Marvel

Abstract Name: Can Sediment Analysis be used to Further Describe Species Richness of Freshwater Sponges?

The purpose of this project is to explain how sediment analysis is used to further describe the species richness of freshwater sponges. Freshwater sponges are environmental health indicators that are extremely understudied. The Louisiana Freshwater Sponge Project (LFSP) is a longitudinal study describing the diversity of freshwater sponge species in Louisiana water systems. Water systems are surveyed throughout the year. At each site, sponges are collected along with sediment. The sponges are then identified using sponge body and/or gemmule spicules and sequencing the COX-1. One gram of homogenized sediment is dried and then processed with a series of chemical reactions to degrease the sediment and remove all inorganic and organic matter. The prepared sediment is then viewed using light microscopy to identify sponge spicules. The sponge identification is then compared to the spicules observed in the processed sediment. This presentation reports the findings of thirty-seven analyzed sediment samples. While most sediment analyses confirm the collected sponge samples, in many sites, the sediment analysis has provided evidence of additional sponge species, expanding on the species richness for some locations. Analyzing sediment allows us to confirm the presence of species at a particular site without having to collect sponge samples. This process provides a more expansive picture of the species richness at a site regardless of the seasonal parameters at the time of collection.

Madison Howe

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Madison Howe

Abstract Name: Yellow

Yellow has been an influential color in graphic design since its use in cave paintings. For years yellow's appearance in nature has contributed to its use in design and what yellow is most commonly known to be a representation for: Happiness, Excitement, and Creativity. But there are also less commonly known associations for yellow here and in other places around the world. This is based on how it has been used throughout history and where geographically it has been used. Thankfully yellow's reputation was saved by an unlikely athlete which has led to its rather uplifting connotations today. Another way yellow’s representation can be changed is based on the colors it is paired with or the specific hue in which it is used. Today, the color one pairs with yellow can change its meaning entirely. For example, yellow and black are very cautionary while yellow and red are used to signify speed and enjoyment. This use of psychological color pairings with yellow have helped make graphic designers, businesses, and artists more successful today.

Braden Howell

KY - University of Kentucky

Discipline: Mathematics and Computer Science

Authors:
#1 Braden Howell

Abstract Name: Jim Beam Bourbon Barrel Analysis

Bourbon barrels have been rupturing since their inception; their solidity tormenting the bourbon industry through significant losses of product. The precise reasons behind these failures have remained elusive due to a manual data collection process that has limited the amount of data and its validity. This research aims to automate that data collection process by using machine learning and computer imaging to detect, identify, and analyze the barrels put into production. The application will collect and store structural information on each barrel such as hoop distance, barrel length, stave count, etc. Whereas initially, human error could lead to barrels being skipped or inaccurate measurements, this system will use a series of cameras to detect the barrels and make calculations instantly. By automating this process, we will vastly increase the amount of data available to determine the factors that affect the likelihood of a barrel bursting. Further development of the software could also allow for the recognition of barrels that fit the profile of "likely to burst". Ultimately, this research provides a pivotal step in resolving this issue that has plagued the bourbon industry for so long, aiming to increase the integrity and longevity of barrels industry-wide.

Kuang-Chung Hsu

OK - University of Central Oklahoma

Discipline:

Authors:
#1 Anna Hoffmann
#2 Nefeli Zafeiri
#3 Linh Pham
#4 Kuang-Chung Hsu
Nefeli Zafeiri

Abstract Name: Metals of the Future in a World in Crisis: Geopolitical Disruption and the Clean Tech Metal Industry

Existing literature has examined how geopolitical issues negatively impact oil and gas markets. As we transition towards renewable energy, ensuring a stable supply of key resources becomes crucial. Particularly, recent geopolitical storms have heightened concerns about the security of these supply lines. Therefore, this paper aims to investigate the effects of geopolitical tension on the high-tech metals industry. Using The MVIS Global Clean-Tech Metals Index (MVGMET) and the Geopolitical Risk (GPR) index proposed by Caldara and Iacoviello (2022) from 2014 to 2023, we employ quantile Granger causality tests and LASSO connectedness models to identify the relationship between geopolitical risks and cleantech metal stock returns. Our results from quantile Granger causality analysis indicate that high geopolitical risks tend to Granger cause extreme upward movements in stock returns. We also find that geopolitical acts and threats exhibit different influences on cleantech metal stocks and the relationship between geopolitical risks and cleantech metal stock returns varies across different sub-periods (before the Paris Agreement, between the Paris Agreement and the COVID-19 pandemic, the COVID-19 period, and the Russia-Ukraine war period). Our results from the connectedness models show that the spillovers between cleantech metal stocks and geopolitical risks vary over time, and have experienced an upward trend during our sampling period. In summary, our research shows that geopolitical risks can influence the price of cleantech metals, which ultimately influence the affordability of clean energy technologies. This has important implications for the transition to a net-zero economy and environmentally-friendly investors.

Reagan Hsu

CA - University of California - Irvine

Discipline: Mathematics and Computer Science

Authors:
#1 Reagan Hsu
#2 Du Anh Tran
#3 German Enciso

Abstract Name: ANOMALOUS ULTRASENSITIVE COMPOSITE REACTIONS\ IN CELLULAR SIGNALING

Ultrasensitivity is a crucial cellular mechanism that plays a vital role in signal transduction. Cells employ ultrasensitivity through "switches" that respond to small changes in signaling factor concentrations. Such switches exhibit steep sigmoidal behavior and are characterized by the Hill coefficient. Traditionally, pairwise combinations of these switches were thought to adhere to Ferrell's inequality, which sets limits on their composed ultrasensitivity. However, recent research has disproven Ferrell's inequality, suggesting the existence of biological systems that can combine non-ultrasensitive reactions to achieve high ultrasensitivity. The specific class of reactions that accomplish this optimization remains unknown. In this paper, we utilize mathematical models to explore how variations in molecule saturation as well as reaction gradient impact ultrasensitivity. These variations result in differences in concavity, steady-state values, and composition structure of the functions. Our findings demonstrate that combining robust functions with threshold curves disprove Ferrell's inequality, generating exceptionally high levels of ultrasensitivity. This discovery could provide novel insights into understanding physiological systems that exhibit switch-like behavior and contribute to the defining of a broader set of reactions for which Ferrell's inequality does not hold true. Here, we specifically discuss the composition of two systems: multisite protein binding and absolute robustness.

Sophie Hu

IL - University of Chicago The College

Discipline: Natural and Physical Sciences

Authors:
#1 Sophie Hu
#2 Suman Suman
#3 Xiaoyang Wu

Abstract Name: A Drug Screening Approach for Enhanced Colorectal Tumor Killing by CAR-NK Cells

Chimeric antigen receptor (CAR)-engineered immune cells have shown promise with amplified recognition and killing of tumor cells in liquid cancers; however, they have had limited therapeutic efficacy with solid tumors due to a hostile tumor microenvironment and poor trafficking to tumor sites. Apart from CAR-T cells, natural killer (NK) cells represent promising alternative effectors cells that can be engineered with CAR technology with several advantages over CAR-T cells. Importantly, NK cells have innate cytotoxic capability and can be utilized as allogeneic off-the-shelf products with a reduced risk of toxicities. However, many are not sufficiently effective and researchers have proposed that combined treatment with chemotherapeutic drug compounds may help to remedy this. Here we propose to target colorectal cancer and its peritoneal metastasis by designing CAR-modified NK-92 cells against novel tumor-specific antigen epitopes and checking for enhanced cytotoxic activity as compared to established CARs against the antigen. We will also identify potential chemical compounds enhancing the therapeutic potential of CAR-modified NK-92 cells against colorectal cancer. A high-throughput screening will be done to identify candidate drugs for our study and then thoroughly tested individually at various concentrations. Then, the cytotoxicity of different combinations of CAR-NK-92 cells and chemical compounds will be assessed, both in vitro and in vivo. We expect to find a

combination therapy with synergistically enhanced efficacy. Results may elucidate a novel molecular mechanism and carry clinical relevance.

Brian Hua

NC - North Carolina State University

Discipline: Engineering and Architecture

Authors:
#1 Brian Hua
#2 Kyla Bosh
#3 Christina Lasdin
#4 Jacqueline Cole
#5 Katherine Saul

Abstract Name: Alterations to Shoulder Muscles following Brachial Plexus Birth Injury in a Rat Model

Brachial plexus birth injury (BPBI) occurs in about 1 out of every 1,000 human births, and damage to the neck or upper trunk during delivery frequently results in muscle weakness, paralysis, or decreased sensation in the upper limb. Previous rodent studies have shown reduced muscle mass and fiber length in the shoulder muscles at 8 weeks following injury, though the timing of injury progression and contributions of unloading to these changes remains unknown. For this study, Sprague Dawley rats received one of four surgeries on one forelimb at postnatal day 3-6: preganglionic (n=12) or postganglionic (n=12) neurectomy, forelimb disarticulation (n=12) to examine effect of unloading without nerve injury, or sham (n=8). Animals were sacrificed at 2, 3, 4, 8, or 16 weeks post-injury, and 11 muscles surrounding the glenohumeral joint were dissected from injured and uninjured limbs: pectoralis major, acromiodeltoid, spinodeltoid, supraspinatus, infraspinatus, teres major, teres minor, subscapularis, triceps, biceps long head, and biceps short head. Muscle mass and length were measured for each muscle. Injured versus uninjured limbs were compared using paired t-tests, and groups were compared with Kruskal-Wallis tests (α=0.05). Analyses are ongoing, but current results suggest that muscle mass is affected in more muscles and to a greater extent than muscle length by preganglionic and disarticulation surgeries when compared to the postganglionic and sham groups. However, both metrics were significantly altered in the injured compared to uninjured limbs for some muscles. These differences occurred primarily in the spinal deltoid, supraspinatus, infraspinatus, and triceps muscles ($p<0.05$). Additionally, these changes are most present at 4 and 8 weeks post-injury. These results indicate that BPBI-related muscle weakness results from both muscular unloading and preganglionic nerve injury, and that the aforementioned weakness occurs as a result of reduced muscle size and mass.

Yiyang Huang

NY - Colgate University

Discipline: Social Sciences

Authors:
#1 Yiyang Huang

Abstract Name: Destination Determinants: The Role of Culture, Politics, and Identity in Selecting Study-Abroad Locations

This research investigates the question: How do cultural perceptions, social identities, and institutional influences shape U.S. college students' study-abroad destination choices? Drawing on the Push/Pull theory,

Territorial Stigma theory, and Capital theory, this study positions itself within the scholarly conversation about international educational mobility. It seeks to make a unique contribution by correlating students' social, cultural, and institutional capital with their choices, particularly highlighting the understudied impact of faculty members' perspectives on these decisions. The research aims to uncover the multifaceted influences on students' decisions, highlighting the interplay between personal, cultural, and institutional factors. Employing a mixed-methods approach, the research incorporates qualitative interviews with Colgate University students and faculty and participant observations to reveal the nuanced interplay between individual motivations and broader cultural narratives. This methodology enables an in-depth examination of students' preconceived notions and the influence of their social networks and institutional guidance.The expected results of this investigation are twofold: firstly, to confirm the hypothesis that students' perceptions of 'safe' and 'fun' correlate with a predilection for Western, English-speaking countries, while motivations for global awareness direct them towards 'adventurous' non-Western countries. I predict that students have stigmatized subjective opinions on study abroad destinations before departure. Secondly, substantiating the anticipation that students' racial or ethnic backgrounds and the recommendations of their social circles, including faculty, significantly influence their destination choices, potentially challenging or perpetuating territorial stigmas.This research aspires to serve as a blueprint for broader analyses in similar educational environments by delving deep into the sociological underpinnings of study-abroad decisions among Colgate students. It is a step towards creating a more informed and inclusive global academic community where genuine curiosity and understanding drive students' choices rather than unchallenged biases and preconceptions.

James Huang

TN - University of Memphis

Discipline: Engineering and Architecture

Authors:
#1 James Huang
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Abstract Name: The Effects of Manuka Honey-Derived Flavonoids on Neutrophil Production of Reactive Oxygen Species

Neutrophils are the most abundant leukocyte in the human circulatory system and are considered the first responding immune cells. Neutrophils respond to foreign bodies by producing reactive oxygen species (ROS). The extent to which ROS are present is a crucial indicator of the host reaction to an invading pathogen or implanted medical device. Previous findings from this lab have indicated that flavonoids derived from Manuka honey: pinobanksin, pinocembrin, and chrysin, possess anti-inflammatory properties. From these conclusions, the production of ROS should be reduced in neutrophils exhibiting pro-inflammatory behavior when treated with Manuka honey-derived flavonoids. Human neutrophils were isolated from a peripheral blood sample. Cells were seeded at 100,000 cells/well, and serial concentrations of the flavonoids were added. The cells were stimulated to be pro-inflammatory with 100 nM phorbol 12-myristate 13-acetate (PMA). A positive control group of PMA-stimulated cells without Flavonoids and a negative control group of unstimulated cells were also included. Using a standard oxidation assay, the ROS levels were measured at three and six hours via spectrophotometry. As seen in prior experiments using a neutrophil-like cell model, an overall reduction of ROS levels was detected across flavonoid concentrations. Continuing work will reveal the most effective concentration at which the flavonoids have anti-inflammatory activity for integration into biomaterials for improved biological integration.

Yanlin Huang

GA - Emory University

Discipline: Humanities

Authors:
#1 Yanlin Huang

Abstract Name: Phonology Variations in Ulanqab Jin

This is a study that focuses on the status of Ulanqab Jin, specifically how its phonology differs among age, socioeconomic status and attitudes towards the language. As a variation of Jin, one of the largest non-Mandarin sinitic languages in the Chinese regions of Inner Mongolia, Shanxi, Shaanxi, Henan and Hebei, Ulanqab Jin is both understudied and is on the track of being replaced by Mandarin. While not having an official status, or writing system, the language is also widely disdained by its speakers. In an age of rapid globalization and the universality of Mandarin, speakers tend to stop speaking it and not pass it to the next generation, as the language lacks both overt and covert prestige. By interviewing 128 residents of Ulanqab from 6 age groups, the study aims to investigate how different elements affected the phonology of Ulanqab Jin. The study utilizes a survey focused on collecting people's background, attitudes and usages of the dialect, and a wordlist made of 261 words four sentences and a free talk section to collect people's sound samples to analyze the phonological organization of each individual. The study aims to use mostly quantitative analysis to compare and explain the correlations between people's pronunciation and their background information. The differences in their pronunciation between reading and free talking will also be analyzed, as well as comparing their Jin pronunciation with their proficiency in “Standard Mandarin " taught in almost all Chinese schools. The ultimate goal of the study is to demonstrate a status quo of this minor Chinese variation and predict the future of it by analyzing its endangerment.

Wenkai Huang

NY - Pace University

Discipline: Natural and Physical Sciences

Authors:
#1 Wenkai Huang

Abstract Name: Analysis of circumnutation developmental profile in Arabidopsis thaliana

Circumnutation is the mysterious back-and-forth elliptical swaying conducted by plant appendages. Even though circumnutation was well written by Darwin over 150 years ago (Darwin, 1880), the purpose of circumnutation is still unknown. To better understand the purpose of circumnutation in shoots, this experiment involves creating a developmental profile of the circumnutating flowering stems in the genetic model plant, Arabidopsis thaliana. The use of time-lapse photography on the X, Y, and Z axis allows the responses of Arabidopsis inflorescences to be tested. The apex of A. thaliana’s inflorescences was traced via PASCO-Capstone (pasco.com). 3D models of circumnutation developmental profiles were made in the research via Cinema 4D. Several phases of circumnutation were identified in this research including “Micro-circumnutation”, “Meso-circumnutation”, “Macro-circumnutation”, and “Horizontal Swinging Stage”. Meso-circumnutation and Macro-circumnutation were considered as “phase 1” of circumnutation, followed by Micro-circumnutation and Horizontal Swing Stage as “phase 2”. 100% of Arabidopsis thaliana showed at least one phase of motion during development. 78.5% of Arabidopsis thaliana showed several phases of motion during development. The average height of the primary inflorescence of the first nutation was identified. Fourier Transformation was conducted to show the most common nutation frequency within Arabidopsis thaliana development.

Liyu Huang

TN - Vanderbilt University

Discipline: Engineering and Architecture

Authors:
#1 Liyu Huang

Abstract Name: Pareidolia: The Face of Architecture

In clouds, nuggets, chips, trees, and more, pareidolia guides people to see meaningful patterns and objects like faces in ambiguous stimuli. Utilizing the power of the face to embody, evoke, and convey feelings, this paper aims to explore the presence and potential impact of face pareidolia in the built environment. Throughout history, studies have shown that faces are actively incorporated into architecture, seen in both the human-like Tata Somba houses built by the Batammaliba as well as the popular nine-square grid layout used for various buildings like the Taj Mahal, Parthenon, or the Basilica of St. Petersburg. Today faces and their corresponding emotions have been identified in the built environment by both human subjects and facial-recognition software, indicating that factors like scene analysis size, time of day, and the ease of face identification can all alter the emotions imparted by architecture. Based on these findings from previous scholarly work, a small experimental pilot study was conducted to explore the comparative impact of pareidolic elements in the built environment. Through computer-aided design renderings where elements were selectively altered, a correlation between the ease of face identification and the emotions imparted to the viewer was established. Based on this preliminary study, this paper demonstrates a need for actively designed subtle pareidolic imagery in architecture. Furthermore, even though most studies of pareidolia analyze 2D images, architecture is a 3D experience, so this study plans to expand to virtual reality to not only collect responses on emotional reactions but also to monitor eye movements indicative of interest. In conclusion, subtle pareidolia should be actively applied in architectural design to impart and improve positive emotions in public places like hospitals or schools, as well as provide a warm and welcoming façade that turns a house into a recognizable home.

Jeremiah Hubbard

WI - University of Wisconsin-Stout

Discipline: Humanities

Authors:
#1 Jeremiah Hubbard

Abstract Name: Reasonableness of Christianity:

Is Christianity reasonable? Asking whether Christianity is reasonable means is there enough evidence to support the Christian faith as a position that cannot be easily discounted as opposed to another religious or nonreligious position. Is there enough merit to Christianity as, say, atheism? The question of whether a god exists is an immensely important issue for society no matter what position is taken on the question. This research will be a comparison of differing worldviews concerning religion to help form an opinion on which view is more reasonable to believe in.This research will require me to read various religious doctrines and several written works of prominent apologists of Christianity, atheism, and other religions. I will conduct comparative analysis and cross-examination between these works; identifying what I believe to be strong and weak arguments for each position.Christian apologetics is the demonstration of reasoned arguments for Christianity based on philosophy, science, history, and theology. Given my current understanding of Christianity, I would like to understand the arguments for Christianity better by researching prominent Christian apologists such as C.S. Lewis.Well-constructed atheist arguments and philosophies have been

around for centuries, but in the last couple of decades there has been the rise of the ‘new atheists.’ Among the new atheists, there are 4 that prominently stand out as leaders of the movement: Richard Dawkins, Christopher Hitchens, Sam Harris, and Daniel Dennett. I plan to research prominent works from each of these individuals to understand the modern arguments for atheism.Going into the project, I already had a basic understanding of both Christianity and atheism. I plan to research the doctrines of Buddhism, Islam, and Hinduism to better understand these major world religions and potentially decide that one of them is more reasonable than either Christianity or atheism.

Samantha Hubbard

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
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#4 Christopher Tracy

Abstract Name: Investigating the Community that Uses Desert Tortoise (Gopherus agassizii) Burrows at Boyd Deep Canyon Desert Research Center

The federally threatened Mojave desert tortoise (Gopherus agassizii) is a keystone species inhabiting the Mojave and Sonoran Deserts. Desert tortoises excavate burrows, providing unique microhabitats with more stable thermal conditions than the ambient environment for both tortoises and other species to use. For the past two years, we have monitored the community of animals that use tortoise burrows and tracked local temperature in order to better understand how the desert community utilizes this valuable resource. We deployed eight game-cameras at the Boyd Deep Canyon Desert Research Center in Palm Desert, CA, outside of tortoise burrows. Burrow visitors triggered cameras that recorded 30-second time and date-stamped videos, and we identified the species in each video. Between June 2021 and December 2023, (6,003 total trap nights), the cameras recorded over 8,000 videos with animals. We have identified 36 species in the videos that use tortoise burrows: 15 birds, 11 mammals, 7 non-avian reptiles, and 3 insects. In addition, we measured shaded temperature at a weather station located at Boyd Deep Canyon Desert Research Center near the tortoise burrows. We will correlate burrow activity with temperature. This research provides clues about how animals use these spaces, and how burrows may place increasingly ecologically relevant roles as temperatures continue to rise due to climate change. Continued observations of desert tortoise burrows and how burrow use ecology naturally changes across various temperatures will provide a clearer understanding of the role their burrows play in this ecosystem, and how to maximize their benefits in the face of a changing ecosystem.

Jessica Hubbs

FL - The University of Tampa

Discipline: Health and Human Services

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Emma Faldo

Abstract Name: Using the Healthy Minds Survey to Understand Student Emotional Wellness

BackgroundRecent Research has demonstrated the prevalence and severity of mental health issues among college students has risen over time and has negatively impacted health and academic performance. Further, the institutional environment is a critical component to emotional well-being. This study is intended to provide stakeholders with a method to measure overall emotional wellness and understand predictors from a common assessment instrument, thus providing a tool for intervention.MethodsData was obtained from the Healthy Minds Study 2021-2022 Academic Year Survey administered at the University of Tampa. 1054 participants (n=1054) were included in the data set following data cleaning and transformations. Factors for predicting student emotional wellness were selected based on literature review, including the selection of Diener Flourishing scores to serve as the dependent variable to measure student emotional wellness. Descriptive statistics were conducted based on stakeholder input. A multiple linear regression was produced and assessed for statistical significance and power to predict student emotional wellness.ResultsThe multiple regression model statistically significantly predicted student flourishing scores in 34% of students with a positive, moderate level of association, F(8,1045)=69.246, p<0.001, adj. R2=0.341, R=0.589, std. error=0.939. Perceived campus support, perceived stigma, sense of belonging, exercise, and sleep were statistically significant predictors of student flourishing scores (y) (p<0.001). ConclusionsIt is anticipated that this study will help to effectively craft group-level interventions and provide a path for continued research on student emotional wellness.

Rachel Hudgins

VA - Virginia Military Institute

Discipline: Social Sciences

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#1 Rachel Hudgins
#2 Scott Frein

Abstract Name: Examining the Influence of Various Time Periods on Mood Through Best Possible Self

The intervention known as Best Possible Self (BPS) is an activity that requires individuals to envision their future as if all their life goals have been achieved. The BPS prompt has been used in numerous studies since first being introduced by King (2001). In our study, we modified King's prompt, which did not specify how far in the future to think, and gave participants different time frames about which to write. The four groups in our study were 10 years in the future, 50 years in, the original BPS prompt, which has no time frame, and the control group which was to write their plans for the next day. Participants were asked to complete the Positive and Negative Affect Scale (PANAS, Watson, Tellegen & Clark, 1988) and then they were directed to write continuously for 15 minutes about their given prompt. Once the 15 minutes are done the participants completed the PANAS a second time. Both the 10 years in the future group and the original BPS prompt showed significant increases in positive affect t(29) = 2.852, p = .008 and t(29) = -4.403, p = <.001 and significant decreases in negative affect t(29) = 2.227, p = .034 and t(29) = 2.587, p = .015. Interestingly, the 50-year group had an increase in positive affect t(29) = -3.407, p = .002 but no significant change in negative affect t(29) = -.700, p = .489. The control group showed no change in their positive affect t(25) = 1.643, p = .113 as well as no significant change in negative affect t(25) = 1.074, p = .293. This might be due to our sample of college students who could have a test the next day, homework, etc. The purpose of this study is to test whether using different periods of time in the best possible writing prompt will affect changes in mood normally found when using the prompt.

Redford Hudson

CA - University of California - Irvine

Discipline: Mathematics and Computer Science

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Abstract Name: Energy-Descent: A Differentiable Energy-Aware Loss Function

Sparsification plays a crucial role in improving machine learning energy efficiency. However, conventional methods tend to oversimplify the dynamic resource distribution within neural networks due to simplistic sparsifying regularizers. Additionally, standard pruning methods involve high overhead, and furthermore greater energy costs, due to their nondifferentiable and iterative nature. To tackle these challenges, we introduce an innovative approach situated at the intersection of energy-aware and differential pruning, with the goal of synthesizing their respective benefits. In this paper, we explore how dynamically changing the geometry of the regularization curve in response to the distribution of a node's parameters can upgrade the sparsification process. We propose a novel loss function that differentiably calculates the l0-norm—the number of nonzero components—of a node parameter vector, and uses this in tandem with the variance of this vector to most effectively sparsify its parameters without any sort of pruning overhead.

Steven Hudspeth

NC - Western Carolina University

Discipline: Business and Entrepreneurship

Authors:
#1 Steven Hudspeth

Abstract Name: The Association Between Online Payments Using Different Payment Types and Six Consumer Assessment Characteristics

During COVID-19, there was a significant uptick in online payments due to the restrictions stemming from the pandemic, which shifted how businesses catered to their customers in person and online. Moreover, there is an ever-increasing need for research on consumer behavior in the digital marketplace and the viability of available payment choices that businesses cater to their consumers' preferences. This paper aims to delve into the relationship between online payments using various types of payments, such as cash, checks, debit cards, credit cards, prepaid cards, money orders, and bank account number payments, during COVID-19 and six characteristics used to assess payment choice. The six characteristics are security, acceptance, getting and setting up, cost, convenience, and payment record. The data used in this analysis is from the 2020 Survey of Consumer Choice published by the Federal Reserve Bank of Atlanta. The data has been through a multistep weighting process to be nationally representative. Then, a logit regression model is used in a cross-sectional analysis to explore the relationship between making online payments and the six assessment characteristics. This analysis will show statistically significant characteristics and control variables that correlate to specific payment types used during COVID-19. Preliminary results indicate a statistically significant association between payment records and cash, payment records and credit cards, security and prepaid cards, acceptance

for payment and bank account number or routing number payments. Also, the control variable for education level showed a significant statistical association between all education levels and all payment types.

Santiago Huertas Gonzalez

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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Abstract Name: Software Integration for an Adaptive Autonomous System Informed by Unobtrusive Measures of Trust, Workload, and Situation Awareness for Deep Space Exploration

Autonomous systems are becoming part of our daily lives, from automatic vacuum cleaners to self-driving cars. These systems aim to facilitate and support multiple processes while decreasing human input. Autonomous systems also have advantages that can be applied to novel tasks that astronauts will encounter in deep space exploration. We explore human-system team collaboration for resilient, autonomous, and self-maintained deep-space habitats. Previous research into adaptive autonomous systems has considered only a single cognitive state, adapted based on observable states (e.g., task load), or employed multiple sensors simultaneously to estimate cognitive states. Future crewed missions to deep space will involve communication delays, making Earth-based mission control infeasible. We propose an autonomous habitat that keeps the human in a supervisory mode. When something fails, the system adjusts intelligently based on the user's current cognitive states (such as trust, mental workload, and situation awareness) to present the error and the possible solutions to best support human operators. We utilize unobtrusive measures derived from operator background information, behaviors, and interactions with the system to estimate real-time cognitive states. To investigate the hypothesis that an autonomous system that adapts its operation according to cognitive state estimates can improve human-system team performance, we developed a system that manages the environmental control and life support system for a space habitat and helps the user to solve faults. We plan to compare the performance of three conditions across 30 subjects: a non-adaptive control, a random/naively-adaptive control, and an intelligently-adaptive system. Our future work will investigate unobtrusive measures with fewer features that can provide estimation with similar accuracy. It could provide transferability to autonomous systems in multiple fields without the need for multiple sensors.

Anja Huesby

WI - University of Wisconsin-Stout

Discipline: Social Sciences

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#2 Sarah Wood

Abstract Name: Consumer Attitudes & Preferences Toward Sustainability vs. Shopping Behaviors

Considering the major impact different farming practices have on water quality, it is important that farmers receive the support they need from consumers to incorporate more sustainable farming methods on their land. Past research indicates that awareness, preferences, connection, and responsibility are factors that increase

sustainable consumer behaviors. This research builds on these ideas to address how consumer attitudes and preferences toward sustainability compare to people's shopping behaviors. Survey data reveals that even though these factors do elicit sustainable behaviors, there is still a disconnect between consumer preference for sustainably and locally sourced foods and actual shopping habits.

Erica Huey

CA - University of California - Davis

Discipline: Natural and Physical Sciences

Authors:
#1 Erica Huey

Abstract Name: Investigating the Role of HSR-9 in X-Chromosome Segregation during Oogenesis

During meiosis, defective and inviable progeny can occur if homologous chromosome pairing and synapsis are not done accurately. Checkpoints monitor chromosome pairing and synapsis to facilitate accurate chromosome segregation. 53PB1 is a tumor suppressor protein that functions in DNA repair and cell cycle checkpoints. The C. elegans ortholog of 53BP1 is HSR-9. To determine whether HSR-9 plays a checkpoint role in monitoring synapsis in meiosis, I constructed a double mutant homozygous for hsr-9 and zim-2. ZIM-2 is a zinc-finger protein that binds to chromosome V and mediates its synapsis; zim-2 mutants lead to embryonic lethality due to a failure to pair and synapse chromosome V during meiosis. I also examined the consequences of removing the X chromosome pairing center protein, HIM-8, as HSR-9 is concentrated on the X chromosome pair. him-8 mutants disrupt X chromosome segregation, which leads to a high incidence of male progeny. The results show that HSR-9 does not play a significant role in signaling when autosomal chromosomes fail to pair and recombine. However, there is statistically fewer male progeny produced by hsr-9;him-8 vs. him-8, suggesting a role for HSR-9 in X chromosome segregation. To understand why this reduction in males occurred, I am currently trying to uncover if this is specific to oogenesis and to measure nondisjunction events. To that end, I am generating hsr-9;him-8 and him-8 strains that mark each of the X chromosomes with a fluorescence marker (GFP and dtTomato) to determine if the absence of HSR-9 alters the pattern of chromosome nondisjunction events when crossed to wild-type males. The results from these studies will provide insight into the role of HSR-9 in X chromosome segregation.

Gibson Huff

VA - Liberty University

Discipline: Natural and Physical Sciences

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Abstract Name: The Divergent Patterns of Fungal Pathogen Presence in Crayfish and Newts

Fungi are ubiquitous in nature and are essential for the overall health of ecosystems, affecting everything from water quality to the health of the organisms. Although many fungi play beneficial roles in nature, some fungi such as Batrachochytrium dendrobatidis (Bd) can cause disease in the members of the ecosystem. This

chytrid fungus continues to be a major contributor to global amphibian declines and lowers the quality of life of many other creatures (e.g., crayfish). As potential carriers of Bd, crayfish are a possible mobile microhabitat to move and persist the presence of Bd in aquatic ecosystems. This project investigated the Bd prevalence on crayfish populations (Cambarus robustus) adjacent to a population of newts (Notophthalmus viridescens) which have been documented to carry Bd. Surprisingly, none of the crayfish sampled over three different surveys (n=60) revealed signs of Bd infection when assessed with pathogen specific real-time PCR (qPCR), while the resident newt population (n=20) had 95% infection rates. Improving our understanding of how this pathogen is moving naturally within an ecosystem and how it is impacting the broader community will aid future conservation efforts.

Luke Huggins

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
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#4 Steve Whitham

Abstract Name: Characterization of PpEC86: An Effector Protein of Phakopsora pachyrhizi Suppressing Soybean Immune Responses

Phakopsora pachyrhizi is an obligate biotrophic pathogen and the causal agent of the devastating soybean rust (SBR) disease. When left uncontrolled, SBR can cause yield losses of up to 90% and can incur billions in economic losses in soybean-growing areas, especially in South America. Part of what makes SBR aggressive is its ability to manipulate plant host immune systems through haustoria-secreted effector proteins. Previous work has identified P. pachyrhizi effector candidate 86 (PpEC86) as a plant immune suppressor. Using transgenic soybeans expressing PpEC86, we performed ROS burst and bacterial infection assays to measure PpEC86 immune-suppressing capabilities in soybeans. Additionally, yeast-two-hybrid followed by a split luciferase complementation assay was performed that identified protein-protein interactions between PpEC86 and a soybean iron superoxide dismutase (SOD). Understanding how effectors work to manipulate host plant immunity moves us one step closer to improving soybean resistance to this devastating fungal pathogen.

Emma Hulse

LA - Louisiana State University, Baton Rouge

Discipline: Humanities

Authors:
#1 Emma Hulse

Abstract Name: Control, Motherhood, and the Power of Demeter, as portrayed in the Homeric Hymn to Demeter and Ovid's Metamorphoses

Who holds the power in the myth of the abduction of Persephone, and who makes the choices? In the Greek version of this classic myth, the Homeric Hymn to Demeter takes a sympathetic view of Demeter, showing the positive perspective and influence of her motherhood. Rather than sympathizing with a masculine perspective, the Homeric version embraces the feminine perspective, criticizing Zeus' and Hades' actions in

the abduction while bringing to light female solidarity in ancient Greece. It portrays Demeter as in control, as she decisively subverts the Olympian and Greek social order, exercising power over the universe as she uses her stubborn act of wrath to ensure the safe return of her daughter, Persephone. However, Ovid's Roman version of the myth in Book 5 of Metamorphoses undermines Demeter's power, choosing to eliminate her powerful moments of influence, especially in her creation of the Eleusinian Mysteries and in her honorable outcome. In addition, Ovid's version takes a sympathetic view of the masculine perspective, excludes the example of Demeter's motherhood, absolves Zeus and Hades of blame, and eliminates Demeter's control once held in the Homeric Hymn. This essay compares the two versions in their amounts of agency in male and female perspectives, their views on Greek motherhood, and the power of Demeter, setting up the foundation of these views in modern reception of the myth.

Svea Hulstedt

NC - Appalachian State University

Discipline: Health and Human Services

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Abstract Name: Social Epidemiology can solve racism

Objective: This scholarship aims to advance the understanding of racism's impact on health by using the Social Ecological Model to succinctly define social-structural terms. Researching and mitigating the effects of racism through these collective definitions will create a more accurate effective measure of racism. Background: Social Epidemiology aims at discovering what influences and affects one's health through analyzing social determinants of health. But there are many issues with how current social epidemiological practices are carried out, particularly with the development of social theory and how we define social mechanisms such as race, gender, and rurality. Social epidemiology is a discipline in between a hard science and a social science but many of the definitions commonly used, particularly race and racism, aren't created in conjunction to, but isolated from, other relevant disciplines. Methodology: Through a scoping review of the literature, the key to restructuring definitions of race and racism is to use the Social Ecological Model (SEM) to give clarity on how to research these in a population. The SEM has 5 levels of influence: intrapersonal, interpersonal, institutional, community, and policy. These levels comprise of all of the major layers of influence in society and, by defining social-structural terms in all 5 levels, they can be used to inform new and current interventions for improving equity surrounding race and racism. Conclusion: These new comprehensive definitions informed by the SEM can then be used to create toolkits for measuring racism more effectively.

Jacob Humbert

MI - Hope College

Discipline: Education

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Abstract Name: Religious Diversity and Culturally Responsive-Sustaining Teaching

As progressive efforts to engage with diversity deepen in the sphere of education, professors and teacher candidates realize that culturally responsive teaching is becoming a core aspect of any successful education department. Culturally responsive teaching ensures that each student is understood and instructed in a way that makes them feel safe and supported. It also addresses the roots of discrimination that may arise from a lack of understanding and education regarding diverse experiences and people. As classroom diversity continues to increase nationwide, competency in culturally responsive teaching becomes paramount in preparing teachers for success. Although religious diversity is essential to educating students in a way that eliminates bias and supports an inclusive environment, it is only sometimes a topic of discussion in teaching programs at the collegiate level. Our previous studies at a Christian liberal arts college found that education students needed a broader understanding of religious diversity through their experiences in the education program. We hoped students majoring in education would have less religious bias than others, but this was not the case. With a sample size of 316 college students (156 education students, 160 non-education students), among them 160 first-year students and 156 seniors, we conducted a two-part multiple choice survey. The first part asked students to determine whether each religious term from various world religions has the following connotations: positive, neutral, or negative. The second part asked students to associate a specific religion with a given term. Our results indicated that despite being in the program for four years, there was little to no difference in perception of different religions.

Katelyn Humphrey

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

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Abstract Name: Concurrent Validity of Body Composition Measures Across Four Modalities Among Male Collegiate Division III Wrestlers

Background/Purpose: The National Collegiate Athletic Association (NCAA) regulations require a minimum of 5 percent body fat (%BF) to participate in a wrestling season. The purpose of testing pre-season %BF is to provide the wrestlers with information on how much weight they can safely gain or lose to be in a specific weight class. The aim of the present research is to compare the difference in %BF measured by the reference criterion dual-energy x-ray absorptiometry (DXA) assessment against approved body composition testing methods (e.g., skinfold (SKF), bioelectrical impedance analysis (BIA), and hydrostatic weighing (HW)). Methods: Twenty-four university wrestlers (18-24 years of age) participated in this study. Each participant underwent a 60-minute body composition assessment session. Prior to testing, urine specific gravity was measured to ensure optimal hydration status using a refractometer. The testing occurred in the order of upper-body BIA, SKF, DXA, and HW. Results: Four participants were excluded from data analysis due to over-hydration; therefore, 20 participants were included in the analyses. A one-way repeated measures analysis of variance, using an alpha level of .05, indicated a significant difference in %BF across the four modalities. Paired sample t tests were employed for multiple comparisons using Bonferroni-adjusted alpha of .0083. Results indicated no difference in %BF for SKF vs. BIA, SKF vs. HW, and BIA vs. HW (p > .0083).

There was a significant difference in %BF between DXA (M ± SD) vs. BIA (M ± SD), SKF (M ± SD), and HW (M ± SD) (p < .001). Conclusion: In NCAA DIII collegiate wrestlers, DXA overestimated %BF by 2.9%, 3.1%, and 3.7% compared to SKF, HW, and BIA, respectively. Further investigations are warranted prior to implementing DXA as one of assessment methods for pre-season body composition screening for collegiate wrestlers.

Jaden Humphrey

OH - University of Findlay

Discipline: Natural and Physical Sciences

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Abstract Name: Monitoring Antibiotic Resistant Populations as a Correlative to Water Quality

Agricultural land use can have adverse effects on the surrounding waterways, which may cause environmental and economical disturbances including but not limited to species assemblage disruption, loss of habitat and wildlife, and human health impacts. There is a need to monitor in vivo aquatic systems, specifically those in agricultural areas, to not only provide a more holistic view into the correlation between agriculture land use and aquatic environmental disruption but also to develop more succinct and effective monitoring and management guidelines. The Blanchard River serves as an excellent model system suitable for monitoring antimicrobial resistant microbe sustainability within a highly agricultural area that also serves as a contributor to the Lake Erie water basin. Outside nosocomial infections, minimal research has been completed to determine the reservoirs of MRSA (methicillin resistant S. aureus) and other resistant microbes. One hundred and twenty-six sites within the Blanchard River and its tributaries were monitored for antibiotic resistant microbes including MRSA. All sites had antibiotic resistant populations while twenty-six of the sites harbored MRSA. Sixteen Areas of Concern (AOCs) were chosen in conjunction with the Blanchard River Watershed Partnership to determine if traditional water quality measures of E. coli concentrations, nutrient levels and macroinvertebrate populations correlate with antibiotic concentrations and resistant populations. There is no correlation between land usage or antibiotic concentrations and the presence of antibiotic resistant microbes. There were weak correlations between antibiotic concentrations and pollution resistant macroinvertebrates and a weak negative correlation between E. coli levels and pollution sensitive macroinvertebrates. Shown through multi-year sampling, water systems have proved to be a novel mode of transmission as MRSA persists in equine and bovine populations in the surrounding communities. Taking the next step toward ensuring water quality via preventative measures, we sought to type the MRSA strain to confirm its origin.

Ethan Hung

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

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Abstract Name: Latent factor decomposition on electronic health records reveals Alzheimer's disease heterogeneity

Alzheimer's disease (AD) is a highly heterogeneous disorder with many co-occurring conditions and risk factors that remain poorly characterized. This substantially limits the ability to identify high-risk individuals and to develop targeted treatments. Electronic health records (EHR) provide an opportunity to disentangle comorbidity relationships in AD patients over time. Here, we quantified the contribution of diverse pre-existing clinical phenotypes to the development of AD in patients in the UCSF EHR database. Using only billing codes found in patient EHRs, we constructed a longitudinal phenotype tensor representing phenotypes for thousands of AD patients over ten years before their diagnosis. To define comorbidity patterns in our AD cohort, we used latent factor decomposition (LFD), a robust unsupervised methodology for distilling large amounts of high-dimensional data like patient EHR trajectories. We performed CANDECOMP/PARAFAC (CP) tensor decompositions using a nonnegative hierarchical alternating least squares algorithm. The resulting factors identified many interpretable AD comorbidities including cardiovascular disease, diabetes, and osteoporosis that were previously identified in the literature. In addition, novel neurological and gastrointestinal phenotype patterns were identified, although further external validation is needed via sensitivity analyses. This LFD approach furthermore provides improved resolution of the temporal dynamics of AD comorbidities and can be applied to a wide variety of chronic and infectious diseases. Overall, such tensor analyses provide a promising tool for resolving disease heterogeneity in increasingly complex datasets with the hope of delivering personalized medicine.

R Hunsicker

NY - Colgate University

Discipline: Humanities

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Abstract Name: Activism Without the 'A': Asexuality's Exclusion From College Anti-Sexual Violence Movements

This article explores asexuality's lack of recognition and belonging within three college activist movements in the United States: Yes Means Yes, Take Back the Night, and Abolish Greek Life, describing how these movements erase and invalidate asexual survivors. By presenting how narrow mission statements, generalized language, and allonormative history are used to create anti-sexual violence protests and events in these organizations, their perpetuation of compulsory sexuality and erasure of asexual experiences are revealed. The article addresses how movements that involve relationships and queerness become a setting solely for allosexual bodies, excluding asexuality from the social movements. The article argues that the college movements: Yes Means Yes, Take Back the Night, and Abolish Greek Life are perpetuating narrow, allonormativing understandings of survivors of sexual violence and their experiences, othering asexual-identifying students in college anti-sexual violence movements.

Lacey Hunt

ID - University of Idaho

Discipline: Mathematics and Computer Science

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Abstract Name: Integration of Control for Diverse Multi-Robot System

The University of Idaho's Center for Intelligent Industrial Robotics (CI2R) aims to further research in the fields of precision agriculture and industrial automation. One ongoing project is an automated farming robot (FarmBot) which autonomously takes care of crops using light from a temporary, fixed lighting system. A new, Programmable Logic Controller (PLC)-controlled variable height Light-Emitting Diode (LED) lighting gantry robot has been designed and built, thanks to grants from the University's Office of Undergraduate Research, but its software is yet to be fully integrated into the FarmBot autonomous plant care system. The use of a PLC, an industrial automation tool, in this domain serves as an application of industrial automation techniques to precision agriculture. This semester, communication between the FarmBot and the lighting gantry robot will be fully integrated into the recently developed Python Control Module (PCM), which currently only handles the FarmBot plant care routines. This integration will ensure the multi-robot system will avoid collisions as well as allow the light panels to "grow" with the plants as their lighting needs change. The lighting gantry robot is currently installed over a second, unused FarmBot for testing purposes but will be mounted over the original FarmBot upon completion of various consistency and safety tests.

Rachel Hunt

NC - Elon University

Discipline: Natural and Physical Sciences

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#4 Antonio Izzo

Abstract Name: DNA Analysis of Fungal Diversity in Tuber Borchii Truffle Orchard Soil

Changes in fungal diversity in a soil environment gives insight into potential fungal interactions occurring in the soil. This project examined various aspects of fungal diversity in truffle orchard soil, where loblolly pine trees are host plants for Tuber borchii fungi. Tuber fungi are mycorrhizal, meaning they form mutualistic relationships with host plant roots. The truffle orchard soil is composed of both mycorrhizal and non-mycorrhizal fungal genera. This research aims to identify any trends in relative Tuber abundance among other fungal genera in the soil and any changes or consistencies in fungal genera distribution in the soil as the orchard ages. Oxford Nanopore sequencing technology coupled with large scale DNA analysis was used to identify fungal genera in multiple soil samples from 1–2-year-old orchards and 7–8-year-old orchards. There was a significant increase in relative abundance of mycorrhizal fungi among all fungal genera in the soil as the orchard ages; however, there was significant decrease in relative Tuber abundance among those mycorrhizal fungal genera in the soil in that same orchard age transition. While Tuber remains steady in the soil over time, other mycorrhizal fungi are becoming more prominent, which could lead to competition among mycorrhizal fungi in the soil. Our findings suggest that there will be some level of competition for host plant roots and nutrients occurring between Tuber and other mycorrhizal fungi in the orchard soil when the root network stops expanding and root space becomes limited.

Katherine Hunter

AR - Lyon College

Discipline: Health and Human Services

Authors:
#1 Katherine Hunter

Abstract Name: Adolescent Mental Health

Adolescence is a time fraught with change: bodies, minds, and situations. During this time, mental health issues which may or may not have been diagnosable in childhood become increasingly apparent. Struggles like depression, anxiety, and eating disorders can elevate the typical strifes of adolescent development. Hormonal changes often intensify feelings both good and bad. Socialization and the creation of self-identity become increasingly important and anxiety provoking for many during this period. Some risk factors for mental illness like genetic predisposition are obvious. Others, like feeling out of control of one's own environment, are less so. Equally nuanced to risk factors are possible methods of recourse. Deciding when an adolescent is exhibiting symptoms of mental illness which require severe intervention or medication can be incredibly difficult when the emotional life of even a typical teenager appears from the outside to be so inherently tumultuous. Prioritization of an individual's mental health is incredibly important at all ages. However, there are unique social factors and developmental characteristics adolescents face which color and differentiate their experience from those in other age groups. The purpose of this literature review and summary of existing psychological research is to demonstrate the differing cognitive processing between adolescents without diagnosable mental health issues and those that do suffer. By exploring these differences, along with the risk factors leading to the development of mental illnesses and possible physical and social consequences of allowing mental illness to go untreated, behavioral health scientists and providers can better understand the unique condition of adolescent mental health. According to the American Psychological Association, more than 20% of American teenagers have seriously contemplated suicide. Anything that can be done to reduce this number and improve the quality of life of adolescents who are struggling is of the utmost importance.

Mckenzie Hurley

VA - Christopher Newport University

Discipline: Social Sciences

Authors:
#1 Mckenzie Hurley
#2 Brianna Lane

Abstract Name: Manipulating the Connection: The Effect of Profile Privacy and Affect-Intense Language on Perceptions of Deception

Although large media and community attention to online grooming and human trafficking has soared in the last few decades, little attention has been paid to the specific communication tactics used by perpetrators to lure their victims. Prior to the rise in popularity of social media, human trafficking mainly occurred through face-to-face interaction. However, with increased social networking platforms, there have been links to human trafficking and its pursuits (Olsen et al., 2007; Quayle et al., 2014; Kehl, 2020). Social networking sites, such as Instagram, allow human traffickers to form relationships with their potential victims by creating fake social networking profiles and engaging with them through manipulated conversations. It is necessary to understand how individuals perceive these profiles and conversations due to the dangerous nature of the interaction. An experiment was conducted where 272 participants viewed fictitious Instagram conversations (high affect vs. low affect intense conversations) between a potential victim of online grooming and a

perpetrator, as well as a fictitious Instagram profile of a perpetrator (private vs. public). Participants were asked to rate their perceptions of trustworthiness, immediacy, affection, and deceit. There was no significant statistical effect size between the type of conversation/profile, and trustworthiness or deceit. However, there was a significant statistical effect size between immediacy and the high affect conversation condition (p> .03). The overall findings show that the participants viewed the perpetrators' messages as warm and affectionate, however, no indication of deceit or deception was inferred. Furthermore, the findings support the concept that studying deception in computer-mediated contexts is challenging, yet significant, especially in connection to crimes such as online grooming and human trafficking.

Ernesto Hurtado-Lopez

VA - Liberty University

Discipline: Natural and Physical Sciences

Authors:
#1 Ernesto Hurtado-Lopez
#2 Ben Kalu

Abstract Name: Rare Bilateral Asymmetry in Brachial Plexus Branching

The brachial plexus is a network of nerves that innervates the upper extremities of the body, providing motor and sensory function to these areas. In most patients, the plexus originates from the ventral rami of the C5-T1 nerves. Pathologically, trauma to the nerves in the plexus may cause loss of strength and/or loss of sensation in the arm. Literature indicates that as many as thirty-eight variations in brachial plexus branching exist. Variations in branching are mostly harmless, however, some may be more susceptible to injury than others. Although brachial plexus morphology is well-documented, little literature exists on rare cases of bilateral asymmetry in branching. The original aim of the study was to record variations in brachial plexus branching with a focus on the ulnar, median, and musculocutaneous nerves, including their respective measurements. As the study progressed, an asymmetrical anomaly was observed in the terminal branch section of the nerves of a patient. The study used 20 upper limbs of 10 patients: 4 females and 6 males from the cadaver lab. The axillary section of the brachial plexus was exposed by students enrolled in an anatomy course before the study began. Through further dissection, the musculocutaneous, median, and ulnar nerves were exposed. Stopping points for measurements were determined by the first indication of branching from the main terminal branches: musculocutaneous nerve branching in the biceps brachii, and ulnar and median nerves in the carpal region. Measurements were recorded on an Excel spreadsheet table for data analysis. The frequency of the variations recorded is consistent with existing literature, along with the measurements of the terminal branches. Although the abnormality in branching asymmetry may not have affected the quality of life of the patient, this finding may aid in the development of neurosurgical procedures involving unexpected asymmetrical branching in the brachial plexus.

Josh Hutchins

UT - Brigham Young University

Discipline: Natural and Physical Sciences

Authors:
#1 Joshua Hutchins
#2 Kevin Wong
#3 Dario Mizrachi
Kevin Wong

Abstract Name: Salt-Water Acclimation in Atlantic Salmon Sheds Light on Claudin Shifting and Tight Junction Membrane Proteins Composition

Tight junctions (TJs) are composed of three cell-adhesion molecules (CAMs) which regulate paracellular permeability in epithelial and endothelial cells. These are claudins (CLDNs), occludin (OCLN), and junctional adhesion molecules (JAMs). There are 25 isoforms of CLDNs in mammals, all suspected to have different strengths in cell adhesion. Currently, the comparative strength and characteristics of the interactions between different CAMs are unknown, and no easily replicable model of a TJ has been created. To address this question, we resorted to bacterial expression of CLDN proteins. These quantitative techniques developed in our laboratory were applied as a proof of concept to the case of the Atlantic salmon (Salmo salar or SALSA). During migration between fresh and saltwater (smoltification), the TJs in the SALSA skin change claudin composition–upregulating claudins 3 and 10. Through our measurements, we determined that these two claudins are more capable of maintaining their cell-adhesion strengths in the increased salinity of ocean water. Furthermore, in humans, disruption of the blood-brain barrier (BBB) leads to many different pathologies. The TJs of the BBB support are maintained by CLDN5. Post-stroke, CLDN1 is upregulated in the BBB and chronic leakiness of vessels ensues. Using our bacterial method, we showed that claudins 1 and 5 are incompatible and show no interactions, while other pairings of human CLDNs formed compatible mixtures. Our results suggest that quantification of the TJ cell-adhesion of CLDNs is possible and can be used to interpret or further studies of complex mixtures of CLDNs.

Ava Huth

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Ava Huth
#2 Kaitlyn Hillery
#3 Boyce Chang

Abstract Name: Tuning Substrate Neutrality for Block Copolymer-Based Surface Patterning

Polymer self-assembly is a critical area of study in the microelectronics domain, specifically for semiconductor fabrication, surface patterning, and advanced lithography applications. Neutral surfaces are critical for controlling the morphology of block copolymers, and this is typically achieved using a precursor layer of random copolymer brushes (RCP). However, this method is highly batch-dependent and is not sufficiently reproducible or consistent. To address this problem, we used homopolymers of polystyrene (PS) and poly(methyl methacrylate) (PMMA) brush blend solutions to create a similar neutral surface with improved consistency. In addition, we investigated the effect of direct immersion in acetonitrile on the hydrophobicity of the sample. In this study, polystyrene (PS) and poly(methyl methacrylate) (PMMA) brush blend solutions were spin-coated onto silicon wafer. These were then thermally annealed under vacuum and cooled. After cooling, the samples were subjected to three rounds of immersion in toluene, with sonication for 10 minutes to remove excess ungrafted chains. Next, the hydrophobicity of the sample was investigated by collecting water contact angle measurements. The samples were then immersed in acetonitrile, followed by toluene, using the same method as previously mentioned. Water contact angle measurements were collected after each immersion. These results were directly compared with those of RCP brushes treated with the same method. Initial results indicated that direct immersion in acetonitrile decreased the measured contact angle, indicating a change in the chemical environment of blend brushes. This observation is unique to the homopolymer blends due to their ability to reorganize under selective solvents. Ongoing studies investigate the replicability of neutral surfaces created with a polymer brush blend layer and the merit of using direct immersion to tune hydrophobicity.

Ava Huth

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Ava Huth
#2 Joseph Hammer
#3 Sarah Wilson

Abstract Name: How Engineering Student Mental Health Help-Seeking Beliefs Change Over Their First Year

Rates of anxiety, depression, and suicidal ideation have increased significantly among college students in recent years. Although existing studies have found that undergraduate engineering students report similar rates of mental health distress as their peers in other majors, distressed engineering students exhibit lower rates of mental health help-seeking. Previous qualitative research has discovered stress- and shame-filled environments in engineering programs that have aided in normalizing mental health issues and undermining students' mental health. Using the Integrated Behavioral Model (IBM) as a theoretical framework, this quantitative study investigated first-year engineering students' beliefs about mental health help-seeking and identified which beliefs most predicted their intention to seek professional treatment. First-year engineering students were surveyed at three time points– September 2021, December 2021, and May 2022– to examine how mental health help-seeking beliefs changed as first-year engineering students adapted to engineering culture and their college environment. Additionally, this study aimed to identify significant differences in the mental health help-seeking beliefs of male and female first-year engineering students. Key findings included a narrowing gap between the distress rates of male and female students over time and significant changes in the predictors of help-seeking intention. Student beliefs about whether others would expect them to seek help were most predictive of help-seeking intention initially, giving way to student attitudes about mental health help-seeking as the top predictor by May. These findings offer important insights into the beliefs of first-year engineering students about seeking professional treatment for mental health concerns, which will inform the design of interventions to encourage mental health help-seeking.

Emily Hutson

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Emily Hutson
#2 Dr. Sidni Justus

Abstract Name: Examining the interactions between symptom masking, quality of life, mental health and other lived experiences in adults with Autism Spectrum Disorder

This study investigated the relationship between symptom masking, overall quality of life, mental health (i.e., stress, anxiety, and depression) and other lived experiences in adults with Autism Spectrum Disorder (ASD). The World Health Organization describes ASD as a group of conditions that are characterized by having difficulty in social interactions and communication as well as restricted or repetitive behaviors. Masking (also referred to as camouflaging) is when a person tries to hide or mask their symptoms or personality to fit in to societal norms. Camouflaging is common in ASD. Further, recent research revealed a negative relationship between camouflaging and quality of life in individuals with ASD. However, the effects of symptom camouflaging on mental health have been understudied in ASD as have the relationships between age of diagnoses and these variables. Continued research is therefore needed to unpack these nuanced relationships.

In this study, 150 participants with ASD were recruited through an online platform, Prolific, to complete a battery of self-report questionnaires regarding ASD symptomatology, symptom masking habits, mental health, quality of life and other demographic questions. Regression analyses evaluating the relationships amongst variables will be discussed. This project adds to the scientific literature on ASD by illustrating how camouflaging may affect not only mental health but also broader lived experiences.

Tobin Hutton

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Tobin Hutton

Abstract Name: Architecture and Graphic Design: History, Principles, and Purpose of the Visual Creations

Graphic design and Architecture are both art forms; they can be umbrellaed together, or are they disciplines that have more history, principles, and purpose within themselves than just the creation of visual aspects? More than just a creation of visual indulgence. But in what ways do they differ, and in what ways are they the same? When looked at historically, how do we ignore the integration and relationships between both? Design disciplines and visual powerhouses are both immediate, and most would not see these in the same field. Ultimately, they are not, but we see how they reflect and relate to each other over time and the changes that spur each other into the next evolution of their industry. The visual element of architecture and the integration of design solutions architects and those in the industry choose to integrate design principles in practice to make space for people in human evolution. As the human experience evolved, so did the ability to intellectualize that experience. Then, the ability to conceptualize, express, and ultimately communicate these human experiences is how written language developed into what we know today. Typeface and imagery started to show more in the built environment, integrated or executed on and within buildings, which was the springboard for an economic shift. The human experience was becoming more about what was being presented to you. Advertisement was the integration of graphic design and architecture; it was the built environment and the visual communication of the building or who it represented. Graphic Design and Architecture are more than visual aspects; they are their history, principles, and purpose. They are the human experience of evolution, communication, feeling, and an expanded expression of the experience.

Thu Huynh

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Thu Huynh
#2 Khanh Bui
#3 Kimberly Cadiz
#4 Trinity Wright
#5 Bethany Lucas
#6 Allyson Sterling

Abstract Name: Discovering Novel Protein(s) that Bind to Nur77 in Immature CD4+ Single Positive T cells

The immune system plays a critical role in protecting the body from infections. T cells are an important part of this system, capable of directly killing or aiding in the destruction of pathogens. To reach maturity, immature T cells must undergo several developmental stages, including the CD4+ Single Positive (SP) stage. Nur77 is a protein that regulates various cellular functions, including inducing cell death and promoting cell proliferation and differentiation in immature double-positive (DP) T cells. Recently, our group found that Nur77 is also expressed by CD4+ SP immature T cells. However, there is currently no research on the interactions between Nur77 and cellular proteins within CD4+ SP T cells. To begin to elucidate the function of Nur77 in CD4+ SP T cells, we employed a discovery approach with a yeast-two-hybrid (Y2H) screen that allowed us to find novel protein(s) that interact with Nur77 in CD4+ SP cells. The Y2H library screen identified prefoldin 5 (Pfdn5) as an interacting partner binding to Nur77 in CD4+ SP T cells. Pfdn5 is part of a chaperone complex that assists with protein folding and has been implicated in promoting or suppressing certain cancers. Future directions could include performing immunohistochemistry for PFDN5 and Nur77 in tumor cells to determine their localization and expression levels. We could also look more carefully at the binding site between Nur77 and PFDN5 by making truncated versions of the proteins or introducing mutations in PFDN5 or Nur77 to try and disrupt their interaction and examine the downstream effects on T cell development. Understanding how Nur77 and Pfdn5 work together in CD4+ SP T cells can lead to a better understanding of T cell development and potential therapeutic targets for cancer.

Muhammad Huzaifa

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Muhammad Huzaifa

Abstract Name: Facial Recognition Based Smart Lock

Vulnerability of traditional door locks against lock picking and minimizing lost key replacement cost, and remote locking or unlocking capabilities have persuaded house owners towards a smart door lock-based system for ensuring security at their home. Primarily these smart locks use fingerprints, keypads, or RFID tags to authenticate homeowners and open or close the locks. Due to the nature of the authentication, it is difficult for senior citizens as well as people with disabilities to use these door locks. In this paper, we propose a smart door lock system using Face Recognition for security and accessibility purposes. To design the smart door lock system, we adopted the OpenCV library. Furthermore, we have also designed a prototype for the proposed smart door lock using a Raspberry Pi. The prototype is equipped with a motion sensor, a

camera module, a relay, and a solenoid lock. As the lock is powered by a battery, to reduce power consumption and prolong the battery life, the device switches between an active and idle mode based on activities detected by the motion sensor. We have also developed a user-accessible mobile app using which users can control the lock remotely via their phones and create new authorized users. We also developed a liveness detection test to ensure nobody can gain access by showing a picture of the authorized user. Through experimentation, we demonstrate that the device can determine specific authorized users with 94% accuracy and the average time for the device to detect the user and unlock the door is 2.09 seconds.

Keslee Hylton

NC - William Peace University

Discipline: Social Sciences

Authors:
#1 Keslee Hylton

Abstract Name: The Effects of Phone Activity on Perceptions of Athletic Performance

Previous research has found that individuals who use their cell phones more tend to have lower GPA, higher anxiety, and lower life satisfaction (Lepp et al., 2013). Kates et al. (2018) similarly found that mobile phone use has negative effects on educational outcomes. Mobile phone use is also related to poor physical fitness (Bravo-Sánchez et al., 2021). Among college athletes excessive recreational screen time is a risk factor for increased anxiety both during and outside of competition (Gao et al., 2021). It is hypothesized that there will be a negative correlation between phone activity and perceptions about athletic performance. Participants are undergraduate student-athletes who participate once a week for a three-week period. Participants complete a Phone Activity Questionnaire and the Athlete Perception of Performance Scale (Rice et al., 2021). Athletes in fall, winter and spring sports are being recruited to participate. The current sample consists of 33 college student athletes, aged between 18 and 23 years old on the women's volleyball and men and women's soccer teams. Data from week one was analyzed. To examine the association between phone activity and athletic performance correlational analyses were performed. A positive correlation between daily phone notifications and guilt about athletic performance ($r(33)=.41$, $p=0.05$) was found. Thus, the more phone notifications the athlete has the higher level of guilt they have about their athletic efforts. There was also a negative correlation between shame and no concern about athletic performance ($r(33)=-.74$, $p=0.01$) and a positive correlation between daily average screen time and shame about athletic performance ($r(33)=.35$, $p=0.05$), indicating that phone use is associated with shame about athletic performance. Thus, there is some support for the hypothesis. This is an on-going study, with more data to be collected during winter and spring sports.

Sofia Ibarra

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

Authors:
#1 Sofia Ibarra
#2 Kieran Smith
#3 Torin Clark

Abstract Name: THE ROLE OF COGNITIVE FUNCTIONS IN SITUATION AWARENESS IN INDIVIDUALS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

BACKGROUNDAttention Deficit Hyperactivity Disorder (ADHD) is characterized by spans of inattention, impulsivity and hyperactivity patterns. Individuals with this condition present cognitive abnormalities that reflect in behavioral features making the role of ADHD crucial in an individual's performance of difficult tasks that require extended periods of attention, information processing, and response. Situation Awareness (SA) refers to the ability to perceive, understand, and predict potential changes in one's environment. SA demands mental resources like attention and information processing [1]. Tasks that require a high level of SA and therefore demand these mental resources may pose a challenge for people with ADHD, since the periods of attention and inattention are more likely to rapidly shift. ADHD occurs in approximately 2.5% of adults and, "...can be an excluding medical condition among pilots due to the risk of attentional degradation and therefore impact on flight safety" [2]. In aviation, the pilot requires good SA in the three main levels: perception of information, comprehension of the situation, and projection of the situation [3]. While investigations [4] have studied ADHD in terrestrial operator tasks, there is relevancy to spaceflight since ADHD is not an exclusionary criteria for astronaut selection, but there is limited information evaluating the performance of individuals with ADHD in all three levels of SA.Studying SA in individuals with ADHD would help understand the cognitive processes that contribute to difficulties in tasks requiring focused attention and mental workload. Research could provide insights into the individual's physiology and brain functioning during these situations enabling them to better manage these situations. METHODSThis study collects physiological data from subjects: function near-infrared spectroscopy, electroencephalography, electrodermal activity, respiration, eye-tracking, among other task-performance metrics, while they engage with a modified MATB-II simulation (aircraft simulation). This approach aims to capture differences in SA between individuals with ADHD and neurotypical counterparts.

Zainab Ibrahim

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Zainab Ibrahim
#2 Sarah Williford
#3 Anita Hjelmeland

Abstract Name: Determining if exosomes from GLUT3 expressing glioblastoma cells increases the migration of macrophages

Glioblastoma (GBM) is an aggressive and invasive cancer characterized by rapid tumor growth. GBM cells present with altered glucose metabolism compared to normal cells. GBM cells' highly coordinated invasiveness results from cell-intrinsic properties and microenvironments. It has been discovered that glucose neuronal transporter 3 (GLUT3) upregulation enables cancer cell growth, correlating directly with its role in invasion and metastasis. The protein level regulation of GLUT3 may have significance in the highly heterogeneous tumor microenvironment of GBM, including nearby immune system components to a growing tumor. Macrophages, or phagocytic immune cells, are affected by tumor progression. Tumor associated macrophages (TAMs) primarily stem from bone marrow monocytes and can polarize to immunosuppressive states, fostering tumor aggression. Various cell types, including cancer cells, secrete exosomes to transfer signals between cells. We found that tumor derived exosomes have a potential role in tumor aggression by influencing macrophage-mediated immune response. Additionally, GLUT3 has a role in mediating GBM invasion that appears independent of its role in glycolysis. The effect of GBM exosomes on macrophages is studied to understand how exosomes influence macrophage function. Transwell migration assays can be used to investigate the migration of macrophages following GLUT3 overexpression BTIC derived exosomes. Additionally, analyses of gene quantification and protein modification with qPCR and western blotting, respectively, address the potential genetic and proteomic contribution in GBM invasion. This knowledge enhances the understanding of cell behavior and gene and protein alterations by tumor-derived exosomes, potentially leading to novel cancer treatments. Investigating the hypothesis that exosomes from GLUT3

expressing glioblastoma cells increase the migration of macrophages may lead to therapeutic opportunities for macrophage modulation and better immune responses for patients.

YOLANDE IDOINE

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

Authors:
#1 Alaa Ahmed
#2 Rachel Marbaker

Abstract Name: Role of Effort in Motor Learning - Split-belt Gait Analysis

Motor learning is a crucial aspect of human development and rehabilitative medicine. Understanding motor learning directly contributes to the design of non-invasive rehabilitations for individuals with movement impairment, such as Parkinson's or post-stroke patients. This research aims to understand how physical effort impacts motor learning. During the experiment, healthy participants walk on a split-belt treadmill which has a separately controlled belt for each foot. Force plates under each belt recorded ground reaction forces and motion capture cameras tracked leg movement. Participants (n=45) wore a weighted vest, with effort differentiated by the amount of added weight. Participants were divided in 3 groups corresponding to different effort conditions: low (5% body weight), high (15% body weight), and control (no weight added). The experiment was divided into time blocks during which the belts ran at the same speed or at different speeds. Differences in speed perturb the gait cycle, inducing an artificial limp. Participants' response to the gait perturbation was assessed via measures of asymmetry in parameters of the gait cycle such as step length, trailing limb angle, and ground reaction forces. Learning was evaluated by comparing the evolution of adaptation between groups. We hypothesized that higher effort would accelerate motor learning by increasing the metabolic cost of asymmetric walking; however, current results reveal no differences in step length adaptation between effort groups. My ongoing work is focused on the analysis of trailing limb angle as well as joint kinematics and dynamics.

Mohammad Tanzil Idrisi

WI - Beloit College

Discipline: Mathematics and Computer Science

Authors:
#1 Mohammad Tanzil Idrisi

Abstract Name: Efficient Hyperparameter Optimization through Sparse Sampling and Robust Tensor PCA

Modern deep learning models are often complex, involving numerous hyperparameters. The task of optimizing these hyperparameters is a significant challenge for practitioners in the field. Classical hyperparameter optimization methods like grid search suffer from the curse of dimensionality, where an extensive search of the hyperparameter space can become very computationally expensive. We address this issue by only calculating the loss for some entries of the grid. The test losses obtained from these models form a sparse loss tensor. Using Robust Tensor PCA, we estimate a low-rank approximation of the loss tensor from the available values. This low-rank representation reconstructs the missing entries so that the best hyperparameter set can be chosen. Our method achieves a two-times speedup compared to dense grid search on a 1000-entry hyperparameter search space at almost optimal accuracy. We further explore this method in

the context of neural network classifiers, particularly focusing on its application to the MNIST dataset. Our experiments reveal that the loss matrices and tensors possess a low-rank structure and can be effectively approximated using our approach, providing a better trade-off between accuracy and search time for hyperparameter settings. This method offers significant improvements in efficiency, particularly for larger neural networks and complex datasets.

Maria Ignacio-Santillan

MI - Wayne State University

Discipline: Health and Human Services

Authors:
#1 Maria Ignacio-Santillan
#2 Jeanne Barcelona

Abstract Name: Functional Aging & Mindfulness for Seniors Through Intergenerational Events: A Pilot Study

Both aging adults and youth are experiencing a rise in mental health issues, with depression, anxiety, and loneliness affecting 25% of aging adults and 40% of youth. Additionally, both age groups are witnessing an increase in obesity and overweight status, with 44.3% prevalence in seniors and 19.7% in youth. The research underscores the positive impact of adopting healthy behaviors, such as physical activity (PA) and healthy eating, on mental and physical health. The Functional Aging and Mindfulness for Seniors (FAMS) intervention aims to promote healthy aging through intergenerational interactions to enhance the physical, mental, and social health of aging adults and youth. This qualitative study, conducted with 20 aging adults and 27 high school students, explored intergenerational engagement in activities like icebreakers, trivia, physical activity, and healthy eating. With a Systematic Engagement Measurement for Intergenerational Time (SEMIT), researchers observed behavior, mood, and interactions, generating variables such as mood and behavior. The results revealed differences in engagement levels based on the type of activity. Specifically, the healthy eating session showed less interaction and lower mood among youth and seniors versus the physical activity session. These findings provide insights into effectively engaging intergenerational participants in health-related activities. The study emphasizes the significance of maintaining healthy habits throughout a lifespan to enhance overall quality of life.

Thomas Iken

ND - University of North Dakota

Discipline: Natural and Physical Sciences

Authors:
#1 Mehmet Ozdogan
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Abstract Name: Synthesis and Characterization of Tin Selenide’s Frictional and Thermal Properties

The current most efficient energy production techniques operate, on average, at 44% efficiency. This means close to 60% of energy is lost as waste heat. Thermoelectric materials can directly convert waste heat into electricity, generating an electrical potential from a thermal gradient applied across the material. They have no moving parts, unlike traditional energy sources, requiring little maintenance, thus making them very robust methods of energy generation. Tin selenide (SnSe) is a prime candidate for a thermoelectric generator,

having one of the highest recorded efficiency values. Thermoelectric efficiency is based off a figure of merit equation, weighing factors such as a materials electrical and thermal conductivity. To improve energy conversion efficiency values for industrial applications, fully understanding the physical properties of thermoelectric material is of the utmost importance. This can be achieved through novel synthesis and analysis techniques such as Atomic Force Microscopy (AFM). AFM is a diverse method for material characterization, it allows one to obtain information about a sample's physical interactions at the nanoscale. Two extensions of AFM measurements are Scanning Thermal Microscopy (SThM) and Lateral Force Microscopy (LFM). SThM process allows for in-situ analysis of topographical and thermoelectric characteristics, while LFM capitalizes on a more flexible probe to allows for an understanding of the frictional properties of the material.

Honorine Ilboudo

WI - Madison Area Technical College

Discipline: Social Sciences

Authors:
#1 Honorine Ilboudo

Abstract Name: Domestic Abuse in West Africa

Domestic violence is a hidden global epidemic, affecting people of all races, genders, and nationalities. Women are particularly vulnerable to violence in the domestic sphere according to reports from the World Health Organization, United Nations-Women, and multiple governmental agencies. Domestic violence is especially pervasive in Sub-Saharan Africa, yet literature suggests that it may not be perceived as such a serious issue. To have a better grasp on the prevalence of domestic violence and people's perceptions of it, I conducted mixed survey research on the online platform SurveyMonkey using a snowball sampling technique. The survey targeted people from Burkina Faso, Mali, and Senegal, but it attracted a disproportionate number of Burkinabe and people whose education levels were above average. Data analysis showed that most participants viewed domestic violence as a serious issue in their country and felt that victims should receive support. However, a few people did not view it as an issue or thought victims deserved it, and many more opted to drop out of the study mid-way through, making it difficult to draw conclusions. The rate of victimization was lower than the national average though more participants reported knowing someone who has been victimized. No statistically significant differences were found between male and female participants. Future research should use a more representative sample and reduce drop-out rates to improve external validity.Key words: Domestic violence, Gender-based violence, West Africa

Tarannum Imam

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Adiba Imam

Abstract Name: Lucian Bernhard: A Better Understanding of The World of Graphic Advertising

This essay follows the journey of Lucian Bernhard, a major figure in the world of graphic design. Focusing on his unique style and the crea on of the Sachplakat genre, the essay shall explore how Bernhard's minimalist approach changed the world of adver sing, se ng the ground rules for future design movements.

Aside from his contribu ons, this essay also dives into Bernhard's personal and professional life, revealing how his crea vity came to be. As the essay unfolds, we slowly unfold the layers of Bernhard's life, leading to a deeper understanding of why he did what he did. Bernhard's story sets the ground for designers around the world because of his ar s c vision and unique style, shaping the world of adver sing as well.

Jordan Incledon

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Jordan Incledon
#2 Matt Rathbun

Abstract Name: Hopf plumbings and generalized Hopf bandings

Knot Theory is a branch of mathematics dedicated to studying properties of knots. One way to understand knots is by seeing what surfaces we can fit around the knot with the knot as the surface's boundary. A rare type of this kind of surface is called a fiber surface. A surface fibers if we can split up all of S3, which can be thought of as R3 plus a point at infinity, into exact copies of that surface. Starting with a disk (a surface that looks like a filled-in circle), we can build fiber surfaces through operations called Hopf plumbings and generalized Hopf bandings. In both of these operations, we attach a special kind of twisted band to a fiber surface in a particular way, which produces another fiber surface. Performing Hopf plumbings and its inverse operations, Hopf de-plumbings (where we cut along one of these twisted bands), is enough to produce every possible fiber surface. So, it must be possible to express a single generalized Hopf banding as a sequence of Hopf plumbings and Hopf de-plumbings. While we are still working on answering that question, we have discovered that performing two specific generalized Hopf bandings results in the same surface as performing two specific Hopf plumbings. Although this material is not traditionally taught at the undergraduate level, this poster will walk through all the necessary background so that our result is accessible to undergraduate students of all majors.

Lewis Inglis

GRB - University of Warwick

Discipline: Social Sciences

Authors:
#1 Lewis Inglis

Abstract Name: The world bank and its promotion of privatisation as a tool of poverty alleviation.

Processes of economic integration have given space to cross border interactions and a collective sympathy for global poverty. However, the arm's length relationship between international actors of global development, and their sociocultural realities do not reflect the various episodes of globalisation promoting economic and cultural connectedness. Indeed, the world bank turns the normal conditions of globalisation in on itself to prevent the subject being approached from diverse directions and made amenable to rational transformations or any plural construction. This has given force to the belief that this uneven exchange of knowledge is an occasion of negative homogenisation. The banks promotion of privatisation as a tool of poverty alleviation is a character of this logic. This paper is particularly concerned by what is incompatible within these terms and how the elements brought together belong to different orders of reality, liberalise sectors without public

participation, and do not resolve into any positive correspondence as much as they reproduce the dislocation between economic actors and marginalised populations. At any rate, this identical contradiction opens the bank up to new forms of questioning and this paper draws together numerous concerns from the substance of policy making.

Paige Ingram

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Paige Ingram
#2 Victoria Akingbehin
#3 Dr. Michelle Snyder

Abstract Name: q-PCR assay exploring Planarian ability to clear Uropathogenic Escherichia coli (UPEC) in the presence of the protein TcpC

Bacterial resistance is a threat to healthcare systems and global health. Uropathogenic Escherichia coli (UPEC) is the leading cause of urinary tract infections, and due to antibiotic treatment, there has been a notable rise in the levels of antibiotic-resistance seen in the environment. Studying this bacteria's molecular mechanisms could provide insight into how to counteract the threat of bacterial resistance. Uropathogenic E.coli produce a protein known as TcpC. TcpC is a Toll/interkeukin-1 receptor domain-containing protein (TIR) which acts as a virulence factor by inhibiting innate immune host immune responses. To study TcpC in E. coli we used the model organism planaria. Planaria are an emerging model organism for host-pathogen interactions due to their efficiency at clearing bacteria. Because TcpC blocks innate immune responses in mammals, we hypothesized that TcpC would also block planarian immune responses, and that when fed a variant of E. coli lacking TcpC bacterial clearance will occur faster versus when fed E.coli with TcpC. For this project, we are developing a new protocol to use quantitative PCR (qPCR) to analyze the clearance of bacteria in planaria. We identified PCR primers that amplify DNA from our bacteria and that we can use to quantify bacterial levels cleared from planaria over time. Our preliminary results suggest that qPCR results with these primers show results that are consistent with a much more tedious method for quantifying bacterial clearance that requires serial dilutions and plating of planarian extracts to count remaining bacteria. We are continuing to use these different experimental procedures to test our hypothesis that TcpC might affect bacterial clearance in planaria. Further studies characterizing immune responses in the planarian model that might be affected by TcpC might offer clues to new therapeutic strategies that could be used to counter UPEC infections with less reliance on traditional antibiotics.

Milka Ininahazwe

PA - Lafayette College

Discipline: Engineering and Architecture

Authors:
#1 Milka Ininahazwe

Abstract Name: Investigating the Impact of Race and Gender on Psychological Safety in Engineering Design Teams

This research addresses the persistent challenges of diversity and inclusion within engineering, particularly

the historical underrepresentation of racial and gender minorities. Focusing on the critical issue of psychological safety, this study explores the intricate relationship between an engineer's racial and gender identity and their well-being within engineering design teams.Drawing from existing research, this study builds on the work of Navarro et al., who delve into how gender and racial backgrounds impact students' persistence in engineering programs. Additionally, Cole and Marhefka et al. emphasize the importance of psychological safety in engineering design education. Yener's research underscores the complex interplay between gender, psychological safety, and the experience of feminine role stress.The research questions are: How does an engineer's racial and/or gender identity influence their level of psychological safety and well-being within engineering design teams? Moreover, how does this level of psychological safety relate to the overall group dynamic? How do intersectional identities, such as being a woman of color or a non-binary person, shape the experience of psychological safety in engineering design teams? The participants of this study are Mechanical Engineering and Integrative Engineering students who are members of the Senior Design teams at Lafayette College. All participants have provided informed consent prior to the commencement of data collection. Surveys are administered to gather quantitative data, including demographic information and participants' perceptions of psychological safety within their engineering design teams. A subset of participants, specifically students of color and non-male students, will undergo interviews guided by predetermined questions.The expected results include the following statements: An engineer's racial and/or gender identity influences their level of psychological safety and well-being within engineering design teams, and intersectional identities (e.g., being a woman of color or a non-binary person) influence the experience of psychological safety and well-being in engineering design teams.

Michal Irfan

WI - Alverno College

Discipline: Health and Human Services

Authors:
#1 Gregory Simandl
#2 Nicholas Raddatz
#3 SuJean Choi
#4 David Baker

Abstract Name: Role of PACAP in Cociane-Induced Plasticity Underlying Drug-Seeking Control

Cocaine-induced neuroplasticity often results in altered glutamate signaling, which likely contributes to substance abuse. Glutamate, the primary excitatory neurotransmitter in the brain, engages in nearly every form of brain function, rendering it a challenging target for drug development. Glutamate and the co-released neuropeptide pituitary adenylate cyclase-activating polypeptide (PACAP) project to the nucleus accumbens (NAc), a brain region known for interfacing motivation and action, which is heavily implicated in addiction-based behaviors. PACAP binds to its primary receptor (PAC1R) located on neurons and astrocytes. PACAP infusions into the NAc core attenuates cocaine-primed reinstatement and potentiates glutamate receptor NMDA currents in a key projection circuit, the direct pathway, linking NAc to other circuits that regulate behavior. Given that PACAP’s attenuating effects on cocaine relapse may involve PAC1R activation on neurons, astrocytes, or both, this project investigates the possibility that cocaine-induced changes in PAC1R expression in the NAc core alters the activity of the direct pathway. To do this, cocaine-historied rats received injections of cholera toxin b (CTb) conjugated with Alexa Fluor488 into the substantia nigra pars compacta and ventral pallidum, which are brain regions innervated by the direct and related NAc pathways. The CTb/Alexa Fluor488 complex will be transported in a retrograde fashion, thereby fluorescently labeling the relevant NAc cells. After 10 days of incubation, NAc efferent neurons were isolated from other cells using fluorescence-activated cell sorting and were used to quantify PAC1R mRNA with RT-qPCR. We hypothesize PAC1R mRNA levels in NAc core neurons will decrease in cocaine- compared to vehicle-treated rats. Activation of neuronal PAC1R has been shown to reduce Mg2+ blockade of NMDA receptors, enabling activation at lower membrane voltages to reduce neuronal excitability. Lower levels of PAC1R mRNA may

reduce PAC1R density on neurons and decrease control over neuronal excitability in NAc - a hallmark of cocaine addiction.

Abby Irish

MI - Northern Michigan University

Discipline: Natural and Physical Sciences

Authors:
#1 Abby Irish
#2 Dr. Lesley Putman

Abstract Name: Hemp’s CBD Production Levels Correlation with Abiotic Stressors

Cannabis sativa is known to have many different health benefits, such as calming anxiety and being an anti-depressant. It is one reason the industry of cannabidiol (CBD) products is growing so quickly as it is. Hemp is a variety of Cannabis sativa that contains very low amounts of tetrahydrocannabinol (THC) (<0.3%) and will not get you the “high” marijuana is known to provide its consumers with. Growing a medicinal plant at home, such as hemp, would allow the cost of buying medicinal products to be significantly lowered for the common household. As well as be a more sustainable practice due to a more closed-loop circle of growing and consuming practice. This study analyzes two everyday household abiotic stressors that can turn people away from growing this plant indoors: water amount and the pH level of the water used. These projects both ran simultaneously and took place under greenhouse conditions. The plants were grown in soil with an irrigation system to monitor the water provided, a phosphate buffer to alter the water pH levels, and the CBD and THC amounts were analyzed through gas chromatography-mass spectroscopy once the plants flowered. The findings of this research aim to help make CBD, a beneficial chemical compound, more accessible for people to grow and use at home individually. It is under the assumption that hemp can not be grown at home due to households not having the “perfect growing conditions”, while this research hopes to prove that growing hemp under different abiotic stresses will not have harsh effects on the amount of CBD being produced by the plant. Therefore still being a beneficial household plant that can provide easy access to herbal medicine for people worldwide.

Diego Iruegas

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Diego Iruegas
#2 Samantha Bromley-Coolidge

Abstract Name: Do Mutations to an Extracellular Matrix Protein Affect Oligodendrocytes in the Brain?

The proper maturation of oligodendrocyte precursor cells (OPCs) into myelinating oligodendrocytes (OLs) is crucial for the development and function of the nervous system. While the regulatory mechanisms governing OPC maturation and axonal myelination have traditionally been explored through the perspectives of transcription factors and secreted molecules, the extracellular matrix (ECM) plays a fundamental role in influencing cellular life and maturation in various contexts. Chondroitin sulfate proteoglycan 4 (CSPG4), a hallmark gene used to identify OPCs, encodes NG2, an ECM protein that interacts directly with surrounding cell-surface and ECM molecules. Signaling downstream of Cspg4 has known effects on the OPC

cytoskeleton and gene expression, positioning it as a key player in orchestrating the development of oligodendrocyte lineage cells (OLCs). Notably, in vitro studies have suggested that surface expression of Cspg4 inhibits OPC maturation. Based on this background, our hypothesis posits that Cspg4 inhibits OLC maturation in vivo. To investigate this, we employed zebrafish as a model system and assessed OLCs in cspg4 mutant larvae. Our findings revealed that mutant larvae exhibited concurrent levels of both OPCs and OLs. Currently, ongoing research involves measuring morphometric features of OPCs and myelinating OLs in live mutant larvae and their wild-type siblings. The pilot data shows that cspg4 mutants OPCs are more spherical and cspg4 mutants OLs make more myelin sheaths (of average length). This approach aims to provide deeper insights into how the ECM, particularly through the influence of Cspg4, contributes to the development of OLCs and the myelination process.

Solomon Isekeije

VA - Norfolk State University

Discipline:

Authors:
#1 Simone Couther
Simone Couther

Abstract Name: Hope Through Artion: Healing communities through Art

Healing through art with your community creates resiliency over challenges ahead. Over the years, American cities have experimented with ways to combat climate change. The Hope through Artion Project recognized that art is a catalyst for change. Nature and humanity have always connected, so now is the time to imagine new ways to help our environment. Our mission is to connect communities in efforts to transform the world by rethinking, visualizing, and taking action. Focusing on unique aspects of the neighborhood persona continues to drive what direction we should look forward to in art experimentation. We strive to establish new perspectives and show that change must become collaborative. The benefits of our efforts are enjoyed and enhanced by the communities we impact. What are the limitations and possibilities for mobilizing the public to care about the environment through art? Norfolk State University fine art students facilitated our first community art engagement activity with the Berkley community, which featured creating a community mural and two interactive surveys to encourage thought surrounding food insecurity and environmental justice. We had the chance to speak with over 100 participants over two days and gathered 62 survey responses. Through social practice art, art is born through experiences shared through communal interaction rather than visual significance. We aim to promote art to enhance unity within our world so that future generations will understand we are better together moving forward. By producing public art that reflects a community persona, history, and identity, these landmarks become foundations for new engagements rather than aesthetics of gentrification. Hope through Artion stands with art education to influence progressive change within communities.

Nicky Ishaak

TX - The University of Texas at Dallas

Discipline: Natural and Physical Sciences

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#1 Nicky Ishaak
#2 Mark Baumann

Abstract Name: Calculating the Trajectory of a Gram-Scale Interstellar Spacecraft Moving at Relativistic Speeds

PoMiN is a relativistic N-body gravitational dynamics solver that uses a Post-Minkowski approximation to general relativity (GR) and is accurate at ultra-relativistic speeds. It was originally written in the C language, but recently has been ported to the Julia language. An application of interest for PoMiN is the computation of trajectories of relativistic spacecraft, such as those proposed by the Breakthrough Starshot Initiative and NASA's Project Starlight. The goal of the Breakthrough Starshot Initiative is to develop an interstellar spacecraft capable of traveling to the nearest star in less than a human lifetime. It proposes building a gram-scale spacecraft that is attached to a light sail and accelerated to 0.2c, either by a ground- or spaced-based laser array. The spacecraft is microchip-sized and equipped with miniaturized sensors and communications. It would have minimal propulsion of its own; therefore, after the initial acceleration, the spacecraft would be left to make the 20-year trek to Proxima Centauri, approximately 4.25 light years away, with minimal course corrections. The question to be answered is: how can the trajectory of the spacecraft be computed? To compute the trajectory of the spacecraft involves accounting for gravitational dynamics between many bodies, for example, the Sun, Earth, Moon, other planets in our solar system, Alpha Centauri A and B, Proxima Centauri, and the spacecraft itself -- all while the spacecraft is traveling at 0.2c. These conditions qualify PoMiN as an ideal tool to solve this problem. To begin the investigation, a set of initial data of all of these bodies was created. Online astronomical databases were used to obtain orbital elements, masses, and accurate positions and velocities. This presentation will discuss the initial conditions, detailed results, challenges, and implications.

Ali Ishaq

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Ali Ishaq
#2 Mohamed Khalil
#3 Scott Terhune
#4 Subramaniam Malarkannan

Abstract Name: Single-cell transcriptomes of antiviral NK cells responding to an MCMV infection reveal the development of Ly49HHi memory-like NK cells

Natural Killer (NK) cells play a crucial role in the early management and clearance of mouse cytomegalovirus (MCMV) infection. Ly49H+ NK cells can specifically recognize and eliminate infected cells presenting the MCMV m157 glycoprotein. Following activation, Ly49H+ NK cells undergo a clonal expansion and form a reservoir of memory-like cells that exhibit enhanced capabilities of targeting future infections. The molecular mechanism by which memory NK cells develop and their transcriptomic profiles have not been fully defined. Here we infected C57BL/B6 mice at different time points with MCMV and performed single-cell RNA-sequencing (scRNA-seq) on NK cells isolated from their spleens. Unsupervised clustering revealed a distinct memory-like Ly49HHi subset that was found at elevated levels seven days post-infection. This Ly49HHi subset had high expression of Cd3e, Cd3d, CD74, Emb, Batf3, and Ltb. In addition, our developmental trajectory analysis of Ly49H+ NK cells revealed a unique branchpoint leading to the development of Ly49HHi memory NK cells. These findings enhance our understanding of memory NK cells and have the potential to influence their future therapeutic applications in cellular immunotherapies.

Alexsia Lucy Ishkhanian

CA - California State University - Northridge

Discipline: Social Sciences

Authors:
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#2 Andrew Salcedo-Alvarez
#3 David Garcia
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Andrew Salcedo-Alvarez
David Garcia

Abstract Name: The Relationship Between Previous Experiences and Familiarity on Conceptions and Beliefs of ChatGPT

The proliferation of Artificial Intelligence (AI) is reshaping human interactions and experiences. These effects are already being felt in educational settings, but little is understood about them. The present study helps fill this gap by examining the perceptions and beliefs surrounding ChatGPT, aiming to unravel misconceptions about its capabilities based on the level of user familiarity. In online surveys, we will ask participants to answer questions regarding their familiarity with ChatGPT. They will also be asked to evaluate the accuracy of statements about what ChatGPT can do such as “ChatGPT can produce accurate responses all the time” and to rate the extent to which different uses such as utilizing the AI tool to generate an outline for an essay for one of their classes will affect students’ learning abilities. We expect that individuals who are less familiar and have little experience with ChatGPT will be more likely to have misconceptions about what it can and cannot do. We additionally expect individuals who are less familiar with the tool to rate examples of ChatGPT usage more negatively in comparison to those who have more familiarity. The implications of these findings for our research are twofold. Firstly, it highlights the importance of addressing misconceptions about ChatGPT among individuals who are less familiar with the AI tool, to provide them with accurate information regarding its capabilities. Secondly, it underscores the need to consider familiarity as a factor when evaluating the potential impact of ChatGPT on learning abilities in educational settings.

Reanna Ishmael

NY - Fordham University

Discipline: Business and Entrepreneurship

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#2 Dominik Molitor

Abstract Name: The Impact of a Web Accessibility Indicator on Purchase Intentions

Web accessibility is the practice of designing websites so that all individuals, especially people with disabilities and the elderly, can use them with both mainstream and assistive technology. While firms that pursue web accessibility stand to gain market share and avoid litigation, most firms have been reluctant to thoroughly implement web accessibility features. This study explores how firms can communicate their commitment to web accessibility to consumers without disabilities. Prior research indicates that displaying a web accessibility certification badge on a website positively affects the firm’s perceived corporate social responsibility (CSR). This project examines the impact of a web accessibility indicator on consumers’ purchase intentions. Grounded in the attitudinal model, the research links beliefs about CSR to attitudes and purchase intentions. Four key variables are considered: website utility, website quality, corporate social responsibility, and trust. Additionally, participants’ attitudes towards the website are measured. The primary dependent variable is purchase intentions. A randomized experiment will involve participants viewing the

website of an online book retailer, with the treated group being randomly assigned to a website with an accessibility indicator, and the control group assigned to a website without an indicator. Following the website content, all participants will respond to questions that test the theoretical framework. The analysis will be carried out using t-tests and linear regression. I hypothesize a positive relationship between the following: a) the presence of an accessibility indicator and at least one of the belief-related variables; b) beliefs and attitudes; and c) attitudes and purchase intentions. The study aims to elucidate the broader impacts of web accessibility features, particularly in influencing consumer perceptions and decisions. By demonstrating the positive effects of accessibility indicators on consumer behavior, this research can encourage more firms to adopt inclusive web practices, thereby advancing digital accessibility.

Musammat Islam

MI - Wayne State University

Discipline: Social Sciences

Authors:
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Ty Partridge, Ph.D.

Abstract Name: Arab American Identity on Depression and Anxiety Through Experience of Racism

Individuals who identify as Middle Eastern, North African, or Arab (MENA) living in the United States navigate complex religious, social, and cultural contexts as they develop from childhood through adulthood. The experiences and identities of MENA individuals are influenced by global political events such as 9/11, the War on Terror, or refugee experiences (Awad et al., 2019; Marvasti, 2005). These experiences are associated with higher levels of depression and anxiety. This secondary study examines the correlation between the Arab American identity and depression and anxiety through the experience of racism.This study was a secondary analysis of data collected as part of the Detroit Arab American Study (see Baker et al., 2003). Data was collected in 2003 and included a representative random sampled Arab Americans living in the tri-county Detroit region. It was originally conducted to assess the impact of 9/11 on the lived experiences of Arab Americans. It consisted of n=724 adults who self-identified as Arab American, 53.2%(n=385) identified as female, and 45.3%(n=328) identified as male.We conducted a structural equation model to test two main hypotheses: increased Arab American identity would be associated with higher levels of depression and anxiety, and the relationship would be mediated by experiencing anti-Arab racism. Our model (see figure 1) found an adequate fit to the data ($\chi 2[66] = 3{,}129$, p<.001; CFI = .94, TLI = .92; RMSEA = .053; SRMR = .06. Further, the relationship between Arab American identity was fully mediated by anti-Arab racism experiences for depression (b=0.031, p = .017) and anxiety (b=0.029, p = .007). A strong Arab American identity was associated with significant increases in anxiety and depression. These relationships, however, were mediated by having anti-Arab racism experiences in the post-9/11 environment. As anti-Arab racism rises, individuals identifying as Arab Americans continue to experience anxiety and depression.

Kelly Isola

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
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#2 Michelle Chung
#3 Elizabeth Crago

Abstract Name: The Influence of Age and Biologic Sex on Presenting Symptoms of Subarachnoid Hemorrhage

Subarachnoid hemorrhage (SAH) is an abrupt and often devastating hemorrhagic stroke resulting from a blood vessel rupture that leaks into the arachnoid space. While patients report a range of symptoms, the hallmark symptom of SAH is sudden, often severe headache. Outcomes after SAH have differed by age and biologic sex, but differences in presenting symptoms has not been well reported.The purpose of this study was to examine if there are differences in presenting symptoms by age or biologic sex at a single stroke center.Demographic and clinical data was collected from the patient, caregiver or chart including symptoms and reason for seeking medical care prior to SAH hospitalization.This retrospective analysis included 491 SAH patients (72.5% female). Age was dichotomized to greater than or less than the mean age of 53 years. Headache was reported in 86% of this sample followed by nausea (47%), vomiting (46%) and stiff neck (33%). The presence of headache was also the most frequent reason for seeking care (49%) followed by a report of unresponsiveness (25%). Most patients reported consistent (53% or worsening (26%) symptoms prior to admission. ANOVA analysis using SPSS v26 showed significant differences in symptoms by patient age. Patients <53 years were more likely to report headache (p=.013), blurred vision (p=.013) and seizure activity (p=.038) than patients in the older group. Patients > 53 years were more likely to report confusion (p=.017) than those in the younger group. There were no significant differences in symptom reports by biologic sex.This analysis found that headache remains the most commonly reported SAH symptom. This analysis also suggests, that age may influence the symptom experience, with younger patients reporting the presence of a wider range of symptoms than older patients after SAH. How or if this influences recovery warrants additional investigation.

Ambrozia Itellari

IL - Elmhurst University

Discipline: Natural and Physical Sciences

Authors:
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#2 Stacey L. Raimondi

Abstract Name: ATRIP Expression is Correlated to Breast Cancer Staging and Hormone Receptor Status but not Patient Demographics

Newly identified in March 2023, ATRIP has become a breast cancer gene of interest. It is observed that variants of ATRIP have led to identification of people experiencing further genetic risk for breast cancer. This gene, called also the ATR Interacting Protein, is a relevant gene involved in the DNA reparation process. The presence of ATRIP (ATR) triggers a cellular response to DNA damage and forms an interaction complex that detects and repairs damaged DNA, assisting with overall genomic stability for humans. However, when the ATRIP gene undergoes mutations, it is no longer functional, and thus decreases in gene expression. Altered ATRIP weakens the process of oncogene regulation, which creates favorable conditions for the proliferation of breast cancer cells. The primary objective was to compare the expression patterns of the ATRIP gene with breast cancer patient data. The research unveiled additional patterns associated with ATRIP gene expression. To conduct this research, the National Cancer Institute Genomic Data Commons was used to gather and identify national data on breast cancer patient cases, including their demographic information, the severity/stage of the cancer, the procedures/treatments conducted on patients, and ATRIP gene expression. Particularly, the research compares and analyzes the expression of ATRIP in breast cancer patients based on their gender, race, cancer stage, estrogen receptor status, and progesterone receptor status. ATRIP gene expressions were found to be susceptibly lower in patient groups who were at cancer Stage IV and in patients who have an overexpression of estrogen and progesterone receptors. Therefore, understanding ATRIP's role

in breast cancer and pinpointing factors linked to its dysfunction may be a further step towards future targeted treatments.

Eliana Ives

CA - California Polytechnic State University - San Luis Obispo

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Gamification to Enhance Logistics Workers' Performance

Gamification is the use of game design principles and mechanics in non-game contexts to motivate and influence behavior. It involves applying aspects of games such as points and competition in scenarios that aren't normally considered games, most often in a work environment. The specific components of gamification and how they contribute to increased motivation and efficiency are up to debate, as well as the possible ethical concerns.This research connects logistics operations to gamification and investigates the effect of gamification on logistics workers as a tool to enhance performance within a dynamic and demanding industry. Key findings of this research include identification of specific gamification aspects such as points and rewards. This study also dives into the ethical considerations and potential disadvantages associated with gamification in logistics specifically. Ultimately, we seek to provide insights to logistics companies seeking to optimize operations and find out how gamification fits into that goal. The study showed potential for the application of gamification methods positively influencing worker productivity. However, to better understand how gamification could influence logistics workers, more extensive experiments and testing would be required.

Diego Izaguirre

IL - DePaul University

Discipline: Mathematics and Computer Science

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#2 Thiru Ramaraj

Abstract Name: A Study on the Efficacy of Normalized Compression Distance (NCD) to create Phylogenic Trees.

Traditional phylogenic computation methods involve comparing specific sections of a genome such as mitochondrial DNA or specific rRNA sequences. While it is very much possible to compare entire genomes doing so is computationally intensive and time consuming. In this study, we will verify the reliability and

accuracy of using Normalized Compression Distance (NCD) in comparison to traditional methods to create phylogenetic trees. The algorithm will take entire genomic data as input and output a distance matrix that can be used to create phylogenetic trees using an external application. This is done with minimal processing and fast execution of whole genomes. If we get a similar tree as the traditional methods, then we can be confident that the methods currently in use are accurate. If we get a dissimilar tree, it will imply there is some discrepancy between the traditional methods and NCD, which will open avenues for further study into the validity of the NCD-generated trees.

Tracy Izard

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

Authors:
#1 Tracy Izard
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Chloe Steber

Abstract Name: Lawn Ornament Shooters, Money Pouch, and Light Candles: Discrepancies in Photographic Image Naming

Image naming tasks are used to explore word finding processes. More normed image sets utilize photographs instead of line drawings (Souza et al., 2020). Photographs are more likely to elicit multiple names than line drawings due to richer details (Brodeur et al., 2010; Moreno-Martinez, Montoro & Laws, 2011). Further, images with high name agreement are elicited faster than those with low name agreement, specifically for low agreement items with multiple names (Alario et al., 2004; Madden, Sale, & Robinson, 2019). Norms for modal and alternative names for photographic stimuli are needed. Further, age-related lexical retrieval changes might be reflected in subtle changes in alternative names. The purpose of this study is to provide norms for name agreement and disagreement for older adults on a large set of photographs of everyday objects, the Bank of Standardized Stimuli (BOSS). Eighty native speakers of English, 40-80 years old, and free of neurologic deficits were recruited. Each participant was presented with 600 BOSS photographs and was asked to name each image as quickly and accurately as possible. The responses were transcribed and accuracy was recorded. Preliminary results revealed a mean accuracy of 83% and a modal name agreement of 77% across the 600 stimuli. A fine-grained coding analysis of correct responses into subordinate (bird–sea gull), synonyms (mobile phone–cell phone), and supraordinate categories (potato peeler – peeler), and of incorrect responses into misconceptions (kiwi – coconut), false responses (asparagus – artichoke) and idiosyncratic responses (lawn ornament shooter – toy soldier) is ongoing. Norms across the age range for image naming provide insight into changes and stability of lexical retrieval processes with age to better characterize normal and impaired performance. The disagreement norms will provide valuable insight into the sources of name disagreement and allow for a richer description of visual stimuli commonly used in psycholinguistic research.

Lauren Jablon

NC - Elon University

Discipline: Interdisciplinary Studies

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#2 Namaste Nina

#3 Jessie Moore

Abstract Name: A Rhetorical Analysis of Concussion Awareness: A Cultural Comparison in Popular Media in the U.S. and Argentina

My project assesses the differences in rhetorical strategies and design techniques of concussion rhetoric relayed in the popular media in both the United States and in Argentina. More specifically, it investigates the ways in which writers discuss concussions in magazines (particularly health/lifestyle, women-tailored, men-tailored, general, and sports-focused magazines) and in newspapers. This project incorporates a discourse analysis of both countries' texts, including cultural comparisons, to examine the differences and gaps in information relayed in popular media representations of concussions and other traumatic brain injuries (TBI's). The coding conducted demonstrates that concussion rhetoric differs between the two countries and that it is often solely located in more specialized sources; so, in this case, magazines and newspapers often lack sufficient mentions of concussions/ traumatic brain injuries in comparison to medical journals. In addition, my research analyzes the perceptions and attitudes regarding head injuries in both countries; differences in healthcare systems, trainings, and in the ways concussion rhetoric is relayed to patients and the general public depends on the particular socio-cultural contexts. The findings highlight a lack of sufficient research in Argentina and insufficient concussion understanding both by the general public and medical professionals in both countries. Ultimately, my rhetorical analysis displays the differences between the two countries and informs suggestions for how to improve concussion rhetoric in both Argentina and the U.S.

Lina Jabr

AL - University of Alabama at Birmingham

Discipline: Humanities

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#2 Rachael George
Rachael George

Abstract Name: In Pursuit of Equity: What Can College Students Do? A Model Proposed by Students From the University of Alabama at Birmingham

Diversity, equity, and inclusion (DEI) and the connection to social justice are important considerations in various contexts, including workplaces, communities, and educational institutions. Alabama, like many other places, has faced significant historical challenges and difficulties, but there has also been a variety of efforts to push forward initiatives to promote DEI as well as social justice across all communities. Student-led DEI initiatives have become increasingly valuable as universities face opposition, and also give students the opportunity to design and lead new and innovative endeavors. Having initiatives like this on campus is a key responsibility that universities have to protect freedom of speech in the face of external pressure, as well as academic growth. One way students have led DEI initiatives on the University of Alabama at Birmingham's (UAB) campus is through the Organized Radical Collegiate Activism (ORCA) conference. ORCA accepts presentation proposals from all students around Alabama who are involved in social justice efforts at their university or in their community. Examples of issues discussed can range from racial/cultural tolerance, LGBTQ+ issues, environmentalism, veteran advocacy, mental health, or any issues students deem to be significant. Such conferences are opportunities for students who may not see social justice as a space for them to learn from their peers about socially prevalent issues that are impacting communities across the state and nation and get involved in small ways. We will discuss the steps involved in organizing a successful social justice conference, its impact on UAB's campus, as well as how to implement the infrastructure of the conference at other universities. Student-led DEI initiatives can play a crucial role in fostering a more inclusive campus community. They provide students with opportunities to develop leadership skills, engage in meaningful dialogue, and contribute to positive change within their educational institutions.

Ruby Jackson

MT - Montana State University - Bozeman

Discipline: Engineering and Architecture

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#4 Dr. Seth Walk
#5 Dr. Jesse Randall
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Abstract Name: Sap Line Surveillance: Impedance Spectroscopy Sensors for Real-Time Biofilm Monitoring

Biofilm, an assemblage of surface-associated microbial cells enclosed in an extracellular polymeric matrix (EPS), is known to have pervasive effects in the food processing industry. Specifically, unwanted biofilm growth in maple sap lines reduces the economic syrup value. One technique to monitor biofilm growth in real-time is using microfabricated electrochemical impedance spectroscopy (EIS) sensors. EIS is a method that involves applying sinusoidal perturbations over a range of frequencies across an interface, and the responses are recorded. We integrated these sensors into sap lines to continuously measure biofilm growth, allowing producers to accurately track sap quality in real-time and make decisions on sanitation practices to improve maple syrup quality and economic value. Experiments were performed abiotically and biotically over a 72-hour time in a laboratory-controlled environment. For biotic experiments, Pseudomonas Sp. was isolated from maple sap lines at Michigan State University Upper Peninsula Forestry Innovation Center, and EIS data followed trends that suggest microbial growth when the inoculum was introduced to the system. Our study suggests that microfabricated EIS sensors can establish a reliable in situ quality control system, effectively aid in mitigating biofilm growth in sap lines, and define sap line disinfection protocols.

Gabriella Jackson

AL - Auburn University

Discipline: Health and Human Services

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#3 Brian Gillis

Abstract Name: The Relationship Between Therapist Within-session Behaviors and Client Outcomes

Therapist variability accounts for 5–15% of the change in couple therapy (Friedlander et al., 2006). Emphasizing in-session therapist behaviors could aid MFT Master's programs focused on molding therapeutic skills, improving outcomes, and promoting change for both partners in couple therapy (Baker, 2017).Efforts have been made to evaluate the therapist's behaviors within-session that impact client change at the initial stage of therapy. The Ratings of Therapists' General Clinical Skills/Qualities Scale (TGCSQ; Evans, Epstein, & McDowell, 2009) measures the therapist's actions focused on common factors. Using the TGCSQ, undergraduate students macro-coded therapy sessions (inter-reliability = .80), with a goal of seeing if factors on the TGCSQ were related to client outcomes, as shown through the Outcome Rating Scale

(ORS). The current study hypothesizes that higher ratings of therapist skills and qualities would be associated with the improvement of client outcomes. The findings of this study showed that on average, clients improved from session 1 to 5, and then leveled off. Higher ratings of the therapists' use of collaboration and structure tactics within-session predicted a shallower leveling-off of client outcomes. Objectively measuring within-session behaviors related to outcomes benefits couple and family therapists-in-training to improve skills. Training programs incorporating a student learning outcome directly connecting the tracking and adjustment of therapist within-session behaviors and client-reported change in therapy could benefit from measures like the TGCSQ. Training programs can connect specific therapist behaviors with client outcomes advancing clinical training.

Makena Jackson

TN - Trevecca Nazarene University

Discipline: Social Sciences

Authors:
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#2 Arielle Brengle
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Arielle Brengle
Delaney Short

Abstract Name: Perfectionism Related to Fear of Failure, Anxiety, and Academic Performance in College Students

Previous research supported the hypotheses of this study which stated that: perfectionism will be positively correlated with fear of failure; perfectionism will be positively correlated with anxiety; and perfectionism will be negatively correlated with academic performance. After IRB approval the study was conducted. A total of 111 undergraduate students at a small private university in the southeast region of the United States were anonymously surveyed using a 38-item instrument composed of the International Anxiety Questionnaire, the Performance Failure Appraisal Inventory, and the Multidimensional Perfectionism Cognitions Inventory, with four additional demographic questions at the end. The surveys were completely voluntary and given within approved classrooms of various studies. Of the 111 participants, 42 were males, 67 were females, and 2 chose other or not to disclose their gender. Ages ranged from 18 to 30 years old. Surveys were scored and results were calculated using a Pearson r correlation analysis through the SPSS program. After analysis of the results, hypothesis one, perfectionism and fear of failure being positively correlated was supported with a significant positive correlation. The second hypothesis, perfectionism and anxiety being positively correlated was supported with a significant positive correlation. Lastly, hypothesis three, perfectionism being negatively correlated with academic performance (measured using GPA), was shown to have no significant correlation. Limitations of this study included the small number of classes the surveys were approved to be administered in, small class sizes, inability to use freshmen data due to them not having a GPA with the institution yet, and the possible inaccurate representation of academic performance due to people not checking their education portal for their reported GPA. It is recommended that further study of this topic takes a more accurate measure of academic performance and looks into a possible correlation of these factors related to gender.

Jateya Jackson

OK - Langston University

Discipline: Natural and Physical Sciences

Authors:

#1 Jateya Jackson
#2 Rpuchala Puchala

Abstract Name: The effect of Sericea Lespedeza on Methane Emission and Health Status in Grazing Boer Goat Wethers

Twelve Boer goat wethers were used to determine effects of feeding Sericea lespedeza as supplemental pellets or grazed forage on ruminal methane emission and health status. There were 4 5-wk periods. Periods 1-3 were on a 0.7-ha grass pasture and period 4 was on a 1.1-ha pasture of Sericea lespedeza. A forage-concentrate pellet was supplemented in period 1 (CON1), 3 (CON2), and 4 (SL-P), and pelleted Sericea lespedeza was given in period 2 (SL-S). Ruminal methane emission was measured with GreenFeed. Pellets were dispensed up to 30 times daily, with 6 sessions of 5-9-g bait drops and a 2.5-h interval. Body weight at the end of periods generally increased as period advanced (35.7, 38.8, 37.9 and 41.1 kg for CON1, SL-S, CON2, and SL-P, respectively). Sericea lespedeza decreased methane emission, with pasture grazing having greater effect than pellet supplementation (43.7, 36.2, 40.9, and 32.5 g/d for CON1, SL-S, CON2, and SL-P, respectively). Likewise, SL consumption decreased FAMACHA score, with a similar effect for both SL forms (3.28, 2.95, 3.21, and 2.86 for CON1, SL-S, CON2, and SL-P, respectively). Body condition score was similar among periods (2.65, 2.64, 2.68, and 2.67 for CON1, SL-S, CON2, and SL-P, respectively). In conclusion, the effect of SL consumption on methane emission probably relates to condensed tannins and greater impact of SL-P could involve a higher dietary level. Similarly, inclusion of SL in meat goat diets has potential to decrease the parasite load and thereby improve health status, also presumably because of bioactive condensed tannins.

Morgan Jackson

CA - Occidental College

Discipline: Social Sciences

Authors:
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Susan Geffen

Abstract Name: How Themed Classes Influence Students Perceptions of Learning

Themed classes teach class content through the lens of real world topics or popular content (e.g., Psychology of Sesame Street, Taylor Swift, Musical Theater). They aim to increase student engagement and absorption of the material by presenting the content in new and exciting ways. Most of the research done on themed classes uses non-empirical methods and leaves many unanswered questions. The current study expands on previous research evaluating how student engagement and performance differs between multiple themed and non-themed courses using a pre- and posttest design. The survey evaluates students' perceptions of their engagement and performance based on three categories: impact on learning, effort, and engagement. We hypothesized that students will report greater engagement with the class material while also learning more for themed courses compared to non-themed courses. Currently, there are no significant findings between groups based on the pretest data, but we predict that may change once posttest data is collected. Posttest data will be collected by the time of the conference and will be included in the poster along with the pretest student survey data for themed and non-themed courses. A potential explanation for these findings can be that students won't report higher engagement or impact on learning before they take the class because they can't predict how influential the themed content will be towards their learning, engagement, and effort. But we predict that students will report higher levels of engagement and impact on learning in the posttest data for themed courses compared to non-themed because they will be more engaged in the themed class due to the content being something they can more easily relate to and take interest in.

Millettia Jackson

GA - Fort Valley State University

Discipline: Education

Authors:
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Abstract Name: Creative Writing in the K-12 Curriculum

Creative writing pedagogy describes the methods by which educators teach creative writing. In this sense, creative writing refers to works of fiction, non-fiction, and other forms of writing that may not adhere to a standard academic and business structure. Creative writing pedagogy can include providing tips for writing, exploring different forms and genres of creative writing, and how to utilize the time and space to actively practice writing. Although studies on creative writing show that there are major academic and personal benefits, it is an underused and underserved discipline in the K-12 classroom. The goals of this study are to increase awareness around the importance of creative writing pedagogy in the K-12 classroom, to identify the barriers that prevent the full benefits creative writing can provide, and to provide policy recommendations for how to increase creative writing in the K-12 ELA curriculum in the United States. This research uses a historical literature-based analysis to examine the evolution of the academic discipline of creative writing in the K-12 classroom from the 1950s to today. Additionally, this study reveals the barriers K-12 teachers face when integrating creative writing pedagogies into the English Language Arts (ELA) curriculum in the United States and assesses their impact on the K-12 classroom from 2000 to 2020. The research identifies three main barriers educators experienced to integrating creative writing pedagogies including funding, curriculum structure, and cultural context.Keywords: Creative Writing Pedagogy, K-12 Curriculum Policy, English Language Arts (ELA) Common Core, STEM, STEAM, English Education, Hip Hop Pedagogy

Mikayla Jackson

AL - University of Alabama at Birmingham

Discipline:

Authors:
#1 Peter Shen

Abstract Name: Impaired motor learning in Rett syndrome mice with MECP2 deletion in purkinje cells of the cerebellum

Autism is a neurodevelopmental disability that manifests cognitive and behavioral impairments. These dysfunctionalities include repetitive behaviors, motor inabilities, and decreased social skills. Rett syndrome (RTT) is one severe autistic disorder that primarily occurs in females. RTT is caused by mutations in the MECP2 gene, which is situated on the X chromosome. RTT individuals demonstrate abnormal motor function traits. Considering the role of the cerebellum in motor coordination and learning, we hypothesize that Purkinje cells, the principal neuron type in the cerebellum, are linked to motor dysfunction in mice with the absence of MECP2. Our hypothesis was tested by creating mice with this conditional MECP2 deficiency. In this study, we compared two mice groups: MECP2 knockouts and controls. These two groups were first confirmed using the immunofluorescence assay. We further examined motor learning by investigating classical eyeblink conditioning in which a signal light is paired with air puff to generate a conditioned response. Our data show that mice with MECP2 deletion in Purkinje cells exhibit impaired conditioned response, suggesting deficits of motor learning. Altogether, this study clearly reveals the significance of impaired cerebellar function in RTT, which contributes to various neurological and neuropsychological aspects of this neurological brain dysfunction.

Jessica Jacob

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Dr. Andrew McDonald

Abstract Name: Determining The Impact of Tumor Location on Brain Atrophy in Varying Regions of the Brain in Patients with Low-Grade Gliomas

Introduction: Approximately one-third of all brain tumors are gliomas, which are tumors arising from the brain's support cells called glial cells. These can result in cerebral atrophy (brain shrinkage); while atrophy is common due to aging, severe forms are fatal. We hypothesized that shrinkage of non-tumor brain regions-of-interest (ROI) will be greater for low-grade glioma patients who have tumors in areas with more white matter pathways connected to the ROI. Thus, we aimed to examine the varying levels of interconnection between specific regions of the brain and their effects of brain atrophy. Methods: 174 patients with glioma diagnoses out of 8,310 scan sequences were considered. Information including tumor laterality/lobe, focality, size, pretreatment scan availability, and sequence type were compiled onto a masterlist. After obtaining T1 non-contrast MRI sequences, 3D Slicer/SynthSeg applications were used to analyze patient segmentations. All errors were examined for these patient scans, with most contributed to imaging issues. The independent variable for our study was the interconnection level between certain brain regions. The dependent variable was atrophy level.Results: Out of approximately thirty patients who experienced a decrease in hippocampal volume from years 1 to 2, the majority had tumors located in the frontal/temporal lobes, with fewer located in the parietal lobe and almost none in the occipital lobe.Conclusions: As the hippocampus is based in the temporal lobe, and the frontal lobe is instrumental in memory retrieval, these two lobes have a greater impact on total hippocampal atrophy as compared to the other lobes.

Marlena Jacobo

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

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Abstract Name: Hurricane exposure and sociocognitive health in a nonhuman primate

Hurricane-induced environmental instability increases the risk of mortality in animal populations, including humans. Although this suggests hurricanes are significant modifiers of health trajectories, the link between hurricane exposure and individual health remains unknown. Here, we evaluated the role of hurricanes as drivers of health by characterizing sociocognitive health in a cross-sectional sample of rhesus macaques (Macaca mulatta) at Cayo Santiago, Puerto Rico exposed to a major hurricane at different life stages and contrasted these patterns with known developmental shifts in social cognition in stable environments. We experimentally measured sociocognitive health of males and females by recording their looking time toward a sequence of varying expressions of conspecific photographs (i.e., neutral, threat), and tested whether mean

looking time changed after the hurricane event. Individuals attended less to faces of conspecifics overall after the hurricane. After controlling for age and experimental variables, mean looking time to a female conspecific photograph significantly decreased after a hurricane ($b = -0.51$, $t = 3.08$, $p = 0.002$). Similarly, mean looking time to a male conspecific significantly decreased after a hurricane ($b = -0.81$, $t = 2.59$, $p = 0.01$). Notably, individuals were similarly sensitive to emotional threat faces before and after the hurricane. These findings suggest that hurricane-induced environmental instability may promote a decrease in social attention which is important toward understanding which factors are influenced by the environment and how they impact social health.

Ariana Jacobs

MN - Minnesota State University - Mankato

Discipline: Social Sciences

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MacKenzie Berg

Abstract Name: Re-examining Resiliency, Mindfulness, and Seasonal Affective Disorder Related to Stress

Stress is a common experience for all individuals, especially college students. College students experience stressors including: high tuition rates, outrageous academic standards, and worry for grades (Etherton et al., 2022). Hudd et al. (2000) suggests that this stress negatively impacts college students. Stress in college students has been shown to increase: low self-esteem, difficulty sleeping, lack of energy, and poor health (Hudd et al., 2000). Taken together, these negative effects of stress impact college students' ability to be successful individuals and academics. Therefore, the present study examines the impact of stress on academic performance and well-being. Here we explore how aspects of positive psychology moderate stress among college students. Further, we explore how seasonal affective disorder (SAD) may play a role in student success and stress. Previously, we found that students who reported lower levels of stress also reported increased resiliency and mindfulness behaviors. Further, we found a significant gender effect. The present study further examines and investigates the variables of stress, mindfulness, and resilience, as well as including SAD and how it may impact student stress levels. Here we continue our survey on behaviors related to college students' academic and everyday lives with a goal of obtaining at least 100 new responses across different school levels and demographic characteristics. Original data was collected Fall and Spring semester 2022-2023. We intend to continue data collection through Spring semester 2024. This continuation study will contribute to knowledge about the overall mental health impact of stress and the moderators of resiliency and mindfulness. We hypothesize that the college students who have higher levels of resilience and mindfulness will also report lower stress, SAD, and higher achievement in academics. The overall analysis will aid in better understanding the relationship between stress and resilience in current students at our university.

Madison Jacobs

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Madison Jacobs

Abstract Name: Turkish Feminist Challenging the Competing Images of the Ottoman Harem

Throughout history, the idea of the harem has existed in societies globally. These harems consisted of women who resided in imperial or wealthy households that afforded separate private and public domestic spaces. In each case, at some point, the society questioned the objectification, exploitation, and patriarchal nature of these harems. This research focuses on the Turkish harem during the last four decades of the Ottoman Empire during which multiple social reforms occurred, generating various social movements, including feminism. I argue that during this period, Turkish feminism, supported by the government, challenged the patriarchal treatment and subjugation of women as exemplified by the Ottoman harem, but also collaborated with the harem by exploiting the immunity of harem women to enhance their movement. During the various reform periods, Turkish feminism drew on Western feminist ideology but also challenged the growing European interest in purporting a false narrative of harems by Western orientalist artists. This narrative was due to a fetish for the "exotic" and ethnocentrism, combined with European patriarchal practices of objectifying women. This research is based on the formal and iconographical examination of depictions of harems by Osman Hamdi Bey, Fabio Fabbi, and Müfide Kadri, within the framework of scholarly art historical and historical research on the harem, Turkish feminist movement, and Orientalism. The study, therefore, contributes to research of the Ottoman harem and Orientalism by examining the concepts of the feminist movement in Turkey.

Madison Jacobs

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Madison Jacobs

Abstract Name: Artistic National Identity Rhetorics in Post-Colonial Morocco and India

Between 1912 and 1956, Morocco served as a protectorate of both France and Spain. Whereas India has faced colonization by Britain since the 18th century. As colonial societies, Europeans romanticized both Morocco and India in their art by way of fetishization and idealization of the "exotic." Significantly, both Morocco and India were decolonized in the mid-1900s, and artists, respective to their countries, participated in the formation of new national identities. This comparative research argues that both Morocco and India experienced a negotiation between the Populists, Nativists, and Bipictorialists. During Morocco's protectorate, which occurred simultaneously with Modernism, three groups of artists were identified in Moroccan art by how they approached nationalism in their work: the Populists, Nativists, and Bipictorialists. These three national identity rhetorics continue to be relevant after decolonization and were carried on by post-colonial artists establishing new national identities. In Morocco, the notion of the Populist, drawing almost explicitly on Western aesthetics, is exemplified by Hassan El Glaoui. Fatima El-Farouj and Ahmed Cherkaoui advocate the Nativists by leaving behind Western art influences. Finally, Farid Belkania, the father figure of the reinvention of the Casablanca Art School, explores Bipictorialists that combine Moroccan and Western (specifically French) artistic cultural production. Similarly in India, artists such as Francis Newton Souza, Jamini Roy, and Nalini Malani advocated the populist, nativist, and Bipictorialists notion of Indian identity in their artwork. The study utilizes semiotic examination of artwork and scholarly research on national identity formation and decolonization to contribute to the limited research of comparative studies on post-colonial societies between Morocco and India.

Ilana Jacobson

PA - Millersville University

Discipline: Education

Authors:
#1 Ilana Jacobson

Abstract Name: Best Practices for Language Acquisition

This thesis examines dominant language acquisition and implications for “best practices” in two contexts – Italy and the United States. This study has implications for improving language learning for learners in multicultural contexts. For the purposes of this study, dominant language acquisition refers to children learning a language other than their home language that is primarily spoken in their schools. The study was conducted through cross cultural comparison of curriculum and instruction, as well a review of United States ELL policies and practices in comparison to Italian Language acquisition policies and practices. Data collection included school observations in Italy, interviews of Italian school personnel, and curriculum and related document review in Reggio Emilia, Italy. Data analysis was conducted using recommendations established by Saldaña (2022). Findings and implications relate to best practices for dominant language learning for multilingual children.

Janelle Jacques

CA - Chapman University

Discipline: Natural and Physical Sciences

Authors:
#1 Janelle Jacques
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Abstract Name: Developing A Lewis Acidity Scale For Redox-Inert Metal Salts

In this work, we determined the ability of different Lewis acidic salts of alkaline, alkaline earth, and redox-inert transition metals to form complexes with ammonia and fluoride ions. To achieve this, we utilized modern density functional theory (DFT) techniques. The energies resulting from the complexation studies were used to generate two Lewis acidity scales, namely the fluoride ion affinity and ammonia affinity for these salts. These scales will serve as a tool to evaluate each Lewis acid's effectiveness in extracting fluorides from organofluorides and promoting the coupling of the organofluoride to amines to form nitrogen-rich compounds.

Unser Jaffry

MI - Michigan State University

Discipline: Health and Human Services

Authors:
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Abstract Name: The association between cause-specific mortality in people with diabetes and the social determinants of health: A county-level analysis of US data

Through this research, an attempt has been made to explore the correlation between different factors for

mortality among people aged 25 or older with diabetes and the social causes impacting human lives. By making an analysis of the primary available data, reports and research articles concerning the United States. Through this study, we tried to identify how social determinants fluctuate mortality rates for individuals suffering from diabetes. Moreover, this study finds a major connection between cause-specific mortality and social determinants. The findings of the research underline the significance of addressing the prevailing economic, societal, and environmental factors to elevate health standards and their results for people suffering from diabetes.

Akash Jagdeesh

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Akash Jagdeesh

Abstract Name: A Three-Dimensional in vitro Model of Disease That Improves Preclinical Research by Incorporating Genetic Diversity and Increasing Physiological Accuracy

Biomedical research is essential for the discovery of new medications and treatments, and is built upon the cooperation of preclinical (in vitro/vivo) research and clinical trials. However, 85% of treatments successful in vitro/vivo fail in clinical trials, suggesting that in vitro models are poor indicators of clinical success. The issue lies in conventional “two-dimensional” in vitro models containing genetically identical cells grown on a flat plate, which lack the variety of cell types and cooperation/structure found in real tissue. Moreover, 2D in vitro models do not simulate humans’ genotypic variability, which affects both pathophysiology and treatment effectiveness. In contrast, 3D in vitro disease models (e.g. organoids/spheroids) contain the extracellular components, structures, cell-cell interactions, and microenvironment observed in human tissue, resulting in more physiologically accurate disease models. This paper consolidates current research of 3D in vitro models of varying complexities for different diseases to propose an effective and efficient solution for creating 3D in vitro models. Organoids should be the model of interest for organ/tissue-specific diseases and tumors, while patient-derived xenografts formed by implanting organoids into humanized mouse models should be used for studying body-wide disease/treatment effects. Growing organoids in prepared hydrogels allows them to mimic a human extracellular matrix and microenvironment, and adjusting the hydrogel’s characteristics allows control over organoid growth/differentiation. Sourcing undifferentiated stem cells from patients of different ethnicities, ages, and socioeconomic statuses allows representation of diverse populations and corresponding epigenetics. Adipose stem cells are abundant and easily accessible with minimally invasive procedures.

Johana Jaimes

CA - Dominican University of California

Discipline: Social Sciences

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#1 Johana Jaimes

Abstract Name: Healing Ethnic Divides: The Promises and Limitations of Consociational Government in Bosnia-Herzegovina

Bosnia-Herzegovina was entrenched in civil warfare between the years of 1992-1995. The establishment of

the Dayton Accords in 1995 was intended to transform Bosnia-Herzegovina into a livable functioning Democracy. With help from the international community, the Dayton Accords presented Bosnia with the opportunity to develop a government that would effectively address the country's ethnic tensions. While there have presently been no outbreaks of a second civil war ethnic tensions within Bosnia are still causing immense polarization, impeding the government from creating necessary symbolic legislation, and furthering discrimination against ethnic minorities. Ethnic conflict literature has found that strong governmental foundations and cultural alignment help to resolve conflict among groups. The consociational government that was established in the Accords was intended to guarantee the inclusion of all ethnic groups into the political process and prevent one group from becoming the majority. Why has the consociation of the political system set up after the Dayton Accords in Bosnia not resolved ethnic tensions in the country? Using the case study method this thesis will analyze the government structure and policy making process in Bosnia-Herzegovina to understand why the framework established by the Dayton Accords has not lessened ethnic tensions, has not advanced the passage of legislation important to certain ethnic groups, or prevented further social divide in the country.

Devanshi Jain

CA - University of California - San Diego

Discipline: Engineering and Architecture

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Preston Gomersall
Devanshi Jain

Abstract Name: Robust Design and Optimization of Turbomachine Compressors

This research is dedicated to advancing gas turbine technology for a greener and more cost-effective commercial air transportation. Our focus lies in optimizing the High Pressure Compressor (HPC) component of NASA’s Energy Efficient Engine (EEE) which compresses air prior to entering the combustion chamber. Our goal for the research project was to improve the compressor’s pressure ratio from inlet to outlet to enhance the efficiency of the combustion process. Factors affecting compressor performance, such as blade twist angle, blade geometry, and shroud and hub tip clearance, are analyzed and optimized to improve efficiency and overall performance. We created Computational Fluid Dynamics (CFD) models within the Ansys software suite and successfully optimized the model of the HPC by leveraging the San Diego Supercomputer Center. This research achieved a pressure ratio increase across the first four stages of a ten-stage compressor, surpassing NASA's 1980s model. This paper outlines the methodology, including geometry generation using Ansys BladeModeler, blade row meshing with TurboGrid, and CFX simulations. The optimization process involved multiple design iterations and a response surface method to attain the highest pressure ratio. Our multidisciplinary approach underscores the potential of leveraging emerging technologies of CFD, and High Performance Computing to significantly improve the efficiency of existing models, as exemplified by the successful optimization of the EEE’s HPC.

Rishabh Jain

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:

#1 Rishabh Jain
#2 Anuj Sharma
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Abstract Name: Retrieval Augmentation Generation (RAG): Advancing Analytical Precision in Multimodal Data.

In the face of escalating data volumes and computational constraints, this research introduces the sophisticated Retrieval Augmentation Generation (RAG) methodology. Tailored to the intricate challenge of analyzing heterogeneous data sources, RAG utilizes an Extract, Transform, Load (ETL) process to systematically structure data. Advanced Machine Learning techniques, encompassing Dimensionality Reduction, Feature Engineering, and Clustering, construct a comprehensive data source. Visualization techniques, coupled with Tableau integration, facilitate nuanced pattern exploration. Fine-tuning a Large Language Model ensures precise inferences, minimizing hallucinatory outcomes. Additionally, RAG extends its purview to extract information from PDF documents, contributing substantially to a more exhaustive analysis of data.This research presents a technically sophisticated and holistic approach to analyzing and visualizing data from disparate sources. The convergence of clustering visualization, chatbot interaction, and Tableau integration underscores the adaptability of the proposed methodology. Despite achieving a commendable 98% accuracy rate, user evaluations identified areas for improvement, emphasizing the need for continuous enhancement to address diverse user queries. Expert opinions were consulted to validate results, providing valuable insights for future refinements. Notably, the chatbot has actively engaged with thousands of queries, revealing that while the model has successfully addressed the majority of questions, ten specific inquiries yielded unsatisfactory results, highlighting opportunities for targeted improvement.This research introduces a comprehensive technical solution for assessment reports and identifies opportunities for future enhancements. Validated by expert opinions, incorporating user feedback serves as a roadmap for continuous improvement. As the technological landscape evolves, the iterative refinement of the RAG methodology will ensure its adaptability and effectiveness in extracting meaningful insights from heterogeneous data sources, contributing to the advancement of analytical precision in technology assessment reports.

Ayush Jain

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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#2 Brian Popko

Abstract Name: Significance of m6A mRNA Methylation in CNS Demyelination and Inflammation

This research explores the role of the METTL14 gene in oligodendrocytes, the cells responsible for myelin production in the central nervous system (CNS). Myelin is very important in nerve conduction and has a strong correlation with demyelinating diseases such as multiple sclerosis (MS), the study aims to unravel the impact of METTL14 on oligodendrocyte function and survival.Using mouse models, MS-like symptoms were induced through Experimental Autoimmune Encephalomyelitis (EAE) and cuprizone models, representing autoimmune and toxic demyelination, respectively. Through tamoxifen inducible Cre recombinase, METTL14 was selectively ablated in oligodendrocyte precursor cells (OPCs) and mature oligodendrocytes.Results revealed distinct outcomes in both models. In the EAE study, METTL14 ablation in mature oligodendrocytes led to reduced T-cell infiltration and tissue damage at post-induction day 30, suggesting a protective effect. Additionally, at the peak of the disease, METTL14 ablation resulted in increased proliferation of OPCs. In the cuprizone study, METTL14 ablation in OPCs led to a reduction in OPCs during the peak of the disease at two weeks.The research incorporated advanced techniques, such as Tamoxifen IP Injection, immunohistochemistry, and HALO software for quantitative analysis. Some of the key markers include PDGFRa for OPCs identification, Ki67 for cell proliferation, CC1 for mature oligodendrocytes identification, MBP for myelin staining, and TPPP for myelinating oligodendrocytes identification. They were employed to assess the effects of METTL14 ablation in immunohistochemistry staining.In conclusion, this study provides several insights into the epigenetic regulation of the myelination process and the impact of METTL14 on oligodendrocyte survival and functionality. The findings suggest a potential therapeutic avenue for demyelinating diseases by targeting METTL14. Further research will investigate the effects of METTL14 in the brain, specifically the corpus callosum due to its high density of oligodendrocytes.

Tanya Jain

TX - Rice University

Discipline: Natural and Physical Sciences

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#3 Gang Bao

Abstract Name: Engineering Useful Gene Therapy Vector Properties in the Baculovirus

Viral methods are commonly used for the delivery of gene therapies. Current common viral delivery methods include lentivirus and adeno-associated virus. These can efficiently deliver DNA into living systems, but have small packaging capacities, unable to hold larger constructs created to deliver more complex, nuanced therapies. This research aims to use baculovirus, an insect-virus with a comparatively large carrying capacity, to deliver inducible, targeted gene therapies to mammalian systems. This work focuses on the process of producing pseudotyped baculovirus containing proteins to enhance transduction, immune protection, and

targeting. Genes for the pseudotyped proteins were placed downstream of the p10 insect promoter in the baculovirus genome using standard molecular cloning techniques. Baculovirus was then produced, purified, then tested in vitro on various cell lines using GFP as a reporter for transduction, as well as in vivo in C57BI6 mice using a firefly luciferase reporter. Both in vitro and in vivo, vesicular stomatitis virus protein-G (VSV-G) has been determined to improve transduction efficiency. With VSV-G, a three-fold increase in transduction was observed in HEK293T and C2C12 cells, and a 30-fold increase was seen in HEPA-1,6 cells. Decay accelerating factor (DAF) also appears to provide protection from the complement portion of the immune system. In vivo, while pseudotyping with VSV-G and DAF independently increased baculovirus transduction, adding both proteins to baculovirus together led to the highest transduction and expression that persisted for a month. Ongoing efforts are focused on the engineering and production of pseudotyped baculovirus containing proteins to enhance targeting and transduction in primary T-cells. The level of control afforded to clinicians and researchers by the large DNA capacity of baculovirus can be used to implement small-molecule inducible systems for temporal control of therapeutic gene expression, or autonomous cell-state sensing mechanisms to monitor and respond to CAR T-cell activity in vivo.

Praniya Jakkamsetti

TX - The University of Texas at Dallas

Discipline: Natural and Physical Sciences

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#7 Ana Hernandez-Reynoso

Abstract Name: Validating methods of diagnosing urinary tract Infections in rats post spinal cord injury

Spinal cord injury (SCI) results in paralysis of extremities and can have a significant impact on bladder function, thus diminishing quality of life. Current treatments, including intermittent catheterization to empty the bladder, provide symptomatic relief but carry notable side effects, including urinary tract infections with a 15% mortality rate, emphasizing the need for innovative approaches. The rat is one of the most used animal models to investigate novel treatments. However urological procedures including intermittent transurethral catheterization can result in bacteriuria. It is difficult to determine if the observed bacteriuria represents a urinary tract infection (UTI) because there are no rapid and validated tools to screen for UTIs in rats. The objective of this study is to identify a rapid and reliable method for diagnosing UTIs in rats, ensuring diagnostic accuracy and eliminating false positives. Urine samples were collected through sterile transurethral catheterization in rats and tested with two methodologies: 1) UTI home test strips and 2) urine culture as a control. The UTI test strips allow quantification of leukocyte concentrations and pH levels, common indicators of UTIs. Concurrently, urine culture via CHROMagar Orientation provides preliminary species identification in these samples. Results showed that samples with higher pH levels and increased leukocyte concentrations exhibited more bacterial colony forming units on CHROMagar. We found a 100% accuracy using the leukocyte indicator and an 89% accuracy with the pH. The leukocyte indicator showed a 100% diagnostic sensitivity, indicating a high probability to detect an UTI if it is present. The pH indicator showed an 11% incidence of false positives. These results support the use of the leukocyte indicator in UTI home test strips for rapid screening in rats. This research is a critical step towards developing rigorous workflows for diagnosing UTIs in rats and facilitating the optimization of urological procedures in post-SCI rats.

Julia Jakusz

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

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#3 Taufeeque Ali

Abstract Name: Phenylboronic Acid Nitrogen Mustards induce P53 Upregulation Inhibiting Cell Migration and Invasion in Breast Cancers

Breast cancers are renowned for their heterogeneity and aggressive nature. The limited treatment options and less favorable prognosis, particularly in Triple-negative breast cancers, position them as the most aggressive among various cancer types. The Peng group has pioneered the development of FAN-NM-CH3, a ROS-activated prodrug that surpasses others in its category, including the FDA-approved chlorambucil and melphalan, by multiple folds. This prodrug exhibits selectivity for H2O2, upon encountering it, activation occurs. The potent activated drug then proceeds to Alkylate DNA strands, hindering cancer cell replication and leading to their death. Gene expression evaluation revealed an upregulation of the tumor suppressor gene P53, supporting a transcriptional mechanism that induces tumor shrinkage. The tumor suppressor P53 protein plays a crucial role in maintaining genomic stability and regulating cell division, preventing uncontrolled and rapid proliferation. The observed increase in P53 expression in cancer cells treated with the prodrug suggests its role as an upregulator of the P53 protein, which, in turn, suppresses tumors. These findings provide valuable insights into the prodrug's function within cellular pathways, shedding light on its regulatory role over other genes that contribute to tumor suppression.

Mariam Jama

EGY - The American University in Cairo

Discipline: Natural and Physical Sciences

Authors:
#1 Mariam Jama

Abstract Name: TEG-working Principle and TEG Performance Analysis

Critical problems currently facing the world include global warming, rising power costs, and population growth. Scientists are working to increase the effectiveness of energy harvesting in this regard. The improvement of the power generation industry is concentrated on waste heat recovery systems using thermoelectric generators (TEGs), which have proven to be capable of converting thermal energy directly into electric energy through the Seebeck effect. TEG is regarded as an environmentally benign power source because it utilizes the existing waste heat sources in a variety of applications to generate electricity. The integration of thermoelectric systems with other technologies for the generation of green energy is introduced in the current study. This paper presents an in-depth analysis of thermoelectric generators (TEGs). Specifically, a comprehensive overview of their working principles from, such as the Seebeck effect, the Peltier effect, the Thomson effect, materials used, Figure of Merit, improvement techniques including different thermoelectric material arrangements and technologies used, and substrate types is provided. Additionally, potential applications of TEGs and their current status and future prospects are discussed. Finally, the importance of predicting the output of thermoelectric devices is highlighted. Moreover, The performance of a combined solar photovoltaic (PV) and thermoelectric generator (TEG) system is examined. Further research should be conducted to investigate potential ways of improving the output of thermoelectric

systems, as well as to explore different methodologies for utilizing them in various settings. It is essential to underline the importance of predicting the output of thermoelectric devices, as it will help determine the future use of this new technology as well as select the most suitable design parameters for thermoelectric generators and systems.

Yahya Jamaleddin

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Yahya Jamaleddin
#2 Nobel Makonnen
#3 Jonathan Finkel
Nobel Makonnen

Abstract Name: Examining the Virulence of Candida Albicans

The CDC is aware of at least 25,000 candidemia which is a fungal bloodstream infection occurs each year. Candida albicans was the focus of this lab over the summer, it is an organism that is famously known to cause severe infection by building off of microbial surfaces known as biofilms. Biofilms form when yeast cells attach to a surface and then later fungal cells spread, beginning the change from yeast to a filamentous cell. After the final step of maturation, any cell that is not attached to the matrix are then released into the surrounding environment. This is precisely what causes the infections we see. What this summers research was focused upon was understanding the how, what, and why of the attachment and if there could be any way we could target a drug to resolve this issue. We looked for defects in the attachments by completing a virulence assay and using many strains from a mutant library, a positive and negative control was used alongside it as well. What was found of interest particularly was the Cht2 gene because of its enhanced virulence .

Zakaria Jamari

MN - University of Minnesota - Twin Cities

Discipline: Social Sciences

Authors:
#1 Traci Mann

Abstract Name: Understanding Healthcare Experiences

Disparities in health between Black people and white people are signs of a systematic and serious public health crisis that needs extensive attention to understand causes and find solutions. Understanding the overall experience of Black patients when seeking medical treatment is a necessary part of this research, because it has been shown that poor treatment by doctors leads people to avoid the healthcare system entirely, leading to worse health outcomes. The research I conducted compared the personal experiences of young Black people who sought medical treatment to those of White people. Using the prolific recruitment website I surveyed 125 Black participants and 103 White participants about their most recent experience with the medical system, and explored any disparities that emerged. Results showed few disparities in reported treatment by healthcare providers. Black patients waited significantly longer to see their doctors than White patients, $t(221) = 2.125$, $p < .035$. However, providers spent more time with Black patients than White patients,

t(226) - 3.64, p < .001, and Black patients and White patients did not differ in how warm or competent they felt their provider was. This was fewer disparities than I expected based on the literature, but I noticed the following unusual features of the participants, which may explain this. First, a third of the Black patients saw a Black doctor, which is much higher than the national average (6%), and 54.4% of Black participants had seen their provider at least once before, which might suggest they liked the provider's care at least somewhat, or they would not have chosen to see them again.

Pranav Jambulingam

FL - Florida Atlantic University

Discipline: Health and Human Services

Authors:
#1 Pranav Jambulingam

Abstract Name: Public Perception of AI Integration in Healthcare: A Survey Study on US Citizens

In recent years, the revolution of artificial intelligence (AI) has taken the world by storm. From education to entertainment, the integration of AI has had many benefits on how we live our day-to-day lives, the potential to lower costs being the most prominent. Healthcare is a sector in which AI has not had much entry due to its dependency on human-to-human interaction, and it is imperative to understand how and why this will change as this determines the future for all patients and healthcare workers. To analyze US citizens' opinions on the integration of AI in healthcare settings, I designed an 18-question survey that was sent to various US citizens on Amazon Mechanical Turk. This resulted in 189 complete surveys. Important revelations have been revealed from this survey that could predict a promising future for AI in healthcare. From surgery to radiology, US citizens are hesitant to let AI alone fully control their medical procedures but are increasingly open to AI's involvement in addition to a human. The less invasive the procedures, the more open people were to AI's involvement. Surprisingly, the older the respondents were, the more open they were to AI being integrated into their healthcare. These results are essential for future healthcare workers looking into studying one of the various fields of medicine as their prospective field may soon be obsolete. Radiology, for example, has become a field of medicine that US citizens have been far more amenable to with the use of AI. In order to better understand the future of AI, we need to understand how comfortable people are with AI in healthcare settings, and this study provides a basis for that understanding.

Jihra James

OK - Langston University

Discipline: Natural and Physical Sciences

Authors:
#1 Jihra James
#2 Fatma Dogan
#3 Mark Poznansky

Abstract Name: Development of a Novel Microgel Containing CXCL12 and Fas-ligand to Enable Allo-islet Transplantation Without Systemic Immune Suppression for Type 1 Diabetes

Type 1 diabetes (T1D) is an incurable disease caused by autoimmune destruction of pancreatic islet cells. Islet transplantation has proven to be successful in curing T1D, but the requirement for chronic systemic immunosuppression and the scarcity of donor islets are barriers to its implementation. The objective of our

research is to combine the immune-modulatory proteins, CXCL12 and Fas-Ligand (Fas-L), with allogenic donor murine alloislets to enable immunoprotection and support of beta-cell function without the need for systemic immune suppressionAs a first step towards this objective, we have constructed a streptavidin (SA) fusion protein with the immunomodulatory proteins FasL and CXCL12 that self-assemble with and then release from biotinylated microgels. We are currently studying how these immune modulatory proteins are released from the microgel in vitro. To this end, we are developing a novel HABA (4'-hydroxyazobenzene-2-carboxylic-acid) based assay to quantitate this. The ratio of unbound HABA to HABA bound to free biotin or SA-CXCL12 protein can be read by measuring light absorbance at 500nm. In this way, we have begun to determine the kinetics of the release of SA-CXCL12 and SA-FasL from biotinylated microgels. After conducting HABA assay, a western blot was done which showed biotin release from microgel in our initial experiments. These initial studies reveal a potentially complex pattern of release of SA-CXCL12 from the biotinylated microgel in vitro that demands further exploration.

Trejon James

OK - Langston University

Discipline: Health and Human Services

Authors:
#1 Trejon James

Abstract Name: Potential Meditators of PTOA

Post traumatic osteoarthritis (PTOA) develops as a result of injury to the joint. This process involves progressive joint damage and chronic low-grade inflammation that leads to PTOA pain. This summer, I focused on damaging joint calcification and a serum macrophage-related inflammatory biomarker as potential mediators of PTOA pain. Progressive joint calcification is associated with sensory nerve growth, and soluble CD-14 is an activated macrophage biomarker associated with OA severity. Given that PTOA pain is related to both peripheral and central changes in the nervous system, we hypothesized that PTOA pain is more strongly correlated with circulating CD14 levels compared to joint calcification. We tested this hypothesis in lean and obese adult mice. 16-week-old male and female mice were fed either a high fat or control fat diet. At 36 weeks of age, mice were anesthetized and had a non-injury sham load or rapid compressive load applied to the knee to cause PTOA. Von Frey filament and Dynamic weight bearing tests were used to evaluate mechanical pain sensitivity before injury (baseline), and two- and four-weeks post injury. At 40 weeks of age, the mice were euthanized, and we collected knee joints and serum. We used micro-computed tomography to quantify joint calcification, and we quantified serum CD14 using an enzyme linked immunosorbent assay. At baseline, diet did not alter pain sensitivity. Pain sensitivity increased two weeks after both compression injury and sham loading to a similar level in lean and obese mice. We are completing the four-week post injury data analysis, and we have collected all samples to measure serum CD-14 and joint calcification. We will compare the increase in pain sensitivity to serum CD-14 concentration and joint calcification volume to test our hypothesis.

Ebrahim Jamil

TX - University of Houston

Discipline: Mathematics and Computer Science

Authors:
#1 Ebrahim Jamil
#2 Jai Manghnani

Jai Manghnani

Abstract Name: Prediction of Loan Defaultation by using IBM Watson Based Machine Learning Techniques

This research pertains to the utilization of artificial intelligence/machine learning to predict loan defaults. The outcome of this research will aid banks in preventing credit losses. Our hypothesis is that the personal and social standing of the subject has the greatest impact on whether a loan will be defaulted. For this research, a dataset from Kaggle was gathered from Coursera's Loan Default Prediction Challenge. The data took in multiple categories to predict loan defaults, ranging from income to education. The aim of the study was to develop algorithm based predictive models that can predict the outcome with a high accuracy, and pinpoint significant factors. IBM Watson Cloud based platform was used to conduct this investigation, considering its capability to select high-performance algorithms to generate models such as ROC curves, while also using enhancements. For the current data, the most prominent models were XGB Classifiers and Snap Random Forest Classifiers. The XGB Classifier models performed slightly better, having an accuracy of 88.6% with and without enhancements, while the Snap Random Forest Classifier models had an accuracy of 88.5%. The ROC curves for all models differed slightly. XGB Classifier models with enhancements demonstrated higher values for sensitivity and specificity, but it is important to note the higher specificity rates in every model, signifying its benefits for identifying loans without a default. When evaluating the different features affecting the predictions, Age exhibited the highest feature importance of 100%. However, the two XGB Classifier models had a feature/product (Age,Income) which also scored a 100% feature importance. These models provided a significant insight into how machine learning could successfully detect loans that would not have defaults. Nonetheless, further research should be conducted in identifying ways to advance them to be more successful in identifying loans that will be defaulted.

Nainil Jariwala

WI - University of Wisconsin-La Crosse

Discipline: Interdisciplinary Studies

Authors:
#1 Nainil Jariwala

Abstract Name: Analyzing GPT-4's Predictive Power in Stock Market: A Comparative Study of individual Technical, Fundamental, and Sentimental and multi-modal Analyses Across Diverse Financial Data Sets

The integration of artificial intelligence (AI) into financial domains has become a focal point of interest, particularly with the recent advancements in large language models. Our study explores the predictive capabilities of GPT-4 in stock market analysis, using results of few-shots (pre-trained) and zero-shot analysis by employing different indicators and datasets from technical, fundamental, and sentimental analyses, as well as a multi-modal approach to the stock market. Building on existing research, our study addresses the gaps in empirical validation, especially in substantiating GPT-4's predictive prowess. Notably, we draw inspiration from successful endeavors using sentimental analysis, adapting the variable StockTwits for our research. Additionally, we refine multi-modal analysis based on lessons learned from failures in the Wall Street Neophyte study, incorporating additional indicators as well as data using prompt engineering and prompt tuning.To investigate GPT-4's potential to outperform traditional methods individually and in combination, a variety of variables, including historical patterns for technical analysis, financial data for fundamental analysis, and media and social media for Sentimental Analysis, will be fed to GPT-4 through carefully crafted prompts. Anticipated outputs include predictions of price lows and highs, accompanied by Standard Deviation and efficient explanations for the predictions made, facilitated through Chain-of-thought prompts. Furthermore, we also describe the strengths and limitations of GPT-4 by comparing its results, using a few statistical measures, with current leading domain-specific fine-tuned models, namely AltIndex, Danelfin, Candlestick.ai, EquBot, including the state-of-the-art model FinBERT (for sentimental analysis), with the real stock market prices/data. The aim is to provide a comprehensive understanding of GPT-4's rationale in

forming predictions, ensuring transparency and reliability in its analytical capabilities. This research holds practical significance and explores how AI, in general, can help both novice and experienced traders, offering a potential breakthrough in financial market trading strategies and AI's predictive abilities.

DANIAH JARRAH

FL - University of Central Florida

Discipline: Social Sciences

Authors:
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Abstract Name: Navigating a Fragmented Landscape: Insights from Civil Society Actors in Lebanon

In the contemporary era, civil society has become an essential component for addressing the political liberalization and democratization of Middle Eastern regimes. This study concentrates on civil society in Lebanon, a small democratic nation in the Levant. Lebanon's government is a consociational system characterized by dysfunctional power-sharing among sectarian parties. Comprehending the factors in Lebanon that influence civil society's ability to function and serve its purpose is essential. This understanding can assist in gaining insights into how civil society activists in the Middle East may mobilize to contribute to purposeful political and social evolutions.This exploratory study seeks to gain a better understanding of how Lebanese civil society functions and the factors that contribute to its capacity (or incapacity) to resolve societal challenges in the context of the Lebanese state's frailty. This study seeks to analyze the impact of multiple contemporary stressors on the fragile state infrastructure, namely the over a decade-long hosting of Syrian refugees and the country's recent political and economic collapse. It also aims to examine how these particular challenges have affected the function of civil society, as well as the intricate dynamics between various organizations at the national and international levels.The gathered evidence supports the conclusion that civil society organizations (CSOs) in Lebanon struggle to navigate a landscape characterized by multiple crises and a faltering public sector. As local CSOs devote a significant portion of their attention to humanitarian aid and external funding, their interactions with international NGOs and Syrian refugee populations contends with complex challenges. Ultimately, this reality has revealed the diminished capacity of CSOs to contribute to meaningful and lasting change in the country.

Madisyn Jarvey

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Madisyn Jarvey
#2 Gustav Pieper
#3 Aveya O'Donnell
#4 Rachel Cohen

Abstract Name: Expression of myoneurin in the green anole lizard (Anolis carolinensis)

The green anole lizard (Anolis carolinensis) is seasonally breeding such that this lizard displays major differences in physiology, morphology, and behavior between the breeding and non-breeding seasons. During the non-breeding season, the lizard will have smaller gonads, lower sex hormone levels, and a decrease in

reproductive behaviors compared to breeding lizards. In this study, we are examining myoneurin (MYNN) mRNA expression to determine whether this gene is involved in mediating seasonal changes in the green anole. MYNN is known to regulate transcription and control the expression of genes; our group predicted that MYNN will be more present in the non-breeding season. To do this, we first designed several primers sets that amplify the anole MYNN gene and used PCR and gel electrophoresis to confirm the quality of our primers. We verified that only one of our primers sets amplified MYNN through DNA sequencing. We then isolated mRNA from the hypothalamus of breeding and non-breeding male and female lizards ($n = 6$), performed cDNA synthesis, and set up standard curves. Our group ran standard curves for the MYNN gene and received inadequate results. The efficiency value equated to zero for each of these runs. We think it is likely that our primers may have been contaminated, resulting in the failed standard curve. Finally, we were able to perform a full run on our control gene, Beta-actin, and we found no differences between sex and season ($p \geq 0.377$). Future research will involve continuing to trouble shoot our qPCR conditions to successfully amplify MYNN. This work will help us determine if MYNN is involved in regulating seasonal changes in the brain that correspond to reproduction.

sanjukta jayaprakash

CA - Mount Saint Mary's University

Discipline: Natural and Physical Sciences

Authors:
#1 Sanju Jayaprakash

Abstract Name: Tulsi as a Natural Remedy for Type II Diabetes

Type II Diabetes is caused by the lack of insulin receptor signaling present in beta cells, which inhibits the absorption of glucose. Human Islet Amyloid Polypeptide (hIAPP) is co-expressed with insulin, however, the aggregation of the hIAPP creates amyloid fibrils which cause beta cell death. Tulsi extract has been shown to naturally and effectively reduce hypoglycemia in rats. It is also thought to have anti-diabetic and antioxidant properties. The objective of this work is to determine the effect of Tulsi on the viability of beta cells and observe its effect on hIAPP toxicity levels. Tulsi was extracted with ethyl acetate and its effects on cell viability were tested using MTT Assay. After determining the optimal concentration of the Tulsi extract, the cells and extract were tested against hIAPP. High concentrations of Tulsi extract decreased cell viability, but the 1:5 dilution of the extract did not drastically reduce viability. HIAPP in all concentrations decreased cell viability and proved to be toxic to RIN-m cells. HIAPP combined with low concentrations of the Tulsi extract did not decrease cell viability. Higher concentrations of the Tulsi extracts had the ability to save the cells from the toxic hIAPP. In the future, even higher concentrations of Tulsi can be tested against hIAPP to further determine its effects on beta cells and the molecular processes involved.

Prapthi Jayesh Sirrkay

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
#1 Markus Meyer

Abstract Name: Using Confocal Microscopy to visualize the interaction between SERCA2A and phospholamban in cardiomyocytes to demonstrate that Ca2+-dependent PLB deinhibition of SERCA2A is a viable approach to improve cardiac contractility

Heart Failure with Reduced Ejection Fraction (HFrEF) is characterized by the inability of the heart to pump blood efficiently due to left ventricular (LV) enlargement. HFrEF accounts for approximately half of the 23 million heart failure cases annually. Impaired calcium uptake into the sarcoplasmic reticulum (SR) is a key abnormality in failing hearts. The regulation of SR calcium uptake is mediated by a Ca(2+)-ATPase known as SERCA2, and its activity is controlled by a protein called phospholamban (PLB). The inhibitory interaction of SERCA2a and PLB is the main regulator of cardiac contractility. The Meyer lab developed a construct utilizing a green fluorescent protein (cpGFP) inserted between SERCA2 and PLB. This construct allowed for the selective interference study of the recombinant protein SERCA2a-cpGFP-PLB. By using a Nikon A1R FLIM Confocal Microscope, we will be able to visualize the interaction between SERCA2A and PLB in rat cardiac myocytes during contraction and relaxation and demonstrate that Ca2+-dependent PLB disinhibition of SERCA2A through an increase in stimulation rate is a viable approach to improve contractility. In patients with heart failure with reduced ejection fraction (HFrEF), there is a decrease in the levels of SERCA2a and an increase in the inhibition of phospholamban (PLB). This alteration makes the SERCA2a-PLB complex a potential target for drug therapy, as it plays a central role in regulating the contractility of the heart. Visualization of the temporal interaction between these proteins in a single heartbeat will allow us to determine how to best interfere with this mechanism. This would also allow researchers to understand better and predict how pharmacological drugs could alter the protein kinase A pathway and alter calcium cycling in the cell.

Seynha Jean Coute

NY - SUNY Geneseo

Discipline: Interdisciplinary Studies

Authors:
#1 Seynha Jean Coute

Abstract Name: From Sub-Saharan Struggles to Caribbean Crisis: Tackling Child Soldiering Globally with U.S. Intervention

The phenomenon of child soldiers, once primarily associated with Sub-Saharan Africa—home to approximately 40% of the world's child soldier population—has expanded geographically. According to the United Nations, from 2005 to 2022, over 105,000 children were confirmed recruited by armed groups worldwide, with the actual number likely surpassing that figure. This disheartening reality has also reached the shores of the Caribbean, especially Haiti. Child soldiers, by definition, constitute a group of children—boys and girls from all over the world—engaged in roles such as armed soldiers, spies, chefs, porters, messengers, or, alarmingly, sex slaves. The use of child soldiers reflects a complex and deeply rooted set of issues often arising from socioeconomic challenges, political instability, and armed conflicts. Our initial research, conducted in the spring of 2022, and supported by existing literature, consolidated our findings on child soldiers in selective regions of Sub-Saharan Africa. These regions included Liberia, Sierra Leone, Somalia, Burundi, Rwanda, Sudan, Ivory Coast, Congo- Brazzaville, and Congo-Kinshasa. As we expanded our work beyond Sub-Saharan Africa, we were able to substantially assess the global involvement of international organizations such as Human Rights Watch, Save the Children, and the Coalition to Stop the Use of Child Soldiers. The aim of our current paper is three-fold: firstly, we will contextualize our data-informed definition of the child soldier phenomenon within Sub-Saharan Africa. Secondly, as we revisit key postures of local governments and the U.S. foreign policy landscape, our analysis will unveil a comparative study of the said phenomenon from Sub-Saharan Africa to Haiti. Thirdly, we will share potential solutions and strategies that could be conducive to sustainable positive changes in fighting the phenomenon. It is our hope that such a comprehensive approach could ensure a thorough understanding of the multifaceted reality of a child soldier, both regionally and globally.

Casey Jeanes

CO - University of Northern Colorado

Discipline: Natural and Physical Sciences

Authors:
#1 Casey Jeanes

Abstract Name: Quantification of Lactic and Acetic Acid Concentrations in Silage

Silage is an integral source of feed for livestock who depend on farmers to provide the proper nutrition to ensure their health and wellbeing. Fermenting plant materials such as corn and alfalfa extends the bunk life of the feed and makes the feed more palatable to farm animals. To determine the quality of the fermentation, it is necessary to quantify the lactic and acetic acids in the silage as their respective quantities are key indicators of proper fermentation. Lactic acid, primarily generated as a byproduct of lactic acid bacteria (LAB) fermenting sugars, is the major acid in fermentation. Through microbial and enzymatic oxidation, a portion of lactic acid is converted into acetic acid, while acetic acid is also produced by other microorganisms. High concentrations of acetic acid often lead to a prolonged fermentation period, while low concentration of lactic acid is an indicator of restricted fermentation. Consequently, quantitative analysis of these acids is a useful metric for ensuring proper silage fermentation. This study, will determine if lactic and acetic acids can be quantified through titration and develop a method to quantitatively analyze the acid concentrations through proton nuclear magnetic resonance (1H NMR) spectroscopy. Although lactic and acetic acids can be quantified using enzymatic methods and by high performance liquid chromatography (HPLC), NMR allows the analyst to measure the concentrations of both acids using a single spectrum taken in a matter of minutes. This study investigates the use of 1H NMR as an alternative method of quantitative analysis that is economical, requires minimal sample preparation, and does not require toxic reagents as opposed to previously mentioned methods. Overall, the application of NMR spectroscopy in this context holds promise as an advantageous approach to lactic and acetic acid quantification.

Hanna Joy Jefcoat

AL - University of North Alabama

Discipline: Natural and Physical Sciences

Authors:
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#3 Jared Truitt

Abstract Name: Investigating Missense Variants in Cleavage Sites of Alzheimer’s–related Amyloid Precursor Protein

Alzheimer’s Disease is the most common neurodegenerative disorder in the world and can be caused by aggregations of amyloid beta protein in the brain. Amyloid beta is a derivative of amyloid precursor protein, which is coded for by the APP gene. When APP is atypically expressed, amyloid beta can be aggregated into longer chains, forming plaques. The oligomers and polymers that make up these plaques are toxic and illicit cascading reactions, causing neurotransmitter interruption and cell death. This study investigates 10 missense amino acid swaps in APP cleavage sites using homology modeling and data gathered from pathogenicity predicting software. It is expected that missense variants in APP cleavage sites may be pathogenic to protein structure and function.

Sweta Jena

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
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#2 Elizabeth Tarazi
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Elizabeth Tarazi

Abstract Name: Participants' Experiences with a Telerehabilitation Behavioral Intervention to Improve Physical Function and Physical Activity After Lung Transplantation: A Mixed-Methods Study

Health intervention studies increasingly leverage telehealth, therefore assessments of patient experience during an intervention are critical to determine reception and the extent to which the intervention met their needs. The study's purpose was describing the experiences of lung transplant recipients (LTRs) randomized to the telerehabilitation behavioral intervention of Lung Transplant Go (LTGo), a clinical trial assessing the efficacy of a supervised exercise training and behavioral coaching via a video conference platform, compared to enhanced usual care with self-directed activity tracking and monthly newsletters. Data collected at 3 months and 6 months included semi structured interviews (SSI), telehealth usability questionnaires (TUQ), and adherence patterns (number of phase 1 exercise sessions completed and phase 2 phone calls). The sample was comprised of 38/44 (86%) of LTRs who completed at least one SSI. Throughout the study, interviews collected open-ended comments which were mostly positive at 3 and 6 months post-intervention. Negative comments about technology only occurred at 3 months; all 6-month comments were positive. Participants completed a mean of 9.35/12 weekly Phase 1 sessions, 7.45/8 behavioral topics, and 2.23/3 monthly Phase 2 phone calls. Average scores for the TUQ were 6.43/7 (the higher the score the greater usability). TUQ scores and adherence remained high throughout the study and feedback from the SSIs was predominantly positive. The few negative comments were related to intervention feedback about the intervention progression and time commitment. As TUQ scores and adherence rates remained high, it is unlikely that the uses of telehealth systems was a significant barrier to accessibility and reception by LTRs. The participant feedback suggests that participants view telerehabilitation as an acceptable approach to rehabilitation. But further research at a larger scale is necessary to determine if telerehabilitation is an acceptable and sustainable method for self-management beyond the active intervention period.

Bree Jenkins

ID - Idaho State University

Discipline: Natural and Physical Sciences

Authors:
#1 Bree Jenkins
#2 Kathleen Lohse
#3 Evan Bilbrey

Abstract Name: Changes in Quality, and Bioavailability of Dissolved Organic Matter in a Semiarid Intermittent Stream Network as a Result of Seasonal Drying and Rewetting

Dissolved organic matter (DOM) serves as a significant source of energy and carbon in stream ecosystems. The quality and bioavailability of DOM can strongly influence the transfer of energy and carbon to higher trophic levels facilitated by stream microbes. (Fellman et al,. 2008). In intermittent stream networks, seasonal drying and rewetting has been shown to affect the quality of DOM, although it remains unclear how the

correlation between bioavailability and quality of DOM varies with seasonal drying and rewetting. We measured quality and estimated bioavailability of DOM using bottle incubations from seven locations in the Gibson Jack watershed in Southeastern Idaho. We hypothesized that bioavailability of DOM would decrease with seasonal drying, and with that change, the quality of DOM would be more aquatic and microbial in character, showing a higher biological index (BIX). Our results showed that BIX, as measured by fluorescence spectroscopic techniques, increased during drydown suggesting the DOM was from autochthonous origin. Contrary to our hypothesis, we found that the bioavailability of DOM decreased with dry down by approximately 2% throughout the watershed whereas it increased by 2% during re-wet. Our findings suggest that the percent bioavailability of DOM decreases as the quality of DOM becomes more humic, or terrestrial like in character, during rewet, while the percent bioavailability during dry down increases as the quality becomes more humic. These findings contribute valuable insights into understanding the intricate relationships within intermittent stream networks during seasonal changes and have implications for broader ecological and biogeochemical processes.

Brady Jenkins

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Brady Jenkins

Abstract Name: Colson Whitehead’s Martyr for Racial Acceptance in

Throughout history, racism has been at a constant high, only finding suppression through the appearances of martyrs. Colson Whitehead’s The Nickel Boys portrays the young Elwood Curtis as a martyr for a new wave of racial acceptance among America’s youth. Exploring the short life of Elwood as a Black teenager growing up in 1960s Tallahassee, readers find an experience that is all too common for the minority youth of this time. From racism and discrimination to mutilation, Elwood experiences a cruel, unfair reality that is defined by his false sentence to Nickel Academy. Elwood’s life is ultimately cut short when he is executed by the administrators of the prison masquerading as a reformatory school. Pushing past the harshness brought on by the racism dwelling in the hearts of those around him, Elwood finds motivation through the words of Martin Luther King Jr. and friendship through another African American teenager who shares the same fate as him. Elwood meets Turner after arriving at Nickel Academy. Turner stays by his side until Elwood is executed by the Nickel staff. Turner pushes forward and continues his life in New York City, burdened by the trauma he suffered at Nickel Academy. Turner chooses to lead his life following Elwood’s ideals and beliefs, paralleling the dynamic of Jesus Christ and his apostles. Turner does not completely escape due to the past trauma and guilt holding him back. As Martin Luther King Jr. became a martyr and Jesse Jackson pushed forward, Elwood becomes a martyr and Turner becomes his follower, tougher and militant, driven by the death of his guide.

Danielle Jensen

MD - Salisbury University

Discipline: Mathematics and Computer Science

Authors:
#1 Danielle Jensen
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Abstract Name: Geometric Distribution of Order r

Individuals have attempted to describe the patterns and movement of the stock market using Normal Distribution. The normal distribution, considered a thin-tailed distribution, does not properly convey the probability of unlikely events. Due to its thin-tailed nature, the probability of a rare event occurring is found to be a very small probability, so small it can be considered zero. Should Normal distribution be the correct distribution to model stock market, then events such as “Black Swan” events, events that are random and highly unexpected, would not occur (Taleb, Chandler, 2007). A few examples of “Black Swan” events include: the financial crisis of 2008, the COVID-19 global pandemic in 2020, and the volatility of stocks of 2020. The application of Geometric distribution of order r could more accurately describe the patterns within these rare events. The theoretical properties of Geometric distribution of order r will be applied to real data from selected “Black Swan” events to show consecutive successes of observed drastic changes in the data. A financial recession and a global pandemic both qualify as unexpected events with minimal probability of occurrence. COVID-19 cases grew exponentially in 2020 throughout the nation and the stock market took a huge hit in 2020 concurrent with the increasing pandemic crisis effecting a majority of Americans. In 2020, the stock market, experienced severe volatility that supposedly had a probability of near zero. The drop in stocks blindsided many individuals and impacted many more. Finding the distribution that works best for such cases would provide more accurate description of real-life data. The growth of understanding within this area of statistics will only continue benefit those impacted by such unexpected events.

Matthew Jensen

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
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#3 David Sharlin
D'Aaliyah Johnson

Abstract Name: Turning-Up the Volume of Knowledge on Fam107a: A Novel Cochlea Expressed Gene

Insufficient thyroid hormone levels during critical windows of development result in hearing loss. Understanding how thyroid hormone mediates cochlear development is a critical step in understanding thyroid hormone-linked deafness. Recently, our lab identified Fam107a as a potential thyroid hormone regulated gene in the developing cochlea. The function of Fam107a is largely unknown, although several reports suggest it is a tumor suppressor. Furthermore, Fam107a expression in the cochlea has not been described. We hypothesize that Fam107a is a thyroid hormone-regulated gene and that its cochlear expression is disrupted following developmental hypothyroidism. To test this, timed-pregnant mice will be separated into two different experimental groups: euthyroid (control) provided with normal drinking water and hypothyroid (experimental) provided with water containing the thyroid gland inhibitor methimazole. The hypothyroidism inducing treatment will be administered from gestation day 13 (G13) until pup sacrifice during the perinatal period. The spatial and temporal pattern of Fam107a mRNA in the developing euthyroid and hypothyroid cochlea will be visualized using in situ hybridization (ISH). ISH will utilize a Fam107a cRNA successfully generated during academic year 2022-2023. Additionally, quantitative changes in Fam107a mRNA will be measured using real-time PCR. Our initial results suggest that Fam107a mRNA has regional specificity in the developing cochlea. Specifically, we note expression in certain epithelial cells of the cochlear duct. Overall, our goal is to understand Fam107a mRNA expression levels between hypothyroid and euthyroid (normal/control) mice. If Fam107a mRNA levels are impacted by developmental hypothyroidism, we propose that Fam107a might ultimately help understand deafness associated with low thyroid hormone in development.

Monica Jensen

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Monica Jensen
#2 Ashley Brandebura
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#5 Jazlynn Meza

Abstract Name: Characterization of disease progression in amyloid- and tau-based mouse models of Alzheimer's Disease

Astrocytes have a crucial function in regulating neuronal synapse formation, function, and elimination. One important mechanism to modulate neuronal synapses is by releasing a variety of secreted proteins that act at the synapse. In Alzheimer's Disease (AD), neurodegeneration may be perpetuated or triggered by astrocyte dysfunction that contributes to the progressive synapse loss and memory impairments characteristic of the disease. The astrocytes in AD transition to a reactive proinflammatory state, which involves morphological rearrangement of the intermediate filament protein, glial fibrillary acidic protein (GFAP), in astrocyte processes. These reactive astrocytes are less supportive of neuronal synaptic function. Therefore, we hypothesize that targeting astrocytes will attenuate disease progression. In order to test this hypothesis, we want to pinpoint the time point at which astrocytes are transitioning to a reactive state and use this time point for our interventions. We characterized the onset and progression of astrocyte reactivity, plaque burden and hyperphosphorylated Tau in two commonly used AD mouse models, APP/PS1 and Tau*P301S. Each mouse line was crossed into the Aldh1L1-Cre line to allow for Cre-dependent targeting of astrocytes in future intervention studies. Three different time points (4, 6 and 9 months) were analyzed to pinpoint the onset of astrocyte reactivity, plaque deposition and accumulation of hyperphosphorylated tau. We are using immunohistochemistry to quantify GFAP immunoreactivity, plaque density, and hyperphosphorylated tau area. Based on these findings, future intervention studies will be performed prior to the onset of astrocyte reactivity in an attempt to ameliorate astrocyte reactivity and slow disease progression.

Connor Jensen

WI - University of Wisconsin-Oshkosh

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Physical properties of electrospun Zinc Oxide and Titania-based nanofibers

By making polymer solutions containing metal precursors, nanofibers with various properties can be made utilizing electrospinning. The desired properties of these nanomaterials depend greatly on the conditions in which they are made, ranging from solution composition ratios to ambient humidity during the electrospinning process. These nanofibers have a wide variety of potential applications, from photocatalysts to medical applications for advanced drug delivery. The process of electrospinning composite nanofibers pose a challenge, especially when it comes to achieving production of structures with reproducible properties. The created nanofibers are analyzed using SEM (Scanning Electron Microscope), BET (Brunauer-Emmett-Teller) instrument, XRD (X-Ray Diffraction) system, and Ultraviolet-Visible spectrometer.

Maria Jensen

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

Authors:
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Abstract Name: Atheist Influencer's Perceptions of the Atheist Community

The internet has played an increasing role in our society, and many people have begun to find and form communities online. These communities can be especially important to people who are geographically isolated or socially isolated from others with similar views. One example is atheists. In this context, atheists can be defined as those who lack a belief in a higher power or any religion. On digital platforms, some people may become social media influencers, defined as people who have roughly 1,000 followers or more. This poster examines answers from fifteen qualitative interviews conducted by a research team in order to illustrate common narratives about how atheist influencers view themselves as being in a digital community, and how the influencers view their own roles and content in such a community. It also examines the role online platforms play in community building and if atheist influencers participate in more traditional, in-person communities as well. Findings suggest that atheists predominantly do not consider atheism to be a religion, but that they do perceive themselves as being in a community, albeit a loose one. Most do not consider themselves leaders or influencers, but many express a desire to create a small community with their own content by providing a safe space and setting an example for how people should act through their own content. While this study focuses specifically on atheists, aspects of this project can be applied more generally to the shifting of in-person communities to online communities and the increasing role of online spaces and interactions in everyday life.

Chloe Jepson

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: A targeted immunotherapy against aggressive ovarian cancer

Background: Ovarian cancer (OC) is a prominent cause of cancer-mediated mortality in women worldwide due to its aggressive and metastatic features. Current therapies extend survival of patients with OC; however, acquired resistance and a suppressive tumor microenvironment still remain issues. Moving toward a clinically relevant therapy, we validated the antitumor effects of combinatorial treatment using two immunomodulators, interleukins (IL)-7 and 12, enhancing potent inflammatory immune responses against various cancers.

Approaches: OCs contain high levels of exposed collagen types I and III. To achieve superior tumor-directed delivery while minimizing systemic adverse effects on the host, both IL-7 and IL-12 were fused to collagen-binding domain (CBD); CBD-IL-7 and CBD-IL-12, respectively. Antitumor responses were validated in vivo with a humanized mouse model. Female humanized mice were orthotopically xenografted with human OC cell line, SKOV3 (104 cells), to the left ovary. SKOV3 cells were genetically labeled with firefly luciferase and mCherry fluorescent protein for in vivo detection. Antitumor efficacy was determined via weekly bioluminescent imaging (BLI) and survival. Residual tumors that were undetected by BLI were confirmed via histology. Results: Tumor growth was confirmed via BLI weekly post-xenograft. Mice that received a one-time combinatorial treatment of CBD-IL-7 (125 pmol) and CBD-IL-12 (330 pmol) exhibited potent antitumor efficacy with no detectable toxicity. Tumor suppression was confirmed in 4/4 mice within four weeks of treatment. Survival analysis revealed a three-fold increase compared to the control group over four months. This model also supported the establishment of antitumor immune memory in 2/3 mice due to an evoked antitumor memory response against a second xenograft of SKOV3 cells subcutaneously. Conclusion: Our findings indicate that this tumor-targeted immunomodulatory approach against OC has increased potential to induce durable antitumor effects and immune memory responses without mediating severe toxicity to the host.

Elena Jerkovic

TN - University of Tennessee at Knoxville

Discipline: Natural and Physical Sciences

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#2 Doris D'Souza

Abstract Name: Persistence and cross-contamination of Listeria monocytogenes on avocadoes in the food environment

Listeria monocytogenes is a Gram-positive foodborne bacterial pathogen. Outbreaks linked to avocadoes and packaged fresh produce need to be prevented. Therefore, factors that enhance its ability to survive, adhere, and transfer to fresh produce need to be investigated. There is potential for contaminated surfaces to cross-contaminate fresh produce in the packing houses. The combined factors of low temperature, high humidity, and dust particulates that trap bacteria are crucial in dry environments for the survival of L. monocytogenes and its ability to transfer to fresh produce. Therefore, the main objectives of this research were to (1) Determine the survival of L. monocytogenes serotype 4b on avocado skins over 2 weeks at room temperature and at refrigeration (4oC) at high humidity conditions (76% relative humidity (RH); and (2) Determine the transfer of L. monocytogenes serotype 4b from a contaminated surface (stainless-steel) to avocados at room temperature. Our results showed that L. monocytogenes could persist on avocadoes under both temperature and humidity conditions for 2 weeks. Our cross-contamination studies showed that contaminated stainless-steel surfaces could transfer bacteria to avocadoes, and vice-versa from contaminated avocadoes to stainless-steel surfaces. This data is useful for risk-assessment analysis and implementation of appropriate control practices.

Himani Jha

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:

#1 Himani Jha
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Ambika Palleti

Abstract Name: Development of MATLAB Programs Addressing Heterogeneity for Meta-Analysis of Multiple Types of Research Data

In the field of medical research, meta-analysis plays a vital role in combining the results of multiple studies to comprehend its impact on subsequent decisions which are based on final research outcomes. We identified the need for developing open-source MATLAB programs that can be used to perform meta-analyses on correlational, binary and continuous medical data using the fixed-effects and random-effects models. The continuous fixed-effect model used the mean, standard deviation, and sample size to estimate the bias-corrected standardized mean difference (Hedges' g). For binary data, events and non-events in two independent groups were used to compute the Odds Ratio as the effect size measure, while in correlational data, the r value was used as the effect size. Subsequently, 95% confidence interval, z-value and p-values, along with the variance of the true standardized mean difference were calculated. The MATLAB programs were then validated by applying them to various examples of medical data. In the second part of the code, heterogeneity in the effect sizes was addressed using MATLAB. Our aim was to quantify this heterogeneity, separating the true variation and random error, there is a need to isolate true variance and then use it to identify various perspectives on the dispersion. To achieve this goal, the MATLAB model was further developed and determined the Q statistics (a measure of weighted square deviations), the results of a statistical based on Q (i.e., P), the between-studies variance (T2), the between-studies standard deviation (T), and the ratio of true heterogeneity to total observed variation (I2). This analysis provides evidence of heterogeneity in the true effect size. The open-source MATLAB code presented at this conference is available for any user to use. Each model presented will show validation results for various studies, ensuring the code's robustness and its potential for broader implementation.

Vaishali Jha

CA - San Jose State University

Discipline: Health and Human Services

Authors:
#1 Vaishali Jha

Abstract Name: Analysis of Cervical Cancer Predictions Using AI/Machine Learning Techniques

Cervical cancer continues to be a major public health concern, highlighting the critical importance of early detection. Leveraging advanced artificial intelligence and machine learning, like IBM Watson, facilitates timely diagnosis. Utilizing data from the UCI Repository, this study focused on identifying risk factors leading to cervical cancer biopsies. Annually, the U.S. reports approximately 11,000 new cases of invasive cervical cancer, resulting in 4,000 deaths, with a global toll of 300,000 women. Human Papillomavirus (HPV) is the primary risk factor, potentially compounded by Chlamydia infection. Family history of cervical cancer and long-term oral contraceptive use increase risks, likely due to reduced protective methods and hormonal impacts on HPV. Childbirth, especially with HPV, is associated with elevated risk. Smoking contributes to precancerous changes and invasive cervical cancer, particularly in HPV-infected women. Immunosuppressed individuals are more vulnerable to HPV and rapid cancer progression. The study's supervised models were enhanced with feature engineering techniques, achieving a remarkable 99.7% accuracy using the XGB Classifier and Decision Tree Classifier. Factors such as HPV infection diagnosis at 100%, CIN infection diagnosis at 47%, IUD at 18%, Age at 5%, Number of Sexual partners at 4%, Hormonal Contraceptives at 3%, Smokes (years) at 3%, first sexual intercourse at 10%, and number of pregnancies at 2% were assessed as potential risk factors. This high accuracy rate suggests that the models were successful in accurately predicting whether patients were at risk of cervical cancer. The presentation will discuss the

applied algorithms and the effect of split ratios on the model's outcomes. It will include the relative importance of how artificial intelligence can be used to help further advance the health environment.

Prashant Jha

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
#1 Kaitlin Klotz
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Abstract Name: Investigating the Roles of Telomerase RNA (TR) Structural Domains on TR Structure and Telomerase Activity in the Parasitic Protozoan, Trypanosoma brucei

Each time eukaryotic cells divide a small amount of DNA is lost from the chromosomal ends. This occurs because DNA polymerase is unable to perfectly replicate the chromosome ends, a phenomenon known as the end replication problem. As telomeres shorten, genes are damaged, leading to cell death. To prevent the degradation of genes, cells have caps of non-coding, repetitive DNA called telomeres at the chromosome ends to serve as a buffer. Telomeres are added to chromosomes by the ribonucleoprotein (RNP) complex, telomerase. Telomerase consists of telomerase RNA (TR) and the telomerase reverse transcriptase (TERT) enzyme, which maintain telomere length and genome stability. The TR provides a template for the addition of telomeric repeats to the chromosome ends while the TERT catalyzes the addition of repeats, thereby extending the proliferative capacity of cells. When either component is missing or mutated, telomerase function is compromised.Rapidly dividing cells rely on telomerase to extend their telomeres and support indefinite proliferation. Dysfunction of the telomerase complex has been linked to diseases including cancer, age-related disorders, and genetic syndromes. Understanding the role of telomerase RNA is crucial for developing new therapies to prevent or treat these conditions.Our research works to better understand the functions of discrete TR structural domains and their impacts on TR structure and telomerase activity in the parasite Trypanosoma brucei. We examine the impact of distinct TR domains on telomerase function. This work, along with planned studies will aid in understanding the telomerase RNA structure, and its distinct functions.

Arnav Jhawar

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

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#2 Kiran Bharadwaj

Abstract Name: Membrane Potential Dynamics During Bacteriophage Infection

Bacteriophages are viruses that infect and replicate within bacteria with the help of their host cellular machinery. They typically utilize a tail apparatus to establish a passage across the entire bacterial cell envelope, enabling the transfer of the viral genome into the host cell cytoplasm and initiating the infection process. It has previously been shown that membrane potential (MP) in bacteria plays an important role in cell-cell communication and metabolic coordination within bacterial biofilms. Studying the dynamics of MP during a single bacteriophage infection event can help us understand the propagation of phages in a

population, especially in the presence of anti-phage defense systems of different kinds. Bacteria have an abortive infection defense system that induces death or dormancy upon infection; providing community-level defense by preventing phage propagation within the population. It might be particularly interesting to observe the dynamics of MP during infection when the defense systems that induce bacterial dormancy are present.Here we us voltage-sensitive dyes (VSD) that rely on intamolecular photoinduced electron transfer to measure the MP dynamics. The dye molecule inserts into the lipid bilayer of the bacterial cell membrane. Any changes in the MP induce a change in the fluorescence quantum yield and excited state lifetime of the dye. Preliminary intensity-based widefield fluorescence measurements have been performed over long periods to record MP fluctuations in a single cell infected with phages in cell cultures of Bacillus subtilis (B. subtilis). Further experiments utilizing the dye's excited-state lifetime as an MP readout are currently being performed using (i) a commercial confocal FLIM and (ii) a home-built wide-field FLIM set-up that utilizes a time-gated SPAD camera and a phasor-based analysis to quantitively capture small changes in resting MP during the cell cycle.

Runpeng Jian

CA - University of California - San Diego

Discipline: Mathematics and Computer Science

Authors:
#1 Runpeng Jian

Abstract Name: Diffusion Models: Exploring Methods for Inverse Problems

Denoising diffusion models are known for their ability to generate diverse types of data that are not present in the original input. These models can handle various forms of data such as images, videos, and figures. The denoising process involves removing the predicted noise, obtained from a trained noise predictor, from a noisy image to align it with the user's desired outcome. In addition to advancements in diffusion models, significant progress has been made in solving inverse problems. These problems involve deducing or restoring missing or damaged parts of visual input data based on available observations. This research aims to investigate the potential of denoising diffusion models in addressing inverse problems, following two proposed paradigms presented at CVPR 2023: the replacement-based method and the reconstruction-based method. By exploring these approaches, we aim to uncover new possibilities for the application of denoising diffusion models in the field of inverse problems.

Madison Jiang

TX - The University of Texas at Dallas

Discipline: Natural and Physical Sciences

Authors:
#1 Madison Jiang
#2 Brandon Sturgill
#3 Joseph Pancrazio

Abstract Name: Effects of Antioxidant-coating for Microelectrode Arrays for Preserving Inhibitory and Excitatory Neuronal Populations

Intracortical microelectrode arrays (MEAs) are important for neuronal interfaces and are used in neuroscience research. These devices can record neural activity at single-neuron resolution (single-unit

activity). However, the recording performance of MEAs diminishes over time, at least in part due to neuroinflammation and associated oxidative stress. Moreover, prior literature suggests that inhibitory neurons are more susceptible to oxidative stress and physical trauma than excitatory neurons. Our previously published research has shown that coating MEAs with the antioxidant Mn(II)tetrakis(4-benzoic acid)porphyrin (MnTBAP) mitigates the loss of single-unit activity and improves chronic recording performances of MEAs. In addition, MnTBAP-coated devices demonstrated a decrease in genetic markers for inflammation and oxidative stress in tissue surrounding the implanted probe. In this study, we further investigate the effects of MnTBAP coatings on the recording performance of inhibitory and excitatory neurons. Single-unit activity can be classified into two subtypes of neurons based on the duration of their spiking activity: fast-repolarizing (putative inhibitory) and regular-repolarizing (putative excitatory). Using this classification, we will determine if the MnTBAP coating affects the recording of these putative inhibitory and excitatory neurons differently. From our previous study, we know that the MnTBAP coating results in a greater number of neural signals surviving at chronic time points. Here, we hypothesize that this effect is predominantly due to the protection of inhibitory neurons through the mitigation of oxidative stress. We expect to see more inhibitory neural signals for MnTBAP-coated devices than for uncoated devices, while uncoated devices should have mostly excitatory neural signals at chronic time points. Our findings will advance our understanding of how specific neuron subtypes respond to intracortical arrays and how MnTBAP improves chronic recording performance. This study will shed light on strategies to optimize long-term neural recordings.

Joanna Jibin

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

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#2 Arif Hamid

Abstract Name: Variation of Dopamine Concentration in Dorsal Striatum During Locomotor Initiation and Termination

Significant evidence shows that dopamine (DA) is responsible for task learning by encoding reward prediction errors (actual reward - expected reward). Although we consider DA as an important factor in reward signals, the death of dopaminergic neurons can cause problems in movement which is considered to play a role in Parkinson’s. Previous work demonstrated an increase in DA release within the dorsomedial striatum (DMS) during the initiation of a locomotor bout, and higher DA release in the dorsolateral striatum (DLS) during the termination of the locomotor bout. However, the cellular and behavioral mechanisms for these dynamics remain unclear. Here, we set out to study the effect of DA stimulation within the DMS and DLS in animals using optogenetic stimulation protocol to examine how learning to run on a wheel changes. The experimental setup consists of a training wheel which was set up along with a rotary encoder to record the linear distance traversed by the mouse and a reward dispenser. The mouse will be exposed to an LCD screen projecting a virtual corridor controlled via LABVIEW behavioral software.We will be analyzing mouse vigor to run on a wheel in different task sessions with varying levels of agency. The mouse displays higher vigor to run on the wheel when they can detect progress toward getting a reward.They become less invigorated to run when they cannot detect progress. Therefore we hypothesize that when DMS is stimulated, there will be more vigor observed from the mouse, causing them to increase their velocity on the wheel to get the reward. In contrast, we expect the DLS stimulation to decrease their vigor which will be reflected as a reduction in their velocity. When completed, our studies will illuminate how dopamine changes in the dorsal striatum regulate locomotor initiation and termination.

Sofia Johansson

IL - University of Chicago The College

Discipline: Social Sciences

Authors:
#1 Sofia Johansson

Abstract Name: Negotiating Ownership and Management of Public Green Space: How the TEP Ménilmontant Community Challenges Paris' Top-Down Urbanism

Paris has increasingly sacrificed public open spaces in lower-income areas for social housing construction. For example, the municipality has largely restricted community gardens to sites slated for development. Open spaces that remain consist of traditionally manicured, municipality-managed, tourist-centric parks and gardens with strict norms and few allowed activities. However, on one site the city targeted for development, the TEP Ménilmontant, a community mobilized to resist the municipality's forced competition between social housing and public green space. Thus, this paper asks how the community occupation, management, and use of the TEP challenge Paris' current top-down approach to planning public space. Through participant observation and interviews with the TEP's main volunteers and community members, I have found that the TEP is combatting this approach through its claim for permanence, collective decision-making, resource leveraging, mutual aid, and flexible land uses. Though municipal officials in support of the TEP cite the surrounding area's density and the ecological need for green space as reasons against municipal development, I argue that the robust social infrastructure of the TEP asserts a more radical reason: the benefits of community self-management and shaping of public space, namely the TEP's resulting uniquely high social diversity and strong network of community care and commitment. As seen in the trajectory of community gardens in New York City, and within Paris itself, much is lost from the elimination or co-optation of community-managed spaces. Accordingly, Paris must adapt its planning framework to grant permanence and maintain the self-management of community-claimed public spaces.

Julia John

TX - Texas Tech University

Discipline: Health and Human Services

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Abstract Name: Effects of astrocyte silencing in the amygdala on pain behaviors in a pre-clinical neuropathic pain model

Chronic and persistent pain imposes a significant burden on healthcare systems, necessitating the exploration of innovative analgesic strategies. The amygdala, a key player in the emotional-affective component of pain and pain modulation, exhibits hyperactivity in various pain models, but underlying mechanisms are not fully understood, and recent evidence suggests that they cannot be explained solely by neural factors. Despite this, the involvement of neuroimmune signaling, a crucial element in maintaining neuronal functions, in amygdala-related processes remains largely unexplored. Astrocytes, constituting a substantial portion of glial cells in the central nervous system, undergo reactive changes in pathological conditions, yet their role in pain-related amygdala neuroplasticity is largely unknown. This study aims to elucidate the impact of astrocytic signaling on amygdala functions in a neuropathic pain model. Our approach integrates pharmacology with behavioral and immunohistochemical analyses to examine the role of amygdala astrocytes in neuropathic

pain. We administered fluorocitric acid (FCA), a selective inhibitor of astrocytic metabolism, stereotaxically into the amygdala of adult male rats four weeks after neuropathic pain induction (spinal nerve ligation, SNL). Pain-related behaviors, including mechanical withdrawal thresholds, evoked audible and ultrasonic vocalizations, spontaneous behaviors (rodent grimace score, RGS), and anxiety-like behaviors (open field test, OFT), were assessed within 24 hours post-FCA or vehicle microinjection in SNL rats. Unexpectedly, FCA increased mechanical hypersensitivity on both injured and uninjured paws, increased vocalizations, and had facilitatory effects in OFT and RGS. Immunohistochemistry confirmed astrocytic inhibition by FCA, as indicated by decreased astrocytic GFAP marker in FCA-injected animals compared to vehicle group. This study implicates amygdala astrocytes in the modulation of pain-related behaviors in neuropathic conditions. The somewhat surprising results suggest that astrocytes may serve compensatory protective functions and could be a potential target for therapeutic interventions in chronic pain conditions.

fiona john

VA - Virginia Commonwealth University

Discipline: Social Sciences

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#1 Fiona John

Abstract Name: North Korean Religion: Kim Il-Sung’s Persecution of Christian Ideals and the Transfer of Secular Power

This review analyzes recent research to gain a deeper understanding of how Kim Il-Sung rose to power and used his agenda to create a state ideology, persecute religion, and elevate his status throughout the North Korean state. The analysis begins with an introduction to the background of the Korean peninsula starting with the liberation of the territory due to the end of World War II in 1945 by the Soviet Union military along with Korean forces. Christianity is closely tied to Western culture, so the Communist Party refuted this religion by persecuting Christian believers. Kim Il-Sung wanted the citizens of North Korea to follow the ideology he set in place, Juche, rather than believing in separate religions with the goal of unifying the state under a collective regime. This review analyzes primary and secondary sources from North Korea, the United States, the Soviet Union, and South Korea to determine how citizens reacted to changing agendas. This paper synthesizes these ideas and applies them to how the public reacted to the changing agenda of the North Korean regime. This research analyzes literature on Kim Il-Sung’s actions, agenda, and propaganda tactics in the context of his leadership of the North Korean government and how he wanted to be seen as an all-powerful ruler through these various approaches. Kim’s power is highlighted not only as a leader but also as a divine individual as discussed throughout the work. Finally, this paper discusses how evolution required the North Korean government to adapt to change despite Kim Il-Sung’s agenda by amending the North Korean Constitution to allow for the practice of religion under strict supervision.

Donte Johnson

AL - University of Alabama at Birmingham

Discipline: Interdisciplinary Studies

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Abstract Name: The Noah Project

The Noah Project is a collaborative and interdisciplinary effort pioneering a pathway to directly influence those impacted by ASXL. There are three rare genetic disorders that our team is focused on: Bohring-Opitz Syndrome (ASXL1), Shashi-Pena Syndrome (ASXL2), and Bainbridge-Ropers Syndrome (ASXL3). Due to its rarity, healthcare professionals know very little about the disorder or how to treat it. Furthermore, only a small number of ASXL-related websites are available to the public. After conducting a SWOT analysis on these websites, our team decided that each of them had room for improvement, and making revisions to the most outstanding website would be more beneficial. In order to effectively decide which elements to add or remove, we created a survey that would be given to the families who have an impact. The team has begun the process of fundraising for the 2024 ASXL Family Conference and the Miracle League. Currently, the team is in the early stages of brainstorming community events, which include but are not limited to interactions with campus-based programming and non-profits within the greater Birmingham area. Additionally, our team will begin a protocol to screen cell lines that will be used to test drugs in the ASXL mutation and wild type.

Parker Johnson

ND - University of North Dakota

Discipline: Natural and Physical Sciences

Authors:
#1 Parker Johnson

Abstract Name: A Fully Explicit Integrator for Modeling Astrophysical Reactive Flows

Simulating complex astrophysical reacting flows is computationally expensive, reactions are stiff and typically require implicit integration methods. The reaction update is often the most expensive part of a simulation, which motivates the exploration of more economical methods. In this study, I investigate how the explicit Runge-Kutta-Chebyshev (RKC) method performs compared to an implicit method when applied to astrophysical reactive flows. These integrators are applied to simulations of X-ray bursts arising from unstable thermonuclear burning of accreted fuel on the surface of neutron stars. They were also applied to the double detonation sub-Chandrasekhar model for type Ia supernovae, occurring when a carbon-oxygen white dwarf accumulates sufficient helium to ignite at the surface. The code framework for these problems is contained within Castro and are ran at the National Energy Research Scientific Computing Center. This study shows the RKC method performs with similar accuracy to our traditional implicit integrator, but is more computationally efficient when run on CPUs.

Julia Johnson

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Julia Johnson
#2 Christopher Leupold

Abstract Name: The Bright Side and the Right Side: Optimism and Moral Self-Image as Antecedents of Organizational Citizenship Behavior

Organizational citizenship behavior (OCB) is action taken by an employee to benefit an organization that is not formally required by their job or that exceeds formal requirements, without the expectation of reward or affirmation. OCB is essential to fostering a positive work environment, yet its origins are difficult to predict. Optimism can be both dispositional and state-driven, described as a positive outlook. Optimism and morality both fall under the “Big 5” Personality Trait umbrella. Moral Self-Image (MSI) is a recently introduced construct describing how one perceives their own morality. The Broaden-and-Build Theory of Positive Psychology supports our first hypothesis; high scorers of optimism will be more likely to engage in OCB. Based on theories of moral compensation, we hypothesize that low scorers on the Moral Self-Image scale are more likely to engage in OCB. Based on a survey of Likert-type scale questions, we expect to find a negative correlation between Moral Self-Image and OCB. Furthermore, we expect to find a positive correlation between optimism and OCB.

Jorden Johnson

TN - Middle Tennessee State University

Discipline: Engineering and Architecture

Authors:
#1 Jorden Johnson
#2 Carrie Pavel

Abstract Name: Assessing the Fidelity of Illuminating Engineering Society (IES) Profiles in Architectural Lighting Simulations: A Comparative Analysis

The purpose of this study is to compare how Enscape 3d and Lumion simulate IES lights for non-VR applications. Enscape 3d and Lumion are two AEC industry-standard architectural visualization software programs that allow users to upload Illuminating Engineering Society (IES) light profile data to simulate the precise characteristics—color temperature, luminous intensity, distribution, and beam spread—of light sources specified for an architectural project. In practice, the accuracy of these simulations is crucial, as they impact decision making and final design outcomes. However, existing research on architectural lighting simulation primarily centers on the rendering fidelity of light sources for use in virtual reality (VR) applications, and moreover, is often limited to the analysis of a single software. The study design consists of thirty 8’ x 8’ x 8’ boxes modeled in Autodesk Revit, with each assigned a material to the floor, ceiling, and four wall surfaces. One of three lighting types, each with a unique IES profile, were placed in the center of the ceiling of each box: an omni, area, and spotlight. Each box was rendered first in Enscape 3d, then in Lumion. All rendered images were then organized within a grid for comparison. Three measures were assessed: interface design—the ease with which users can operate the software controls; lighting fidelity—the accuracy with which each program simulates lighting distribution, beam spread, and luminous intensity; and material fidelity—the accuracy with which each program simulates the reflectivity, roughness, and color value of the materials on which the lighting is cast. Differences observed among these three measures in between each program will be discussed. Understanding the abilities and limitations of each software program will allow more effective adjustments to lighting schemes during the design process to prevent costly change orders later on.

Morgan Johnson

NY - Long Island University

Discipline: Natural and Physical Sciences

Authors:
#1 Morgan Johnson

Abstract Name: Analyzing the Nexus: Political Infrastructure and Communication Strategies in Shaping Public Response to London's Ultra Low Emission Zone

In 2015, along with 195 other states, the United Kingdom committed to the vital carbon emission reduction goals of the Paris Agreement. Now, more than halfway to the 2030 deadline, London and cities worldwide are struggling to implement sustainable transportation solutions in order to meet their carbon neutrality goals. As a global city, London has been wrestling with finding the balance between effective policy and community buy-in regarding the rollout of new vehicle regulations and recent expansion of the contested Ultra Low Emission Zone (ULEZ). This transdisciplinary qualitative case study examines how the policy communication strategy to promote the ULEZ used by The Greater London Authority over the last four years has influenced the current relationship between policymakers and the impacted community in the Greater London area. The data was collected over a three-month period between September and November 2023 from participant observations on existing public modes of transport in London, interviews with policy, electric vehicle and sustainability experts, a survey targeted towards uncovering Londoners' perceptions of the ULEZ, public consultation and political polls, and archival research in the Transport for London (TfL) database. The main finding of this research is that environmental policies are never purely environmental, but rather complex and political, and thus can easily be disrupted and exploited for political gain by manipulating public opinion. Furthermore, while public support may not be a prerequisite for an environmental policy to be initiated, it may be necessary to sustain the political infrastructure that the policy relies on. The significance and purpose of this research is to remind future policymakers of the importance of well-tailored communication strategies to gain public support when implementing green policies.

Kaden Johnson

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Ashley Gentles
#2 Kaden Johnson

Abstract Name: Leadership in Energy and Environmental Design: Cases of LEED Certifications for Fulton County School Buildings in GA

The Research Center for Sustainable Communities (RCSC) at Kennesaw State University (KSU) has been conducting analytical studies on how to enhance sustainability and reduce the carbon footprints of school infrastructures statewide in GA. The RCSC seeks ways in which the state could advance healthier and more sustainable, equitable, and cost-effective learning environments. Rooted in this initiative and funded by the KSU Office of Undergraduate Research, this research aims to examine the employment of Leadership in Energy and Environmental Design (LEED) certification as an outline for promoting the existing operation of school buildings. LEED is a globally recognized rating system with a set of rigorous standards developed by the U.S. Green Building Council (USGBC). There are 808 high schools in Georgia, 18 of which are LEED-certified. Centered on Fulton County, the team will inquire about what measures were taken by these certificated high schools in the County that were not implemented in the rest of the County. The research will encompass a multi-faceted methodology, including a literature review, interviews (i.e., with county officials), and analysis of building certificate data. The findings will provide insights into the economic and environmental aspects of such certificates and the role of county decision-makers and stakeholders. Ultimately, the research will underline sustainability through environmental stewardship, economic prosperity, and social responsibility.

Chloe Johnson

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
#1 Chloe Johnson
Chloe Paltzer
Bailey Bremel

Abstract Name: A Quantitative Analysis of a Pre-College Support Program

The focus of this research project is on the emotional and behavioral well-being of youth enrolled in an Upward Bound program in the midwestern region of the United States. Upward Bound is a federally funded program that provides academic and social support to high school students who are traditionally underrepresented in post-secondary education.The research team utilized a quantitative approach to data collection. The research was longitudinal, and data was collected from four different cohorts at time of entrance into the Upward Bound program: Summer 2018 (n=18), Summer 2019 (n=17), Summer 2022 (n=24), and Summer 2023 (n=16). Participants were asked to complete a modified version of the Strengths and Difficulties Questionnaire (SDQ) which is a twenty-five item measure that contains four different subscales: emotional problems, conduct problems, hyperactivity, and peer problems. Higher scores on the measure and corresponding subscales indicated a lower level of functioning in that area. A fifth subscale, entitled pro-social skills, was scored differently meaning a higher score indicated a higher level of functioning.Data analysis indicated that the 2018 and 2019 cohorts reported fewer concerns related to emotional problems, conduct problems, hyperactivity, and peer problems when compared to the 2022 and 2023 cohorts. In addition, the 2018 and 2019 cohorts scored higher on pro-social skills than the 2022 and 2023 cohorts. One interpretation of the data is that the COVID-19 pandemic negatively impacted the social and emotional well-being of the youth who participated in this research.

Keeleigh Johnson

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Keeleigh Johnson

Abstract Name: Making a Safe Home for People with Blunt Eye Trauma

The purpose of the project is to create a home that is functional for someone with blunt eye trauma and its potential long-term effects. Blunt eye trauma can cause a series of symptoms such as blurry vision, double vision, and blindness. In addition, it can lead to various intrinsic eye injuries, such as a globe rupture, whose symptoms include eye deformity, eye pain, and vision loss. Therefore, the home must have a natural process of way-finding to accommodate the navigation of the new space. Through case studies and literature review, the information outlines inclusive design features that are or are not appropriate in this application. For example, creating a distinctive feature for each room enables the user to be able to decipher where they are located. Having bold, contrasting elements allows them to be identifiable from one another opposed to having no variation. Adequate lighting is crucial when trying to navigate and perform tasks within each room. The orientation of the home must be positioned in such a way to optimize daylighting. In addition, the implication

of cove lighting provides indirect light that illuminates the space whilst avoiding any harmful glare. Every individual has unique vision capabilities and personal tolerances, therefore flexibility in controlling environmental quality is very important. Incorporating technology that allows the space to be easily controlled by the user is another layer of design that can aid visual impairment. Overall, the considerate implication of lighting, color, finishes, and other signifying elements, would effectuate an optimal home environment for a user with blunt eye trauma.

Kera Johnson

NY - York College

Discipline: Natural and Physical Sciences

Authors:
#1 Kera Johnson
#2 Justin Ramdeen
Justin Ramdeen

Abstract Name: A cross-sectional study of public superfund information: Implications for public health risks from air pollution exposure

Millions of people around the world are affected by the release of hazardous substances that impact air quality and contribute to a decrease in life expectancy. In the United States, about 21 million people live within a one-mile radius of a superfund site, exposing them to harmful chemicals from vapor intrusion and air pollution; however, residents of affected communities are often not informed about the toxic substances to which they are exposed, largely because information available to the public is not easily understood. In this cross-sectional study, we assess the readability of environmental health data obtained from 282 superfund sites in the tri-state area of New York, Connecticut and New Jersey. Descriptive statistics for the distribution of readability scores from the Gunning Fog, SMOG, and Flesch-Kincaid tests were used to assess the metric of publicly available superfund information on the U.S. Environmental Protection Agency (EPA) website. In our comparison between resolved and unresolved cases as indicators of readability scores; unresolved cases showed statistically higher readability levels than resolved cases. The mean readability, 14.19 (Range: 10.37-19.18; SD = 1.30, N = 282) was attained with statistically significant difference at p<.05, (t (280) = 4.105, p <.001). This high mean readability score revealed unfamiliarity with published superfund information in the communities and demonstrated the need for simpler language to reduce complexity, and improve comprehension of public health risks by superfund sites to enable residents to protect themselves. This study can contribute to the advancement of environmental justice, critical for the successful management of superfund sites across the US. Addressing this challenge is paramount to an understanding of how to detect, report and remediate the release of toxic substances, and to prevent unwanted human exposures to air pollution.

Marta Johnson

MI - Hope College

Discipline: Education

Authors:
#1 Marta Johnson
#2 Macy Kerr
#3 Kambree DeWitt
#4 Jane Finn

Kambree DeWitt
Macy Kerr

Abstract Name: Compassion Fatigue Within Pre-Service Teachers

With growing signs of burnout along with increased compassion fatigue reported in teachers, we were interested in studying whether this burnout and compassion fatigue begins to show during the student teaching semester. This semester occurs during the last semester of the pre-service teacher's undergraduate studies. This semester should align with the "real world of teaching", and set up individuals to get ready to enter the field.Current research shows a correlation between teacher burnout symptoms to teaching enthusiasm levels. Analysis of previous research proved that gender, seniority, and the teacher burnout symptoms of emotional exhaustion and a decreasing sense of personal accomplishment were significant predictors of both teaching and subject enthusiasm (Dağyar & Kasalak, 2022). Additionally, research by King and Wheeler (2019) explores the "dark side" of interpersonal communication allowing students to open up about traumatic personal experiences and the stress that can lead to compassion fatigue in teachers. Furthermore, Ziaian-Gafari and Berg's (2019) qualitative research explored compassion fatigue and burnout, which both appeared when general education teachers worked with students with exceptionalities or those students with trauma. Compassion fatigue has been shown to affect one's health-related quality of life negatively (Jackson et al., 2021). Looking at this previous research, we were interested in exploring when this compassion fatigue begins to show during teaching. Specifically, our research questions are: (1) Do pre-service teachers show signs of compassion fatigue during the student teaching semester? (2) Do pre-service teachers report needing additional assistance (such as mentorship or counseling) during the student teaching semester? To explore these questions, we gave the standardized survey, The Professional Quality of Life Scale (ProQLS) to 55 pre-service student teachers in Spring 2022. Our poster will dive into the qualitative results.

Emma Johnson

IN - Valparaiso University

Discipline: Humanities

Authors:
#1 Emma Johnson

Abstract Name: The Relativity of Reality in Revolution: Woolf's Attention to Astronomy in TO THE LIGHTHOUSE

Virginia Woolf was a writer not only heavily involved with literature, philosophy, and history, but also with the early 20th century developments in the physical sciences, especially with topics related to astronomy. Woolf was writing in the wake of Einstein's theory of relativity as well as Hubble's discovery of the expansion of the universe. Indeed, many critics, such as Holly Henry, see the influence of astronomy in her works and laced throughout her diaries. However, despite this attention, most critics curiously fail to consider how astronomy was woven into Woolf's masterpiece, To the Lighthouse. In viewing this novel through the lens of astronomy, not only are we able to see the constellation of connections and understand an essential analogy, but we can also identify the design of relativity permeating To the Lighthouse. As Woolf was influenced by astronomical discoveries, she designed characters to be similar to objects in outer space to display the relationships between them and to articulate how relativity influences one's experience with reality. Specifically, Woolf designed her characters to represent physical bodies in a solar system, where Mrs. Ramsay is encapsulated in the brightness and energy-creating nature of a star and Mr. Ramsay is the alienation of a distant planet in the same solar system. By constructing her characters in a solar system, she gave attention to each perspective by using relativity to describe the space and time they occupy and how this influences their interaction with reality and the world around them.

Kaelen Johnson

MD - Howard Community College

Discipline: Health and Human Services

Authors:
#1 Kaelen Johnson

Abstract Name: Preimplantation Genetic Testing and the Future of Public Health

Preimplantation genetic testing (PGT) has emerged as a new form of assisted reproductive technology (ART) in recent years. Although it was initially used as a method used to prevent the transmission of genetic diseases, PGT has evolved to encompass a wider range of applications by spearheading new innovative methods in stem cell research, gene editing methods, and genetic disease therapies. This has the potential to significantly impact public health and expand the use of reproductive technology in healthcare systems.This poster presentation aims to analyze the current and possible future applications of PGT in the field of public health while sparking a discussion about PGT's continued growth and future role as a biotechnology in said field. The presentation will also delve into its principles and techniques, while also examining the ethical implications of PGT and what it means in the field of public health. The methodology used will utilize studies done by public health professionals and other healthcare experts. This includes ethical analyses, literature reviews, case studies, statistics, and consultations that highlight the application of PGT.The results show that PGT plays a significant role in public health by decreasing the risk of genetic disorders in offspring by offering expecting parents an insight to the health of their future children and future generations. It is also reliable and contributes to reduced costs in healthcare and improved pregnancy outcomes. PGT has revolutionized personalized medicine by screening embryos for specific traits which offers new solutions to preventing genetic disorders.However, the usage of PGT raises ethical concerns as genetic profiling raises concerns about societal values, eugenics, healthcare equity, and biotechnology regulations. Preimplantation Genetic Testing holds significant potential for shaping public health and biotechnology, but responsible use and ethical standards play a crucial role for its full potential.

Anna Scott Johnson

TN - University of Tennessee at Knoxville

Discipline: Health and Human Services

Authors:
#1 Anna Scott Johnson

Abstract Name: Effectiveness of Mobile Clinic in Improving Access to Mental Health Services for Those Experiencing Health Disparities in Rural East Tennessee

Health disparities, specifically those with mental health, are experienced by people living in rural communities. Data has shown that telehealth and mobile health clinics have improved access to care for those living in rural areas. However, in many rural counties individuals do not have access to internet and transportation limiting the availability of telehealth. The purpose of the study is to determine if the use of a mobile van providing internet services will increase utilization of health care. Secondarily, the number of clients seen will be determined to evaluate usage of the service. A grant has been received to utilize a mobile van in Hamblen, McMinn, Morgan, Monroe, and Sevier counties, and will operate five days a week for 50 weeks. A descriptive, non-experimental design will be used to survey a minimum of 50 clients using a self-developed questionnaire. Data analysis and conclusions/recommendations are to be determined as this study has not reached completion.

Lindsey Johnson

WI - University of Wisconsin-River Falls

Discipline: Health and Human Services

Authors:
#1 Lindsey Johnson
#2 Lori Swanson

Abstract Name: Teacher and Speech-Language Pathologist (SLP) Use and Perspectives on Telegraphic Speech with Children who are Deaf and Hard of Hearing

Simplified speech is often used by adults when speaking with young children, especially children with language delay. However, there is research that has shown that there is controversy surrounding whether this simplified speech should be telegraphic (e.g., Doggie go, more toy) or grammatical (e.g., Go, Doggie! More toys) (Venker, Yasick, McDaniel, 2019). Use of telegraphic input has been studied regarding children with language delay, but there is limited information on use of telegraphic input with other populations, such as children who are deaf and hard of hearing. The purpose of this study is to expand on prior research regarding use of telegraphic input with children with language delay titled, “When Is Simplified too… Simple?” (Venker & Stronach 2017) and examine parent, teacher, and Speech-Language Pathologist (SLP) perspectives on and use of telegraphic input when speaking/working with children who are deaf and hard of hearing at the prelinguistic, one-word, two-word, and telegraphic stages of spoken language acquisition, through a set of survey questions. These survey questions come from a research study titled “Saying too Little Can Make a Big Impact: Graduate Student Knowledge and Use of Telegraphic Input” (Schaar & Stronach 2021), with modifications made to focus on children who are deaf and hard of hearing. This research study will present new perspectives on use of telegraphic speech and its perceived importance by caregivers for use with children who are deaf and hard of hearing.

Abigail Johnson

TX - Lubbock Christian University

Discipline: Social Sciences

Authors:
#1 Abigail Johnson

Abstract Name: How Self-talk is Used by College Students to Improve Cognitive Functions Related to Learning

The role of language and self-talk in cognitive psychology is becoming a bigger area of research for both linguists and psychologists. However, much of the research only focuses on how athletes use self-talk to improve sports performance and does not look at people’s daily lives or how it can be used in academic environments. There is also a tendency to group audible verbalizations directed toward oneself (private speech) and internalized language used to guide mental processes (inner dialogue) together or to just focus on one with no comparison of the two methods. This proposed study is a phenomenological analysis that aims to examine how self-talk is used by college students to enhance aspects of cognition, such as memory, attention, motivation, and abstract thinking, as well as the differences between speaking out loud and in one’s head. Another goal of this research is to examine the benefits of both private speech and inner dialogue to explore the different outcomes of these two models of self-talk. This proposed study will consist of transcribing and

coding interviews with 16 participants and looking for themes related to the type, form, and content of self-talk used by college students. It is expected that college students use private speech and inner speech for different functions, and that self-talk is used more frequently in academic contexts than in everyday activities. This proposed study benefits education, mental health counseling, and personal development by providing data on what kinds of methods are more heavily utilized for learning and personal goal achievement.

Isabella Johnson

MI - Oakland University

Discipline: Health and Human Services

Authors:
#1 Isabella Johnson
#2 Vandre Figueirdo

Abstract Name: Ribosome Biogenesis in Cancer Cachexia

Cancer cachexia is a wasting syndrome characterized by the loss of skeletal muscle mass, which in turn is a predictor of poor prognosis and mortality in cancer patients. Maintaining skeletal muscle mass during cancer is also associated with longevity in this population. The synthesis of ribosomes, known as ribosome biogenesis, is a central mechanism regulating cell mass, including muscle cells. This investigation aims to determine whether ribosome biogenesis and ribosomal abundance in skeletal muscle is impaired during cancer cachexia in a genetically modified mice model of pancreatic adenocarcinoma (the KPP mice) that resembles muscle wasting in humans due to cancer cachexia. The KPP mice will be used to test the hypothesis on whether ribosomal abundance is affected in cancer cachexia and whether lower ribosome synthesis precedes the onset of cancer cachexia. Understanding the molecular mechanism of muscle wasting in cancer cachexia will allow us to design better therapeutic approaches.

Kyasia Johnson

MD - Johns Hopkins University

Discipline: Social Sciences

Authors:
#1 Kyasia Johnson
#2 Tamar Rodney

Abstract Name: The Impact of Postpartum Depression on African American Fathers In The United States

Postpartum depression (PPD) is a widely used terminology, however it does not currently reflect a unique clinical diagnostic label. The guidance as defined by the DSM-5-TR is best classified as Peripartum Depression, or Major Depressive Disorder with peripartum onset defined as a subtype of depression that occurs during pregnancy or in the first four weeks after delivery. Approximately, one in eight women experience symptoms of PPD in the United States, and 50% of men whose partners are diagnosed with PPD go on to develop depression themselves. To assess the impact of PPD [as experienced by women] on African American fathers in the U.S., a literature review process was conducted. The search strategy was limited to peer reviewed publications within the last ten years, and focused on the U.S. population. Based on the limitations and three key terms, postpartum depression, women, and fathers, 4,683 studies were identified from databases and registers. Seven articles were included in the final extraction. The majority of current studies centered on data from White, or European ethnic groups and out of the seven, one article provided

data on African American fathers. Guidance for fathers who experienced the effects of their partner's PPD and how to receive support is also very minimal. Fathers possessing current knowledge or a better understanding of PPD, stressors, available social support, and perspective on treatment could decrease depressive symptomatology for both parents while simultaneously improving the bond between father and infant and the quality of the partnership or relationship between the parents.

Olivia Johnston

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Olivia Johnston
#2 Nipun Jayachandran
#3 Betty Mousseau
#4 Davide Botta
#5 Frances Lund

Abstract Name: A Novel Model Investigating the Genetic Mechanisms of Plasma Cell Differentiation

B lymphocytes are one of the key immune subsets that participate in the adaptive immune response. Antibody secreting cells (ASCs) are terminally differentiated from mature B cells, mediating their protective function by secreting antibodies against infectious agents. Epigenetic control of ASC differentiation by histone modifying enzyme EZH2 contributes towards the survival and function of these cells. Upon antigenic exposure, EZH2 expression is upregulated in differentiating B cells with levels peaking within ASCs. As the role of this enzyme in ASC differentiation from the memory compartment is not fully understood, exploring further will identify novel mechanisms controlling this differentiation.We are developing a mouse model targeting EZH2 in B cells to determine its role in ASC differentiation. CRISPR technology within Sca1 and cKit expressing hematopoietic stem cells (LSK cells) will be utilized followed by a B cell-specific deletion induced by tamoxifen in vivo. Our initial approaches have identified these LSK cells and achieved a purity of above 99% upon isolation from the bone marrow. We were able to maintain and expand LSK cells in culture, allowing for maintenance of the stem cell population for a month, and then transfer cells into irradiated recipients to detect engraftment within four weeks. Generated lentivirus was able to transduce these LSK cells, demonstrating over 50% efficiency. We will be investigating the ability of this lentivirus to knock out genes in Cas9 expressing B cells. Our approaches will ultimately contribute to the development of a mouse model that can be exploited to study the biology of ASC differentiation.

Megan Johnston

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Megan Johnston
#2 Renata Belisario
#3 Dr. Lisa Vaillancourt

Abstract Name: A nonpathogenic signal peptidase mutant of the maize anthracnose fungus Colletotrichum graminicola secretes cell wall degrading enzymes normally

Colletotrichum graminicola is an economically devastating fungus that causes anthracnose leaf blight, stalk rot, and top die-back in maize. As a hemibiotrophic pathogen, C. graminicola uses two methods of nutrient acquisition. The fungus first invades living cells biotrophically and later switches to necrotrophy. This transition from biotrophy to necrotrophy is attributed to the up regulation of genes encoding cell wall degrading enzymes (CWDEs). CWDEs also play roles in host-pathogen communication and are critical to promoting disease susceptibility. A mutant strain of C. graminicola (MT) lacks pathogenicity to maize leaves and stalks due to a mutation in the 3'UTR of a gene (Cpr1) encoding a homolog of the SPC22/23 subunit of the signal peptidase complex. Despite being able to germinate and penetrate host cells, the MT is interrupted early in infection, so it never shifts to necrotrophy, produces lesions, or sporulates. To investigate the mechanism behind the non-pathogenicity of the MT, it was hypothesized that the MT is deficient in its ability to secrete CWDEs in planta during the transition to necrotrophy. Hydrolase activity against plant cell wall polymers in culture was quantified and compared via reducing-sugar assays and utilization of chromogenic substrates. Individual CWDEs, such as pectate lyase, were also visualized as fluorescent fusions and quantified in the wild type (WT), MT, and complemented MT (C-MT) strains in living or killed maize leaf sheaths, and in culture. Pectate lyase plays a critical role in pectin degradation and was selected due to its high expression in transcriptome studies. Results indicated that hydrolase activity and enzyme secretion by the MT were equivalent to those of the WT and C-MT, suggesting that the lack of pathogenicity in the MT is not due to an inability to secrete CWDEs. Understanding fungal pathogenicity mechanisms is crucial to develop plant resistance to fungal pathogens.

Mitchell Johnstone

WI - Milwaukee School of Engineering

Discipline: Mathematics and Computer Science

Authors:
#1 Mitchell Johnstone
#2 Mays Neiroukh
#3 Subha Kumpaty
#4 Pawan Panwar
Mays Neiroukh

Abstract Name: Leveraging Machine Learning in the Design of Novel Ionic Liquids

Ionic Liquids (ILs), recognized for their versatile applications across various domains, have stirred considerable interest. However, the traditional experimental approach to discover unique ILs is resource intensive and time consuming. To address this, our study introduces a contemporary method for generating unique ILs, leveraging machine learning to ensure desired chemical properties and novelty in the resulting ILs. While many neural network architectures have attempted to tackle similar problems related to chemical generation, our research uniquely employs the Generative Chemical Transformer (GCT) model for IL generation. Integrating the proven Transformer and Conditional Variational Autoencoder (CVAE) architectures, the GCT model can generate novel ILs with specified properties. We utilized the National Institute of Standards and Technology database to obtain properties of 450 ILs at varied temperatures and atmospheric pressure, amassing 3315 data points. Each data point was tailored to include the IL depicted as a standard SMILES string, alongside the recorded temperature, pressure, and IL properties such as density, viscosity, and electrical conductivity. The GCT model, trained on this data, generated 30000 ILs for model testing. By facilitating the creation of valid and innovative ILs with predefined attributes, our research streamlines and expedites generation of efficacious ILs.

Lesly Joj-Escun

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Lesly Joj-Escun
#2 Stephanie Perez Martinez
#3 Natalia Gatdula
#4 Melawhy Garcia
Stephanie Perez Martinez

Abstract Name: Self-efficacy for Food Security and Intention to Increase Fruit and Vegetable Intake among Hispanics/Latinos in U.S

Background: Studies demonstrate self-efficacy is often related to eating habits. However, given the disproportionate rates of food insecurity among Hispanics/Latinos and the serious consequences it has on people's health and well-being, this research aimed to examine the association between self-efficacy for food security and intention to increase the number of servings of fruits and vegetables. Methods: A cross-sectional study of 750 Latino/Hispanic adults was conducted. Participants were asked to report on self-efficacy for food security using a six-item scale with response options of 1=not at all confident to 4= very confident. Participant average responses were recoded to be dichotomous: low self-efficacy or high self-efficacy. Intention was measured by asking, "How sure are you that you can increase the number of servings of fruit that you eat daily?". A similar question was asked for vegetable intake with a 4-point Likert scale. Chi-square tests for independence were used to examine associations between self-efficacy and intention. Results: Among the 750 participants, the mean age was 48.4 years old (range 18-93). Less than half (44%) of the participants classified as having low self-efficacy. There was a significant relationship between self-efficacy for food security and intention. Participants with high self-efficacy were more likely than those with low self-efficacy to have higher intention to increase their daily intake of fruits X2 (3, N = 750) = 123.5, p < .001 and vegetables X2 (3, N = 750) = 116.2, p < .001. Conclusion: The results are in alignment with current literature on low self-efficacy's correlation to less healthy eating habits. Food security risk factors such as low-income status and environmental factors such as accessibility to grocery stores with healthier food options could be driving factors. Public health efforts are needed to address food insecurity.

Mouse Jones

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Mouse Jones

Abstract Name: Ink & Design: The Connection Between Graphic Design and Tattoos

This paper explores the world of tattoos, aiming to shed light on the intricacies behind why people have been getting tattoos for centuries. It touches on the meanings behind tattoos, such as cultural or religious reasons. It also connects the process of being a Graphic Designer with being a Tattoo Artist and how both professions go through very similar processes to create their final product. This paper expresses how tattoos use all parts of design as well as shed light on the influence of art movements in both tattoos and design, and the symbolism that often occurs in both fields. I aimed to uncover the importance of human expression and how tattoos are an important part of design and should not be easily overlooked by diving into the connections between the two. This reveals a profound aspect of showing how our creativity and identity intersect in these two distinct art forms.

Aliessia Jones

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Aliessia Jones

Abstract Name: Re-Traditionalism, Sexology, and Art: Competing Narratives of Gender and Sexuality in Socialist Poland

Most scholars of the Polish People's Republic focus on gender roles concerning the socialist government and its ideals. Many scholars contrast this socialist gender ideal with the gender concepts of post-socialist, capitalist Poland. This study argues that, in socialist Poland, there were four competing narratives of gender roles, including the narratives of the Polish state, the Polish Catholic Church, sexology advocates, and artists. The following findings were established based on this research. First, as the de-Stalinization process progressed between the 1950s and 1980s, the government promoted the re-traditionalization of gender roles, which pushed women back into the domestic sphere, heavily regulating but liberating birth control through the network of public well-woman clinics. Similarly, the Catholic Church advocated traditional gender roles but critiqued the adverse effects of abortions and contraceptives since abstinence was the foundation of the Catholic Notion of family planning. At the same time, society engaged in sexology learning, which was a rapidly growing scientific field that demystified sexual life but also promoted traditional sexual relations as the only way to be sexually satisfied. Women artists, on the other hand, engaged in this negotiation of gender roles by challenging the state, Church, and sexologists' re-traditionalization of gender in society. This research is supported by a semiotic examination of artwork by Krystyna Wrobleska, Natalie LL, and Ewa Partum, utilizing studies on the Polish socialist reforms, constitution and laws regarding marriage, and the combative but collaborative relationship between the Church and state.

Aliessia Jones

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Aliessia Jones

Abstract Name: Stamps as Messengers of Socialist National Identity in The People’s Republic of Congo (1969-1991)

Since the nineteenth century, political entities have used stamps as one of the many elements of national and political identity formation and projected that identity to a global audience. This study examines how the People's Republic of Congo utilized stamps following the political coup of 1969 until the regime's fall in 1991. Through the formal and iconographical examination of monthly stamps issued during this period and scholarly stamp studies, this research argues that in the People's Republic of Congo, stamps with socialist, nationalist, cultural, religious, and global imageries and symbols were a primary element in the creation of a socialist national identity. First, stamps were introduced as a reflection of political change and the establishment of the People's Republic of Congo. Three major trends are identified in the following examination of the stamps of the People's Republic of Congo. Stamps with socialist and communist leaders, revolutionary heroes, and national symbols supported socialist ideology. Stamps with national flora and fauna enhanced the national image by promoting tourism and displaying the country's natural environment. The most significant number of stamps contained images that targeted Western audiences as they depicted imagery of Christianity, celebrities, musicians, and international holidays and events and promoted the

country's openness to the Western world. This study is significant as the socialist period of The People's Republic of Congo is often neglected in discussions about socialism and art.

Faith Jones

WI - University of Wisconsin-Whitewater

Discipline: Health and Human Services

Authors:
#1 Faith Jones

Abstract Name: Understanding Religion and Spirituality in Social Work

This research study examines the topics of religion and spirituality in the social work profession. Social workers are often nervous when discussing religion and spitituality due to concerns over crossing personal boundaries or ethical violations, or solely because the social worker themselves may not feel adequately educated or hold strong religious and/or spiritual beliefs. Following IRB approval, electronic surveys were sent to social work students (from religion and non-religious schools) and practicing social workers in order to learn more about their attitudes and behaviors when it comes to the topics of religion and spirituality in their practice. Data analysis demonstrated a significant difference between students who declared social work as a major compared to those in other majors in the following areas: attending religious meeting as a child and the belief that everyone needs to find their own religion and beliefs, A significant difference between social work major from a religious school compared to those in a non-religious school in the following areas: attending a mission trip and ideas of God or a transcendent Spirit are irrelevant in the world today. Of note, there was also a significant different related to race and having “strong faith”. Other qualitative results supported the researchers initial hypothesis that many social work students and social work practitioners do not have high levels of confidence when discussing faith or spirituality with clients. The researcher is currently exploring these topics by conducting a series of qualitative interviews with practicing professionals to better understand the role of religion and spirituality in a day to day setting. Initial results of these findings will be shared.

Stephen Jones-Jensen

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Stephen Jones-Jensen

Abstract Name: Therapeutic Communication Training: Teaching Nursing Students Empathy

The Jeffries/National League for Nursing Advancing Care Excellence (ACE) framework is a listening and communication skills scaffolding program that can be used to improve measures of therapeutic communication. The ACE framework has been shown to increase measures of empathy, self-awareness, active listening skills, and PCC orientation in student nurses through randomized controlled trials. PCC has been consistently shown to improve patient outcomes. Nursing programs strive to prepare students for entry into professional practice through cognitive, affective, and psychomotor skills. Teaching therapeutic communication skills is a priority to ensure student competency during clinical experience and after entry into practice. The project will evaluate the efficacy of utilizing the Jeffries/National League for Nursing Advancing Care Excellence (ACE) framework on the development of active listening skills and patient-

centered care orientation among a convenience sample of undergraduate nursing students at the University of Central Oklahoma. Undergraduate students enrolled in the University of Central Oklahoma nursing program will be exposed to the ACE framework. Two core variables will be tracked, and data from pre/post conditions analyzed along with demographic data, employment, and pre-exposure to active listening skills training. PCC orientation will be measured with the use of the Patient-Provider Orientation Scale. Active listening will be measured with the Active-Empathetic Listening Scale. This quality improvement project will determine if use of the ACE framework will enhance performance, thereby producing students that are better equipped to improve patient outcomes.

Dylan Jong

CA - University of California - Merced

Discipline: Social Sciences

Authors:
#1 Dylan Jong
#2 Matthew J. Zawadzki

Abstract Name: Testing the Moderating Effect of Burnout on the Relationship between Anxiety and Sleep Quality

Several studies strongly indicate a connection between the quality of sleep and students' learning abilities and academic success. Thus, understanding the factors that disrupt one’s sleep quality is important. One potent factor that can disrupt sleep is mental health, particularly anxiety. Although anxiety is a natural process to try to keep a person safe by alerting them to potential dangers, this has a downside by increasing psychological and physiological arousal that can disrupt how well one sleeps. Previous research has found strong correlations between sleep quality and anxiety; however, some people may be more vulnerable than others to the negative association of anxiety and sleep. Notably, those experiencing burnout may be psychologically depleted from their workplaces and have fewer resources to cope with anxious states. Therefore, this study will investigate how anxiety predicts sleep quality (Research Question 1), and how anxiety and burnout both relate to each other in their relationship to affect sleep quality (Research Question 2). Online surveys were completed by non-faculty employees (n = 140) from the University of California, Merced participants. These measures included the Generalized Anxiety Disorder-7 Scale, the Pittsburgh Sleep Quality Index, and the Bergen Burnout Inventory. Data analyses are ongoing. We expect to find a strong positive correlation between anxiety and sleep quality. In addition, we expect a significant interaction of anxiety and burnout, such that burnout amplifies the effects anxiety has on participants’ sleep quality. The findings are expected to offer valuable insights into the role of anxiety and burnout in influencing sleep quality, shedding light on potential interventions to cultivate more sustainable and healthy work environments and mitigate the risk of burnout and anxiety.

Aubree Jordan

AL - Auburn University

Discipline: Natural and Physical Sciences

Authors:
#1 Aubree Jordan

Abstract Name: Antioxidant properties of a zinc complex with a macrocyclic redox-active ligand

Recently, a Zn(II) complex with a polydentate quinol-containing ligand was found to be a functional mimic of superoxide dismutase. In order to establish structure-function relationships for this new class of antioxidant, we prepared a Zn(II) complex with 1,8-bis(2,5-dihydroxybenzyl)-1,4,8,11-tetraazacyclotetradecane, which consists of two quinols covalently tethered to a cyclam macrocycle. The ligand differs from other frameworks that we have investigated in that it prevents exogenous ligands from coordinating cis to the bound quinols. We have characterized the antioxidant properties of the isolated Zn(II) complex using common assays.

Katherine Jorgens

OR - Corban University

Discipline: Natural and Physical Sciences

Authors:
#1 Katherine Jorgens
#2 Christina Cooper
#3 Noah Miller
#4 Nicole Bantilan
#5 Amy Bisson

Abstract Name: Factors Associated with Changes in Oral Microbiota

Previous research has shown that changes in physical and psychological stressors can affect the biodiversity of the oral microbiome. Disruption of homeostasis in the oral microbiome has been known to increase the risk of developing dental caries, periodontitis, and other oral health concerns. This study aims to investigate possible correlations between college student lifestyle habits and these health challenges. After receiving IRB approval, students from a variety of academic disciplines and class status at a small, private university in the Pacific Northwest were invited to participate in this study. Participants signed informed consent documents and their data will be collected during finals week of the Fall, 2023, semester. The following data will be collected: survey responses that are designed to measure self-perceived stress, nutritional habits, dental hygiene practices, and other lifestyle factors; responses to the Penn College Perceived Stress Scale, saliva samples, and basic vital signs, which include blood pressure and heart rate. The saliva samples will be analyzed using a salivary cortisol ELISA to measure the amount of cortisol present. In accordance with previous research, it is hypothesized that the amount of cortisol will positively correlate with the amount of stress revealed in the Penn College Perceived Stress Scale. The bacterial species present in the saliva samples will also be identified through gene sequencing. Previous research leads to the hypothesis that Fusobacterium, Corynebacterium, Eikenella, Leptotrichia, and Tannerella will be upregulated when stress is high. Statistical analysis will be performed to confirm if there is any significant correlation between lifestyle habits, vitals, and the composition of the oral microbiota. It is expected that results will show a correlation between student stress and lifestyle habits and the diversity and composition of the oral microbiota.

Carter Jorgenson

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Carter Jorgenson

Abstract Name: The Detriment of Bruxism on Longevity of Dental Veneers in Middle-Aged Adults with

Anxiety: Materials, Lifespan, Treatment Plan

The problem with bruxism patients struggling with fixing and avoiding lasting negative deterioration of teeth along with other sensitive dental procedure structures such as veneers due to their stress and anxiety levels which may be leading to sleep hindrance needs to be addressed in future works of dentistry by creating durable veneers with different material combinations to satisfy both resistance needs from grinding teeth through the day and/or night and reaching aesthetic expectations of the patient(s). Studies of both bruxism connections to anxiety, along with physical and mental health/fatigue, paired with veneer compositions and fracture patterns, emphasizing the significance of factors like color perception in shade selection due to its connection with an individual's confidence based on their front teeth appearance were gathered for future dental advancements to consider in order to reduce stress levels of patients which may decline bruxism and build tooth coverings able to resist the repetitive action of teeth grinding. This may create a pathway for new innovative dental treatment strategies through material changes that can revolutionize dentistry, especially the specialties dealing with sleep disorders and mental issues. Results showed patients diagnosed with sleep bruxism (SB) reported 22% in respective to their own group suffering from depression compared to the control variable group at 11.1%. The majority of sleep bruxism participants voted their most common level of depression to be "severe" (48%) versus the undiagnosed group selecting "normal" (38.77%). Participants with any type of bruxism showed significantly higher levels of dental anxiety and emotional stress compared to those that responded "no" to grinding teeth (sleep bruxism: dental anxiety: 13.47, emotional stress: 27.16; without sleep bruxism: dental anxiety: 9.93, emotional stress: 24.49). Bruxism had underlying factors to anxiety (genetic probability: 0.428, p-value: 8.34*10^-05).

Jelan Jose

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Jelan Jose
#2 Awatef Ergai
#3 Tristan McMichael

Abstract Name: How Gaming Affects Novice Pilots

The aviation industry is anticipating a pilot shortage of 600,000 by the year 2040. Methods for improving pilot training are needed to combat this shortage. Research has shown that gaming can enhance hand-eye coordination and cognitive skills related to visually tracking objects. This study investigates the flight performance and gaze patterns of gamers in comparison to non-gamers. The research utilized an FAA certified flight simulator, eye-tracking glasses, and a video camera. Two groups were selected based on their gaming experience: non-gamers, and gamers. Both groups received basic flight training and completed a short practice flight. During data collection, participants were instructed to maintain a straight and level flight path. Eye-tracking glasses monitored where participants directed their gaze, whether at the cockpit window screens or individual gauges. Recorded gaze footage was processed using iMotions software. The initial data obtained from the iMotions analysis, revealed that experienced gamers spent more time on average looking at the window screens than the non-gamers and both groups minimized their interactions with the airspeed and compass gauges. Flight performance was rated based on the pilot's ability to maintain the straight and level flight mission. In addition, we measured inter-rater reliability for data generated from the rubric. Based on a review of the two groups' flight performance metrics, the gamers demonstrated superior flight performance on average, while novice gamers tend to exhibit lower performance levels.

Sophia Joseph

DC - American University

Discipline: Social Sciences

Authors:
#1 Sophia Joseph

Abstract Name: Ave Maria: Analyzing Gender Inequality in Latin America through the Lenses of Marianismo and Machismo

Gender inequality is oftentimes viewed as evidence of a society's lack of progression: despite that, gender inequality is rampant throughout all regions. In recent years, there has been an emphasis on gender inequality throughout Latin America, such as the rise of femicide, or the murder of women. Throughout Latin America, gender inequality can be rooted to Spanish and Portuguese colonial concepts of marianismo and machismo.Marianismo refers to glorification of the Virgin Mary and the ideology that Latina women should embody the values of Mary, whereas machismo refers to the masculinization of men with distinct aggressive characteristics. Machismo culture emulates traditional patriarchal values, such as the domination of women, which in turn leads to violence towards women. These attitudes are then upheld by marianismo culture: women are expected to remain chaste, to be homemakers, and ultimately both accept and become perpetrators of the very status quo that ensnares them. Gender inequity through marianismo and machismo exists in a dual role: to ensure women disappear both into the homes and into their "proper place," and to ensure that men remain emotionless, aggressive, and "stereotypically" masculine beings. These systems of oppression then form societal expectations regarding gender, and when these systems are broken, violence can and has occurred, such as the rise of femicide in the region.The research aims to answer the question "In the modern age, how have marianismo and machismo gender stereotypes formed a system that operates on ensuring gender inequality?" The expected conclusions are that both marianismo and machismo delved from both colonial and Christian ideology that blended together to form a detrimental social system that continues to operate in Latin America.

Abigail Joseph

FL - Florida Atlantic University

Discipline: Mathematics and Computer Science

Authors:
#1 Abigail Joseph
#2 Jinwoo Jang

Abstract Name: Agent Behavior Modeling and the Interactions with Surroundings in Data-driven 3D Digital Twin Environments

Digital twin models build on real-world data-driven situation awareness and data streams, enhancing our capabilities to better understand the interactions and operations of real-life objects, systems, and processes. Most of the current civil infrastructure simulation tools are specialized to a single type of urban mobility (e.g., motorized vehicles), failing to incorporate the social science components and human interactions with surroundings into reflecting the functioning of city dynamics.This research project aims to develop the 3D digital twin simulation environment of the city of West Palm Beach, Florida. The objectives of this research include (1) building streetscape infrastructure based on real 3D building inventory data and (2) integrating human behaviors and their interactions with streetscape into the simulation environment. Unity and C# programming languages were used to develop the digital twin environments and to model agent behaviors and interactions.In this research work, multiple agents were integrated into the digital twin environment by defining their human behaviors and interactions with the streetscape infrastructure. First, the pathfinding behavior of the agents was developed to enable multiple agents to find a way to get to their destinations in the

streetscape. Moreover, their travel behaviors (e.g., walking speed and social distancing to nearby agents) were modeled to represent human-to-human interactions. Last, the interactions between agents and surroundings (e.g., stopping at an intersection and checking whether an intersection is free of vehicles before crossing) were added to the digital twin model. The performance of the agent behavior and their interaction models were tested and validated in the simulation environments. The potential growth of this research project is exceptional as researchers continue to improve its design and simulate more streetscape interactions, furthering the goal of making streetscapes safer, more efficient, and more accessible to all.

Harnoor Joura

CA - University of the Pacific

Discipline: Natural and Physical Sciences

Authors:
#1 Harnoor Joura
#2 Jenna Makarem
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#4 Zachary Stahlschmidt
Jenna Makarem

Abstract Name: Fear and warming in California: How do heat waves and predation risk impact resource dynamics in female crickets?

The effects of climate change are ever-expanding as human populations continue to impact our planet's ecosystems. Extreme changes in temperature due to climate change are no longer isolated events, as demonstrated by the growing prevalence of heat waves globally. Heat waves often place organisms in vulnerable situations, forcing them to find the means to regulate body temperature, conserve energy, and find resources to fuel reproduction. In addition to heat wave exposure, animals regularly encounter threats from other organisms in their environments, such as predation risk. The combination of these two factors introduces a conflict between survival and investment into fitness-related traits; food is required to withstand a heat wave and to invest in reproduction and self-maintenance, but foraging in the presence of predators increases the threat of mortality. Thus, we used female variable field cricket (Gryllus lineaticeps) to investigate the effects of heat waves in conjunction with predation risk (exposed food and water sources, and exposure to scent from black widow spiders, Latrodectus hesperus) on resource acquisition (food intake) and allocation (investment into ovarian and somatic tissues). A simulated heat wave increased food intake and the allocation of resources to reproductive investment. Crickets exposed to high predation risk reduced food intake, but were able to maintain their reproductive investment at the expense of investment into somatic tissue. Thus, exposure to both heat waves and predation risk deprioritized investment into self-maintenance, which may impair key physiological processes (e.g., immunity or stress tolerance). This study was the first to integrate the effects of heat waves and predation risk on resource acquisition and allocation, and it can help us understand how multiple covarying stressors alter important decisions by animals in a changing world.

Bethany Jowers

FL - University of South Florida

Discipline: Health and Human Services

Authors:
#1 Bethany Jowers
#2 Lindy Davidson
#3 Cayla Lanier

Abstract Name: Evaluating the Dot Survey Method as an HIV/AIDS Community Health Approach in Rural Dominican Republic

Despite advances in the clinical treatment and prevention of the human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), HIV/AIDS remains an epidemic in developing regions due to a lack of health system infrastructure, low education and literacy levels, poverty, and other socioeconomic drivers of the disease. In the context of limited healthcare and educational resources, it is imperative that novel community health tools are developed to build HIV/AIDS health literacy and promote sustainable wellness in underserved communities. In this program evaluation, the dot survey methodology was tested within a community health initiative (CHI) in the Northern Dominican Republic in May 2023. Adapted for use from open markets, the dot survey incorporates direct participant engagement into traditional data collection by soliciting responses through placement of dot stickers on a poster. In total, 92 adult participants were recruited during pop-up clinics in four rural communities, with an average age of 44 years and 25:67 male to female gender ratio. In their responses, participants indicated strong knowledge of the basics of HIV transmission and management, but their knowledge of more complex methods of transmission varied, as did their perceptions of people living with HIV. Almost all participants indicated they were comfortable sharing their opinion through the dot survey and that they liked the dot survey more than other survey methods (97%). Overall, the dot survey method was proven to be feasible in low-resource settings, as well as a powerful tool for shared learning and the creation of rapport between patients and CHI providers.

Daniel Juan

MD - University of Maryland College Park

Discipline: Natural and Physical Sciences

Authors:
#1 Daniel Juan
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Abstract Name: Liver transplant with a cold ischemic time less than 3h with or without normothermic machine perfusion: a comparison

Background: Recent U.S. data on normothermic machine perfusion (NMP) in orthotopic liver transplantation (OLT) has shown 93-94% 12-month patient survival and 97-99% graft survival. NMP trial patients had a MELD of 19 to 28 and a DCD use rate of 16% to 19%. Their actual cold ischemia time (CIT) ranged between 2.3h and 2.9h. We thought to analyze UNOS data to see if those outcomes are comparable to donors with very a CIT <3h. Methods: Deceased donor OLT performed between 2018 to 2020 were recorded. CIT was stratified into four categories: <3h, 3-6h, 6-9h, and >9h. Kaplan-Meier and Cox regression analyses were used. Results: 20,590 recipients were analyzed. We found that CIT 3-6h, 6-9h, and >9h groups had 40%, 60%, and 110% higher chance of graft failure rates compared to the CIT <3h group (all $p \leq 0.05$), respectively. Recipients falling within the <3h CIT represented a smaller subset (n=660) and had 93% 12-month patient survival and 94% graft survival (Figure). The average CIT was 2.7±0.3h, the mean MELD was 22.3±10.3, and there were 5.2% DCDs in the <3h CIT group. Reasons for graft failure were PNF, HAT, infection, rejection, GVH, and biliary issues. There was no statistical difference in patient and graft survival between DCDs and DBDs within the <3h CIT group (p>0.2). Conclusions: Liver transplants from deceased donors with <3h CIT have similar patient and graft survival rates compared to those with <3h CIT pumped with NMP. Using deceased donor livers with a projected CIT<3h might be a complementary option to NMP when the situation allows.

Mariana Juarez

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Mariana Juarez

Abstract Name: Fear of Mass Shootings: Mass Media, Myths, and Trust in Government

As shootings keep increasing throughout the years, so does the fear of falling victim to one. In 2023, there have been more mass shootings than days, with over 565 occurring across America. The increase of fear of mass shootings has increased based on the effects of mass media, myths, and the trust we have in government officials that occurs after the shooting. Due to these effects and media coverage portrayal of mass shootings, the fear keeps increasing. Relying on the Chapman Survey of American Fears, a representative national sample of U.S adults, I found that the more one watches or listens to mass media, the more likely one is to believe myths about mass shootings. Using the survey, I found a high fear level among those who identify as a woman, people of color, and are 35 and younger. These discoveries correlate with the way that shootings are portrayed in the media. Mass media will often portray victims of shootings to be women and young adults as it calls the attention of consumers and what type of shootings are shown. They will portray mass shooting perpetrators as young, white adults but turn it into an issue of mental health rather than guns which thus furthers the misinformation about gun control and shootings. As our digital era expands and we seek our news through media, we need to recognize what is the truth and what is misinformation. Media coverage plays into the increase of fear of mass shootings as they contribute to the problem by providing notoriety to the perpetrator rather than assisting in news coverage of governmental policies and change.

Naomi Julian

UT - Brigham Young University

Discipline: Social Sciences

Authors:
#1 Naomi Julian
#2 Carol Ward
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#4 Michael Cope

Abstract Name: One Size Does Not Fit All: Creating Educational Equity for Later Diagnosed Autistic Women

Autism research focuses on the externalized behaviors usually associated with the male phenotype of autism with little representation of the internalized behaviors associated with the female phenotype of autism. Even more so, there is little research involving later diagnosed autistic women — especially women of color. Beyond this, non-white individuals have been marginalized within the sphere of education, and their marginalization is exacerbated by an autism diagnosis.In the realm of schooling, the relationship between race, gender, and disability lacks investigation. In this exploratory study, I draw upon qualitative data from interviews of 18 racially diverse autistic women ages ranging from 18-52. In these interviews, I investigate the questions (1) “What are the behaviors, attitudes during and towards schooling, and self-perceptions of late-diagnosed women with autism across different racial demographics?” and (2) “How do these attitudes and behaviors correlate to their GPAs?” Since the current literature addresses the issues autistic individuals have with camouflaging their autistic traits because of the toll it takes on their mental state, this can be further analyzed in a school setting. This daily environment forces autistic individuals to exercise their camouflaging

abilities while experiencing many changes and social interactions. I am conducting a thematic analysis across the experiences of these women and comparing their experiences to their past and/or current GPAs. So far, these interviews have exposed a pattern that autistic women are consistently not believed and lack the resources they need to succeed in a formal classroom setting and school environment. As data continues to be collected from this study, women with ability and racial and ethnic minority status will gain the opportunity to add their own voices to conversations they have historically been left out of.

Shirlaine Juliano

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Shirlaine Juliano
#2 Nabila Tanjeem

Abstract Name: Photothermally driven assembly and shape transition of giant amphiphilic microstructures

Amphiphilic molecules are known to self-assemble into diverse morphologies to form micelles, vesicles, lamellar, hexagonal, and cubic phases. We developed a new experimental platform to realize light-driven self-assembly of an ionic amphiphile (Cetyltrimethylammonium bromide, CTAB) and gold nanoparticles into structures with a size of a few micrometers. The self-assembly is driven by a convective flow arising from the photothermal heating of gold nanoparticles in suspension. We synthesized the gold nanoparticles using a seed-mediated growth method. The seed solution was prepared by mixing a CTAB aqueous solution with tetrachlorauric acid (HAuCl4) and sodium borohydride. We prepared a separate growth solution by adding ascorbic acid to a mixture of HAuCl4 and CTAB, and then mixed it with a 2-hour aged seed solution. After stirring for 10-15 minutes at 28°C, the solution produced a purple-magenta color. We measured the absorption spectrum of the synthesized gold nanoparticles using UV-vis spectroscopy and found two dominant peaks – one at 540 nm (the surface plasmon resonance peak of the gold nanoparticles) and another at 268 nm (likely arising from the excess CTAB present in the solution). Using an inverted optical microscope, we illuminated the gold nanoparticle/CTAB solution with high intensity LED light. We observed a flow of nanoparticles towards the center of illumination and the formation of microscale structures with a variety of shapes. At low nanoparticle concentration and low light intensity, the formed structures were large plates and rod networks. At high concentration and high light intensity, the structures transitioned into small circular disks and hexagonal crystals. We studied the sample at different temperature (25°C-80°C) and confirmed that the convective flow is essential for the formation of these structures. This work is the first demonstration using photothermal convection to drive rapid supramolecular self-assembly, and thereby holds promise in the field of nanotechnology and nanocomposites.

Amina Jumamyradova

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Amina Jumamyradova
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Abstract Name: Rational targeting of candidate transcription factors in a neurodevelopmental disorder model.

Chromatin is the physiological substrate of all genetic processes in eukaryotic cells. Histone proteins represent a major constituent of chromatin. Their post-translational modifications have long been recognized among major regulators of gene expression in eukaryotic cells. Mutations in the proteins involved in establishment and interpretation of histone modifications are frequent in many diseases, including cancer and developmental disorders. Recently, histone genes were implicated in several neurodevelopmental phenotypes, including intellectual disability (ID) and autism spectrum disorders (ASD). Despite significant progress in topic, molecular mechanisms underlying these diseases remain largely unknown, and etiological treatments are lacking.A heterozygous germline mutation in linker histone H1.4 was identified in many patients with childhood overgrowth, ID and ASD. All H1.4 mutations are short indels that result in a stereotypical frameshift that replaces wild-type, lysine-rich C-terminal tail of H1.4 with a glutamic acid-rich de novo peptide, identical in all patients. Despite the dramatic change in charge, levels of H1.4 remain unchanged, and mutant resembles the wild-type linker histone in biochemical assays. However, RNA-Seq and ATAC-Seq analysis identified aberrant activation of neurodevelopmental programs coincident with a focal increase of accessibility at a subset of approximately 2000 genomic sites associated with a class of basic leucine zipper (bZIP) transcription factors.Seven paralogous bZIP transcription factors were identified as ectopic interactors with H1.4 mutants in pulldown and mass-spectrometry assays. Genomic and imaging data demonstrate that accumulation of mutant H1.4 drives aberrant retention of bZIP factors in chromatin. These present a potential target to alleviate cellular phenotypes driven by H1.4 mutation. Experiments are underway to establish a genetic rescue using an inducible CRISPRi system. These studies will determine whether manipulating downstream transcription factor targets would rescue histone mutant phenotype, providing first clues to rational therapies in an incurable neurodevelopmental disorder.

Yoon Sik Jung

CA - University of Southern California

Discipline: Natural and Physical Sciences

Authors:
#1 Yoon Sik Jung

Abstract Name: Survey of Clinical Trial Data of Immune Checkpoint Inhibitors – Avelumab and Cemiplimab

Immune checkpoint inhibitors, specifically PD1/PDL1 inhibitors, have revolutionized cancer immunotherapy by empowering the patient's immune system to combat cancer cells. Nevertheless, their efficacy exhibits significant variation across different cancer types and even within the same type. The research focused on assessing clinical paradigms of the four drugs and identifying novel biomsarkers predictive of response to these drugs in various cancer types of avelumab and cemiplimab. The analysis encompassed 392 publicly accessible clinical trials spanning phases I to III. The study's foundation rests on two primary databases: ClinicalTrials.gov for clinical trial information and Drugs@FDA.com (as of June 20, 2023) for drug approval data. The core assessment criteria comprised the present development status, approval timelines, and recognized indications, encompassing combined therapies. Clinical trials underwent systematic categorization based on factors such as conditions, sponsoring entities, study types, initiation dates, and posted dates. Furthermore, the research delved into indications currently in development, showcasing potential for future FDA approval based on observable trends. In the case of avelumab, indications with the most promise for approval include colorectal and breast cancer, in addition to ovarian cancer. These indications stand out due to the extensive volume of related clinical trials and the high degree of collaborative engagement in their exploration. For cemiplimab, breast cancer, head and neck cancer, and melanoma demonstrate substantial potential for FDA approval, evident through the significant number of trials. Additionally, cemiplimab's distinctive characteristic of receiving higher sponsorship involvement from diverse categories in approved drugs opens the door to potential approval for prostate cancer and lymphoma indications. Avelumab and cemiplimab’s similarities were comparable development times of 1491.5 and 1303 days. Some differences were seen in the indication development as avelumab had more involvement of the collaborator and others while cemiplimab had more trials by sponsor and others.

Anish Jupudy

CA - Aspiring Scholars Directed Research Program

Discipline: Interdisciplinary Studies

Authors:
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Abstract Name: Comparative Genomic Analysis of Colorectal Cancer Microbiome Bacteria to Discover Novel Relationships

Colorectal cancer (CRC) is uncontrolled tumor growth that starts in the rectum or colon (Park E. et al., 2022). Many factors affect the development of cancer, including daily habits, environments, and genetics. Our research focuses on analyzing the differences in pathways/enzymes between cancerous and non-cancerous associated bacteria in the gut microbiome outlined by a recent cancer microbiome review (Park E. et al., 2022). By utilizing the Bacterial and Viral Bioinformatics Resource Center (BV-BRC), we compiled our bacteria's genetic information into genome groups and used the comparative systems service to identify target pathways and construct phylogenetic trees. After focusing on genomes, we delved deeper into the enzymes. The programming language R was used to narrow down four specific enzymes from the set of genomes: two from the pathways only in non-cancerous bacteria and two in cancerous-associated bacteria. A Multiple Sequence Alignment (MSA) run at the genome level identified the range of lowest entropy among the genes in the four enzymes - one of which had the lowest range of 30-40. We are using NCBI Blast and other bioinformatics methods to characterize/validate the four enzymes in our respective target bacteria. Our end goal is to target/screen the unique pathways and enzymes (like the enzyme with EC number 5.4.3.2) of the cancer-associated bacteria and non-cancerous associated bacteria to decrease the metastasis of CRC tumors (Park E. et al., 2022). These genes, which code for the enzymes, can be manipulated in the wet lab as shown by the cited paper

Veronika Juylova

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Galactic Supernova Neutrino Burst Signals with PUSH and SNEWPY

The overarching goal of our project is to generate artificial supernova neutrino signals using a combination of two codes called PUSH and SNEWPY. PUSH is a 1D supernova simulation code that simulates the supernova explosions and generates unoscillated neutrino spectra. SNEWPY is software written for the SuperNova Early Warning System collaboration which combines the data from supernova simulation with a prescription for the flavor transformation and then computes the neutrino event rates in terrestrial detectors. Together, they form a pipeline that allows us to simulate the neutrino signal from a nearby supernova and design protocols for extracting the information we seek from a signal. To develop this pipeline we created a PUSH supernova model class using Python to be inserted into the current SNEWPY software. We then extracted and read data from PUSH to form correlations between neutrino data and supernova events.The PUSH model class extracts, reads and handles data for us to model the relationship between different variables, including luminosity, flux, time, neutrino flavor/type, and energy.Then after running SNEWPY flavor transformations, we determine the neutrino fluxes that reach the Earth. With nine different models and different mass orders, we can create multiple models that correlate the flavor and flux of neutrinos seen on Earth.From there, a part of SNEWPY called SNOwGLoBES provides functions to format the data files run through a chosen set of neutrino detectors and output the final result of data we speculate to see on Earth at the next captured CCSN event. From the output we expect our generated data and models will capture distinct differences in resulted neutrino emission, hence relating back to the type of model and creating a distinct connection between neutrino data detection and types of supernovas.

Hena Kachroo

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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#1 Hena Kachroo
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Abstract Name: Determination of the Conformation of AfeETF for Further Biochemical Experimentation

The electron transport flavoprotein (ETF) found in mitochondria mediates transfer of electrons during respiration. However anaerobic bacteria such as Acidaminococcus fermentans possess a different type of ETF, which can execute electron transfer bifurcation. A. fermentans ETF (AfeETF) couples two electron transfer reactions, producing a more energetic product than the starting material. This is a newly recognized mechanism that naturally conserves energy at the level of electron flow. Thus, the ETF protein is a valuable source of insight for creating novel materials and devices to capture and store energy. The knowledge of how ETF conformational (open or closed) changes are coupled to the reactivity of its cofactor flavin is essential for understanding how to make the electron flow of such reactions more energy efficient. This project will test small extensions to the ETF proteins, that will act as steric doorstops, to hold the protein in its closed or open conformation. These extensions are small polypeptide chains that will be attached to the N terminus or C terminus subunit of the AfeETF. The recombinant protein subunits will be expressed in bacteria, purified, and observed using polyacrylamide gel electrophoresis. Improper folding of the recombinant subunits is expected to result in diminished protein yield or fractionation to the insoluble phase during purification. Functional integrity of the protein subunits will be assessed by examining the stoichiometry of bound flavin using spectroscopy. The proposed experiments will enable testing of other reaction variables for energy efficiency while retaining AfeETF in constant open or closed conformation states. Thus, this project will provide key biochemical knowledge to harness biological reactions for sustainable energy solutions.

Annis Kaculi

CA - California State University - Fullerton

Discipline: Social Sciences

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Jon Bruschke

Abstract Name: Social Media Use and Pretrial Publicity Effects

Much research has been done on pretrial publicity but virtually all of it has been done with traditional social media, and there is very limited information on the amount of pretrial exposure and pretrial judgments of guilt. This study seeks to obtain information about cases that have recently appeared in the media to determine levels of coverage that are likely to result in widespread attention. It will further identify, for each of those cases, the source of information, and the extent to which crime coverage is received via new media. Finally, it will seek to correlate exposure levels with prejudgment of guilt. This information is directed at the fundamental question about the rate of exposure and its connection to pretrial judgements, which is at present a connection lacking a scientific consensus. In addition, it will speak to questions that courts must address, which is not typically whether publicity can influence the outcome of a trial but the amount and types of exposure that require judicial remedy. Through a Qualtrics survey, survey research will ask 200 respondents to indicate their familiarity with each of nine different contemporary court cases. The survey will further query the source of information about each case, include objective questions about each case to assess the accuracy of beliefs about the case, and assess prejudgment levels. Finally, the RAND (2019) instrument will be modified for the present study. The scale includes consumption measures for both traditional and social media news sources. Together these measures will assess traditional and social media news consumption and will separately query media exposure about particular defendants and news consumption overall.

Grant Kahle

MT - Montana State University - Bozeman

Discipline: Business and Entrepreneurship

Authors:
#1 Grant Kahle

Abstract Name: Nuclear Power as a Future Main Source of Electricity

AbstractThe use of nuclear power to produce electricity is a promising source of safe, clean, and reliable energy. Though in the past public opinion has inhibited the growth and success of this electricity source; today, with the pressure of climate change forcing the world to make a lasting change in the way our society generates electricity, nuclear power is the most prominent source for a clean energy future. The first main goal of our research is to gain knowledge to further understand Montana’s public opinion and knowledge of nuclear power and, more importantly, the foundation and reasoning for their views. We have conducted a survey that asks whether the respondent is favorable or unfavorable and why they hold that opinion, then whether they feel knowledgeable or unknowledgeable about nuclear power to produce electricity. We have surveyed students at the end of two Montana State University energy and sustainability courses, and in the next semester, we will conduct the survey in the beginning and end of courses from the science and business backgrounds. The second main goal of our research is to gain an understanding of why nuclear power has such a high price tag associated with it. We are researching the costs through summaries of techno-economic analyses of the construction and operation of previous nuclear power plants. To achieve this goal, we have been in contact with Northwestern Energy, Idaho National Laboratory, NuScale Power, and other sources from the internet. These sources have been gracious enough to share abundant information and data regarding their economic and financial knowledge and research into the field. With this information, a further goal is to identify where nuclear power can decrease costs to make it more economically viable and competitive.

Nicole Kahler

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Nicole Kahler
#2 Samantha Walunas
#3 Matthew Hemm

Abstract Name: Identifying New Small Proteins in a Molecular Biology CURE Class

Small proteins, defined as those containing 50 or fewer amino acids, are difficult to identify and characterize using standard bioinformatic and biochemical techniques. The process of identifying new small proteins, however, is an ideal project for a hypothesis-driven Course-based Undergraduate Research Experience (CURE) laboratory class. Working in groups of two, undergraduate students use basic DNA and protein sequence characteristics to identify a short open reading frame (sORF) in the Escherichia coli genome that they predict most likely encodes an expressed protein. The hypothesis for their semester-long research project becomes “We hypothesize that this sORF encodes a small protein.” Students then use molecular biology techniques such as polymerase chain reaction, DNA purification, cell transformation, and homologous recombination to create bacteria strains required to test their hypothesis. Finally, at the end of the semester they perform western blots to determine if their candidate small protein is synthesized. Over the past eleven years more than 400 students have tested over 200 sORFs for synthesis, identifying at least 58 new small proteins. Most recently, nineteen students in the Spring 2023 class identified three new small proteins out of nine sORFs tested. Altogether, students in the small protein CURE class learn valuable molecular techniques while making publishable contributions to our understanding of the E. coli small proteome.

Anna Kajs

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Anna Kajs
#2 Azucena Verdin Peralta

Abstract Name: The Impact on Children Coping with the Loss of Fathers to Suicide

Suicide in men has become increasingly common in the last decade. Often, these men do not have known mental health conditions and do not seek external support. Many factors contribute to this issue such as gender stereotypes, stigma, limited access to services, and unsupportive environments. Losing a parent in childhood can be traumatic and lead to long-term consequences. Some challenges these bereaved children face include emotional-social delays, disruptive behaviors, and mental health struggles. These children must receive adequate support to grieve in their families, communities, and schools. Interventions can be implemented to lessen the impact on these families, reducing confusion, anger, and loneliness. Previous literature has demonstrated how the loss of a parent can result in issues such as incomplete education, depression, and various mental health conditions, including alcohol and substance abuse, along with the absence of known mental health conditions in men who commit suicide. To better understand the determinants of suicide and its impact on their bereaved children, a literature review was conducted. This

information can be utilized to work towards increased prevention of male suicide in our society, ultimately reducing the impact on survivors, such as intergenerational trauma, continuing stigma, and the significance of fathers. The insights gained from this literature review can inform various professional settings, including counseling and mental health, as well as direct areas surrounding these families in schools and communities. By working towards a decrease in suicide among fathers, we can minimize the loss of children and loved ones. The findings of this literature review will help elucidate themes related to how children of fathers who committed suicide describe their own experiences with mental health and the barriers to support they encounter.

Tarun Kakarala

LA - Louisiana State University, Baton Rouge

Discipline: Social Sciences

Authors:
#1 Tarun Kakarala

Abstract Name: Development of a low-cost portable Multispectral Camera for Bovid Teeth Examination

Bovid teeth are among the most commonly found fossils in South Africa, and the accurate identification of such is vital for paleoenvironmental reconstructions as they reflect ecological adaptations. Currently, methods to test species identification of Bovid teeth involve manually tracing and binarizing images of the occlusal surface with an image manipulator software, which can be time-consuming and inaccurate depending on the tooth's condition and image quality. Previous studies on human dentition have found that multispectral imaging at the Near-Infrared wavelength (NIR) can acquire high-contrast images of enamel and enamel demineralization. The images showed cross-polarized reflectance, interproximal reflectance, and occlusal transillumination. Post-processing techniques have proven effective, including isolating the occlusal surface and quantitative analysis of pixel mean light intensity.This study aims to develop a low-cost multispectral camera with macro-imaging capabilities tailored to examine bovid teeth closely. The study will also investigate the utility of reflectance values from the occlusal surface of the teeth for more accurate species identification. The initial study will test the reflectance differences between local extant bovid species, Bos taurus and Capra aegagrus hircus, domestic cattle and goat. The difference in reflectance values between species will then be compared to the difference from the Elliptical Fourier Analysis (EPA) from binarized images of the teeth. It is hypothesized that there will be a significant difference in reflectance values of the occlusal surface of the teeth due to differences in diet and water consumption habits. Further research can then be done to determine the accuracy on fossilized species.

Karli Kallas

UT - Utah State University

Discipline: Humanities

Authors:
#1 Karli Kallas

Abstract Name: Ethics of Web3 and Decentralized Internet

For this presentation, I will present a care ethics analysis of Web3 and decentralized internet, with a specific focus on privacy concerns and the increase of internet scams due to the lack of regulation and accountability. Ethics of care argues that there is moral importance in promoting the well-being of caregivers and receivers

in a network of social relations, recognizing that all human life is co-dependent. It is important to note that care ethics was not designed to engage with such large networks of relationships, I will be expanding it to apply to the situation, so it gives us just one new way of viewing it. I will expand on this ethical lens by including points from care ethics, specifically points from Joan Tronto, such as the empathy in the design of Web3, and responsibility for online communities. My research explores the intricate web of relationships and responsibilities in the decentralized environment, aiming to shed light on the vulnerabilities within internet scams in contrast to the benefits of cryptocurrency. I examine here the moral dimensions of these scams, considering the impact on individuals and the broader digital community. The emphasis on care ethics demonstrates the interconnectedness of actors within Web3, as well as the need for a collective commitment to certain forms of innovation.

Mitchell Kallenbach

WI - University of Wisconsin-Eau Claire

Discipline: Humanities

Authors:
#1 Mitchell Kallenbach

Abstract Name: Extending the Olive Branch of Rhetoric to Everyone

Rhetoric is a field that pervades every facet of human life. This field of language is important in understanding how society and the individuals within it interact within the scope of persuasion. With this discipline I will be analyzing the process of book bannings in the US through the lens of queerness. In order to do this I will be utilizing and rhetorically analyzing texts from a trans scholar by the name of Jack Halberstam such as Gaga Feminism, as well as reframing Kate Crawford's idea of the Atlas of AI to create my own rhetorical theory of a metaphorical Atlas of rhetoric. Through my own rhetorical theory I will analyze censorship, the accessibility of rhetoric, and exclusionary power structures that control texts as if they were natural resources. The study of rhetoric helps people understand the choices other people as well as themselves make when formulating arguments, which can lead to a closer understanding of both sides. Since it gives people the tools to analyze other people's use of rhetoric, it then helps to examine systems of power in our world that are used to hold marginalized members of society back. Because of the important job rhetoric serves, it is crucial that we view it critically, since it is not immune to the woes of exclusionary practices. The point of my analysis on book bannings is to model what I wish for the future of rhetoric; I am working to allow everyone to participate in rhetoric as a wide net community, so that no identity is left out. In the case that there is a perspective that does not appear within this community I hope to build, it would simply be because they have not heard of the movement, but the olive branch is in constant extension to everyone.

Pratishrut Kamal

NC - Wake Technical Community College

Discipline: Mathematics and Computer Science

Authors:
#1 Pratishrut Kamal

Abstract Name: MEAM: A novel, low-cost algorithm utilizing ensemble learning with Audio, Visual, and Text-based applications to generate an overall human emotion

In the era of pervasive digital communication, understanding human emotions is a paramount challenge with profound implications for various domains, including healthcare, education, and human-computer interaction. This research presents a cutting-edge Multimodal Emotional Analysis Model (MEAM) designed to offer a comprehensive and context-rich assessment of human emotions by simultaneously analyzing audio, video, and text-based inputs. This model's applications are far-reaching. In healthcare, MEAM can aid in early detection and monitoring of mental health disorders by analyzing patient interviews and expressions. In education, it can enhance personalized learning experiences by gauging student engagement and emotional responses during online lessons. Human-computer interaction benefits from MEAM by creating empathetic AI interfaces that adapt to users' emotions, offering more tailored and supportive interactions. The Multimodal Emotional Analysis Model represents a pivotal advancement in emotion analysis technology, paving the way for deeper insights into the human psyche. By fusing audio, video, and text-based inputs, MEAM provides a greater context for understanding emotions, opening doors to more empathetic and responsive systems across various sectors. MEAM was able to achieve a high accuracy reaching 70% accuracy on facial emotion recognition, 95% accuracy on Audio Emotional Classification, and 96% accuracy on Text Emotion Recognition with each of these models being tested across 8 classes of emotion.

Arya Kamat

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Arya Kamat
#2 Karthik Sabhanayakam
Karthik Sabhanayakam

Abstract Name: AI/Machine Learning Techniques to Predict the Presence of Hazardous Superfund Sites Using Socioeconomic Data

Superfund sites are contaminated sites caused by the mismanagement of hazardous waste dumping adversely affecting human health. As a result, they pose important questions regarding their locations, given that research has shown that poorer communities tend to have disproportionally higher levels of hazardous waste sites. With this in mind, we aim to determine the validity of our hypothesis of lower socioeconomics positively correlating to the presence of a superfund site. Using socioeconomic data from the 2010 US Census and superfund data from the National Priorities List, we try to discern whether there is environmental discrimination surrounding superfund sites. The selected data had 344 input parameters like land area, education levels, and demographics. To validate the proposed hypothetical correlation, the IBM Watson platform was used to model machine learning algorithms optimized for accuracy. The models selected were the LGBM Classifier and the Decision Tree algorithm. The original prediction model utilized unbalanced data, resulting in the model having a high specificity and a low sensitivity. To balance the data, attempts were made to undersample the negative cases, which helped the best-performing model, the LGBM Classifier. The LGBM Classifier achieved higher accuracies in predictions of both (65.4%-positive and 71.2%-negative), got an F1 score of 0.669, and scored 0.732 under the ROC curve. After running the experiment, it was found that the most influential parameters on the prediction were land area, census mail return rate, and number of people with a bachelor’s degree or higher. The proposed hypothesis was found accurate as a strong correlation was found between lower socioeconomics and the presence of superfund sites. Using these results, we anticipate that this research can be used to launch the public debate over superfunds to give more understanding of how socioeconomics can affect the location of superfund sites.

Anthony Kamenski

PA - Westminster College

Discipline: Humanities

Authors:
#1 Anthony Kamenski

Abstract Name: From Clowns to Crowds: History of the Culture Change of Competitive Eating

Greatness comes in many shapes and sizes. Some search far and wild to achieve greatness, while others look within themselves to find self-fulfillment. The most prominent way to become great as a competitive eater is to eat the most hotdogs on the Fourth of July. At one time competitive eating was looked at as a carnival attraction or some kind of gimmick. What events caused the shift from carnival culture to the competitive sport it is today? Drawing from news articles, interviews, and scholarly-primary works, this paper demonstrates that the sport went through three stages of transformation. Competitive eating originated in the early 1600s, when it was seen as more of a sideshow attraction. The initial shift of carnival to competitive culture began to appear in the first Nathan's Hotdog Eating Contest on July 4, 1916. More eating events began to pop up and stars of the sport started to emerge. In the second phase of development, in 1997, these breakout athletes organized into the International Federation of Competitive Eating, today's Major League Eating. The sport now had sanctioned events under its own organization. The final stage was a time of cultural unease and the emergence of an eating legend, as the clashing tensions between American and Japanese athletes created the most notable eater of today, Joey Chestnut. The competition between nations put competitive eating in the spotlight and made it must-watch television, pushing it toward where we are today. The world of competitive eating is mostly untouched by scholarly sources. This research allows for the hunger of this cultural history to be fulfilled.

Shravya Kanchanapally

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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#2 Caroline Grady
#3 Bryan Becker

Abstract Name: Endothelin Receptor B Blockade in a Model of Salt-Sensitive Hypertension

Hypertension is one of the most common health conditions worldwide. Although the causes of hypertension are varied and incompletely understood, individuals with salt-sensitive hypertension have a greater risk for cardiovascular diseases. Dysfunction of the endothelin B receptor (ETB-R) is known to cause salt-sensitive hypertension. Therefore, we hypothesized that blockade of the ETB-R increases kidney expression of factors involved in salt-sensitive hypertension. Rat models of ETB-R deficiency (ETB-def) and Transgenic (TG) controls were given a high salt diet (4% NaCl) and either vehicle or A192621. A192621 is a selective antagonist for ETB-R. We extracted RNA and performed RT-qPCR from kidney cortex samples. A192621-treated ETB-def rats displayed higher expression of endothelin-1 (2.23 ± 0.67; $n = 3$) when compared to TG rats (1.35 ± 0.15; $n = 4$; $p = 0.0978$). Endothelin-1 was similar in both vehicle-treated ETB-def and TG (1.28 ± 0.12 vs 1.01 ± 0.10; $n = 2/3$ respectively; $p = 0.6416$). Endothelin-3 expression was similar in A192621-treated ETB-def rats (1.40 ± 0.51; $n = 3$) compared to A192621-treated WT rats (1.11 ± 0.15; $n = 4$; $p = 0.4738$). Endothelin A receptor expression was higher in ETB-def than TG rats regardless of A192621 or vehicle treatment (2-way ANOVA group effect of genotype $p = 0.0778$). Additional targets including the angiotensin II receptor 1a were not different across genotypes or treatment. Overall, we observed changes in components of the endothelin system in both TG and ETB-def rats following high salt diet and ETB-R blockade methods.

Ram Kandasamy

CA - California State University - East Bay

Discipline:

Authors:
#1 Ram Kandasamy
#2 Jennifer Sherwood
Jennifer Sherwood

Abstract Name: Designing Strategies That Emphasize Mentorship Within a Center for Student Research at a Public Regional Minority-serving Institution

The Center for Student Research (CSR) at California State University, East Bay supports students performing independent research with faculty. Since its founding in 2012 with 28 students, the CSR has expanded the number of engaged students and faculty with a maximum of 235 students and 80 faculty mentors in 2019 and offers programming related to professional development and funding for research and travel. A primary focus of the CSR is to ensure that students benefit from one-on-one faculty mentorship. Here, we describe implemented strategies to empower students through student-faculty mentorship. The CSR has implemented three practices: 1) Engaging faculty and students in an advisory board to restructure the center; 2) Requiring an application from both faculty and student to set mentoring goals and expectations; and 3) Using a badging system to ensure that both faculty and students are tracking the progression of students. First, engaging both faculty and students on our advisory board allows both groups to work together to contribute to the development of programming of the CSR. Second, requiring faculty to describe their approach to mentoring when nominating students ensures that mentors have a structured and tailored approach to ensure an effective working relationship. Lastly, our badging system asks faculty and students to identify at least 3 skills that the student must accomplish over the course of the term. Once accomplished, the students receive a digital badge that can be shared widely such as on social media platforms. Our 2023 mid-year progress reports indicate that badging serves as a very effective tool for tracking both faculty and student progress, as it has resulted in several students and faculty working together to submit abstracts, publications, and increased competency within the discipline. Future programs within the CSR will continue to emphasize mentorship and documentation of resulting short- and long-term products.

Emerson Kane

IA - Iowa State University

Discipline: Business and Entrepreneurship

Authors:
#1 Emerson kane
#2 Hyei Joo

Abstract Name: The contribution of tourism to community recovery after natural disasters

In a world where natural disasters increase in frequency and intensity, local tourism businesses have become more vulnerable than ever before. Although the destination community requires an extensive amount of time, the perspectives of the local businesses have been relatively neglected. Despite the extant body of literature regarding crisis management policies and tourists' visitation intentions, there is a severe scarcity of scholarly inquiries that analyze the operational guidelines and strategies of tourism destination management. Therefore,

this paper aims to balance the viewpoints of the stakeholders in tourism and hospitality businesses. Drawing the Tourism Recovery Scorecard (TOURS) model, multidimensional insights will be provided by spotlighting the major contributors to the local economy, Small- and Medium-sized Enterprises (SMEs). For an in-depth analysis, this research will conduct thematic analyses through NVivo. As Hawaiians are currently preoccupied with restoring tourism after a wildfire, the sample will be the Hawaiians who have lived in Hawaii for five years and are engaged in SMEs. Random sampling will be adopted for the data collection through the Native Hawaiian Businesses and Organizations. The projected number of sample size will be 30, and two independent researchers will analyze the narrative. The findings will be demonstrated in accordance with the significance of the theme and the narrative disclosed pertaining to the subject matter. The anticipated theoretical implication of this research is supplementing the viewpoints of destination residents to the TOURS model. The provision of a comprehensive perspective on the TOURS model is anticipated to enhance the model's reliability. Additionally, policymakers and the disaster-affected local community will gain from this research. This research increases the likelihood that the viewpoints of the local community will be considered in the restoration of the destination, as their input will provide regional policymakers with vital information that enables them to allocate resources effectively.

Nathan Kang

CA - North Hollywood High School

Discipline: Natural and Physical Sciences

Authors:
#1 Adam Green
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Abstract Name: Machine Learning versus Kinematic Variables in Collider Physics

The calculation of the W boson mass (W-mass) is a benchmark and testament to the usefulness of kinematic variables in experimental particle physics. More complex particle physics processes demand the use of more complicated kinematic variables and, correspondingly, more computational power. This project is developing a neural network that aims to reduce the required computational power of these kinematic variables while still maintaining their predictive power. The network was given either a distribution of transverse masses of the decay products or an incomplete distribution of 4-momenta (to simulate real collider data). The project also experimented with training the neural network on normalized data, different training data sizes, and different learning rates. Overall, the best architecture for this problem cannot be generalized for all W-mass calculations, but there are some patterns that emerge. For example, normalizing the training data from 0 to 1 improves network results. In addition, a network learning rate of around 0.001 seems to provide the most accurate results. Finally, increasing training data sizes corresponds to smaller errors until the error plateaus at roughly 600 training points. This work will be the foundation of a future project that utilizes Lorentz Boost Networks in conjunction with our network in a way that identifies the optimal distribution of kinematic variables to learn the mass of intermediate particles in more complicated decay processes.

Abhinav Kansal

CAN - University of British Columbia

Discipline: Mathematics and Computer Science

Authors:
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Chhavi Nayyar

Abstract Name: Region-Specific Economic Impacts of Extreme Weather Events

The research investigates the economic repercussions of climate change on various sectors in British Columbia. The central research purpose of our project is: Investigating the economic factors influenced by climate change and developing a machine learning-based forecasting model specifically for industries affected by climate change. By exploring the distribution of productivity in each sector in British Columbia, we can determine the relationship between dominant industry productivity and factors affecting climate change. The study promotes the need for improved data collection and the incorporation of climate considerations into economic forecasting and planning processes. The results from analysis will enhance the accuracy of economic impact assessment related to climate change for the next five years, which will be a novel contribution to the field. We will demonstrate the correlation between temperature variations and productivity with the help of linear regression model, and also use a Long Short-Term Memory (LSTM) machine-learning model to predict productivity trends, incorporating the temperature variables from the past 20 years of data. The evaluation of the Normal Q-Q plot in our preliminary analysis reveals the existence of heavy tails in the distribution, potentially due to Heteroscedasticity implying that the presence of variability may result in unusually high or low differences in residuals, impacting the overall distribution. We delve into a heteroscedasticity analysis that helps identify different levels of residual variability across predictor values, which can potentially impact coefficient precision in climate models. The findings suggest a significant decline in productivity for British Columbia's Agriculture and Mining sectors due to climate change. This research enhances understanding of the intricate interplay between climate change and productivity, providing actionable insights for stakeholders. We aim to present a comprehensive analysis so that we are able to contribute to the broader discourse on climate-related economic impacts.

Rachel Kanter

CA - California State University - San Bernardino

Discipline: Social Sciences

Authors:
#1 Rachel Kanter
#2 Kayla Seamons
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Kayla Seamons

Abstract Name: White Knight or Mere Bystander? Examining the Complex Role of Benevolent Sexism on Bystander Intervention in Workplace Sexual Harassment

Although workshops addressing sexual harassment (SH) in the workplace have focused on helping bystanders find ways to intervene in SH situations, attitudes and beliefs about gender and harassment may pose a barrier to various stages in the bystander intervention (BI) process. A cross-sectional study of 451 academic and professional scientists demonstrated that regardless of noticing the event and knowing how to help, participants were more likely to interpret a SH event as an emergency and accept responsibility to help when endorsement of SH myths was low and benevolent sexism was high. Interestingly, willingness to implement help increased as SH myth endorsement and benevolent sexism decreased, which may indicate that the chivalrous and paternalistic veneer of benevolent sexism extends to recognizing issues of SH but ultimately prevents taking critical action. Other common measures of gendered and societal attitudes (i.e., social dominance orientation, hostile sexism) were also negatively related to various stages of the BI process, indicating that attitudes about gender equality must be addressed and changed in order to address SH in the workplace.

Alexander Kao

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Weiwen Wang

Abstract Name: Explore undergraduate baccalaureate nursing students' sleep quality during their clinical experience

BACKGROUND: Good sleep quality ensures personal physical and mental health of an individual. For undergraduate baccalaureate nursing students, who are in a very rigorous academic program as well as clinical practice, sleep health becomes even more crucial. Poor sleep quality can affect cognitive functions, decision-making skills, and overall clinical performance. The purpose of this study is to explore the sleep quality of undergraduate baccalaureate nursing students in different academic years during their clinical experience.METHODS: The objective population for this cross-sectional survey was Bachelor of Science in Nursing (BSN) students who are enrolled in clinical courses at three universities. The survey consisted of demographics, sleep quality, and clinical performance. The Pittsburgh Sleep Quality Index (PSQI) was used to measure sleep quality and the Self Efficacy in Clinical Performance (SECP) scale was used to evaluate clinical performance. SPSS software was used to analyze the data.RESULTS: There were 124 nursing students participating in this study. The mean age was 20.87 years and 88.9% was female. 30.65% of the nursing students reported good sleep quality (PSQI < 5) and 69.35% of them reported poor sleep quality (PSQI > 5). Among the nursing students with poor sleep quality, sophomores had the highest percentage (78.57%), followed by seniors (71.87%), and then juniors (63.64%). Results of this study indicated that nursing students' clinical performance self-efficacy scores increased with their academic year. Sophomores had the lowest clinical performance self-efficacy score (67.25%), followed by juniors (72.52%), and seniors (74.40%).CONCLUSIONS: This study revealed that sophomores had the poorest sleep quality and the lowest confidence in clinical performance during their clinical experience. These results should raise nursing educators' awareness by implementing educational strategies earlier in the curriculum to improve nursing students' sleep health and confidence in their clinical performance.

Hyden Kao

CA - Orange Coast College

Discipline: Social Sciences

Authors:
#1 Hyden Kao

Abstract Name: Revealing the processes behind decision making in high stress situations

The Prefrontal Cortex (PFC) and hippocampus are some of the most critical regions of the human brain that influence decision making. There are four steps in the decision making process. To understand what happens, comparisons of brain activity during decision making during high stress versus low stress situations were made. By examining relevant data and literature, it was found that stress exposure affects the neural circuits and increases the likelihood of us engaging in risk-taking behaviors. Stress is associated with the sympathetic adrenal medullary (SAM) axis and the hypothalamic pituitary adrenal (HPA) axis. It has been shown that the prefrontal cortex is involved in activating the HPA in response to stress. This study will examine the neuroscience behind decision making and how we can improve decision making in high stress situations. Stress is multifaceted and thus needs to be examined in the context of decision making.

Namitha Kapa

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Namitha Kapa

Abstract Name: From Mary Kay and Johnny to The Mary Tyler Moore Show: How Television Sitcoms Shaped Our Perspective on Dating and Sex for Single Women.

Mary Kay and Johnny was the first sitcom broadcast on national television in the United States. It starred a married couple and was the first program to show a couple sharing a bed. Mary Kay and Johnny paved the way for later sitcoms, such as The Mary Tyler Moore Show, to challenge societal norms regarding sex and romantic relationships. Today's depiction of single women in television sitcoms is a reflection of the progress that America has made due to the waves of feminism and the sexual liberation movement. However, there remains a double standard within society and television between men and women in romantic relationships. According to studies on the sexual double standard, the social consequences between men and women engaging in sexual activity differ substantially. Men are held to fewer standards and even praised for sexual behavior. Conversely, women are governed by purity culture and judged for their number of sexual partners and when it is socially acceptable for her to have sex (first date, long-term relationship, marriage.) The purpose of this paper is to analyze how specific television sitcoms between the 1950-1970's contributed to the sexual liberation movement, women's rights, and societies' current attitude regarding sex and romantic relationships for single women. I explored this question by analyzing texts on feminist theory, text on American television, and primary television sitcom sources. Television sitcoms grew from avoiding even the suggestion of a sexual relationship for single women to actively discussing contraceptives and a single woman's sex life. Representation in television sitcoms regarding the double standard between single men dating and single woman dating is still necessary today. By reflecting on the growth of television sitcoms and its influence on society, we can address current gender norms for sexual conduct and liberate women from societal pressure surrounding sex and dating.

Selin Kaplanoglu

TN - University of Tennessee at Chattanooga

Discipline: Natural and Physical Sciences

Authors:
#1 Selin Kaplanoglu
#2 Jannatul Ferdoush

Abstract Name: Understanding the Overexpression of TATA box-binding protein-associated factor 13 (TAF13) in Eukaryotic Cells

TATA-binding protein (TBP) and TATA box-binding protein-associated factors (TAFs) comprise RNA Polymerase II (RNA Pol II) pre-initiation complex, a universal component that carefully controls the transcriptional initiation process. One of the TAFs, TAF13, also plays an important role in the regulation of RNA Pol II transcription initiation which is evolutionarily conserved from yeast to humans. It is found that TAF13 is overexpressed in thyroid carcinoma (TC) cells, while the exact mechanism that is responsible for this overexpression is unclear. Our hypothesis suggests that targeted degradation by the 26S proteasome via ubiquitylation (UPS) may be the mechanism that regulates the stability of TAF13. To test this possibility, we evaluated the role of UPS on the stability of TAF13 in yeast (Saccharomyces cerevisiae). Importantly for the first time, we found that TAF13 undergoes polyubiquitylation and have yet to find if it is regulated by the 26S proteasome. In the case of our hypothesis being supported by experimental results, therapeutic intervention could be possible for future patients of thyroid cancer.

Ronit Kapoor

CA - University of California - Santa Barbara

Discipline: Mathematics and Computer Science

Authors:
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Preston Bhat
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Abstract Name: Extending Moral Foundations Theory: Unraveling the Foundation of fairness in Political Decision-Making

We propose that the two independent foundations of equality and proportionality make up the foundation of fairness to address gaps in differing stances on what fair means, particularly among policy issues. This paper explores gaps in Moral Foundations Theory (MFT), a framework for understanding the moral underpinnings that shape decision-making processes. MFT identifies five fundamental moral foundations: care, fairness, loyalty, authority, and sanctity. The study aims to investigate how politicians engage with these foundations with respect to political ideology. We compiled SCOTUS opinions from all cases deliberated during the 2022-2023 term, collected congressional tweets from both Democrat and Republican House members, and utilized a modified MFT dictionary to quantify the presence and frequency of moral foundations. Preliminary findings suggest that there is a significant correlation among Martin-Quinn scores of SCOTUS justices and

usage of equality over proportionality. The Twitter dataset further supports this correlation, suggesting that liberals emphasize equality in their decision making more than proportionality, while conservatives tend to do the opposite. We also find that moral words are expressed more frequently in appealing to the shared ideological backgrounds of constituents than the creation of political stances. These computationally driven results support an extension to MFT, with respect to how different foundations inform on political stance and ideology.

Lucy Karabedian

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
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#3 Ramen Saha

Abstract Name: Environmental Neurotoxins Effects on Neuronal Networks and Synaptic Mechanisms

Endocrine-disrupting chemicals (EDC) disrupt activity-dependent signaling necessary for immediate early gene (IEG) transcription in developing neurons. Here we show that 6OH-BDE-47(a hydroxylated metabolite of PBDE-47; a commercially used flame retardant) and BPA (a ubiquitous plasticizer) disrupt activity-dependent Arc (model IEG) transcription. The toxins were administered to primary cortical neuronal cultures at different doses and developmental ages with either bicuculline - to measure synaptic signaling, or Tetrodotoxin (TTX) and phorbol myristate acetate (PMA) in tandem - to induce MAPK intracellularly through PKC. Arc pre-mRNA levels were then amplified by one-step RT-PCR using intron-spanning primers and quantified by qPCR. Data demonstrates a dose-dependent attenuation in Arc induction in both MAPK activation models. This finding brings into question how MAPK- which is necessary and sufficient to rIEG induction - is attenuated by such toxins. We believe this attenuation in Arc transcription may be explained by the structurally unhindered OH groups in these compounds, which may potentially disrupt phase-separating behaviors at the synapse and/ or nucleus. IEGs are significant because they rapidly activate in response to environmental changes and exposure to these environmental toxins may disrupt synaptic plasticity. The mechanisms which these toxins may disrupt are elusive and begs for further investigation.

Aydin Loid Karatas

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
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#4 Isha Tripathi
#5 Bobbie Patton

Abstract Name: Viral Communities in the Human Gut from Ancient to Modern Epochs

The human gut microbiome is central to health, digestion, and immune response. Gut viruses also contribute to human health, but their response to changing human diets from pre-historic to modern timescales has not

been thoroughly examined. To address this, we extracted and analyzed viral sequences from publicly available gut microbiome data, including samples from modern-industrial populations, modern-pre-industrial populations, and fossilized feces, known as coprolites. Lifestyle predictions of identified phages revealed modern samples exhibit higher proportions of temperate viruses than paleofaecal samples. This correlated with an increase in genetic hallmarkers of pathogenicity and a decline in frequencies of oxidoreductase genes involved in metabolism of toxins in gut virus communities from antiguity to modern times. Finally, clustering of viral metabolic gene composition revealed industrial samples exhibited higher homogeneity than pre-industrial and paleofaecal samples. Altogether, this shows that the modern human gut virome has lost metabolic diversity, is likely less resistant to toxic secondary metabolites, and is more temperate than pre-historic and pre-industrial populations, to deleterious effect on modern health.

Waly M Z Karim

NY - University of Rochester

Discipline: Natural and Physical Sciences

Authors:
#1 Waly M Z Karim
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Abstract Name: Simulation-Based Optimization of IceCube-Gen2 Modules for Enhanced Sensitivity to Neutrinos from Galactic Core-Collapse Supernovae

The IceCube Neutrino Observatory is capable of detecting high-energy astrophysical neutrinos from unknown sources as well as bursts of MeV neutrinos produced by galactic core-collapse supernovae (CCSNe). Propelling this capability forward, the upcoming IceCube-Gen2 telescope will encompass nearly tenfold the volume of its predecessor, incorporating cutting-edge multi-photomultiplier-tube Digital Optical Modules (mDOMs) and Wavelength-shifting Optical Modules (WOMs) presently undergoing development and testing. The design of the new modules will have a significant impact on the sensitivity of IceCube-Gen2 to supernova neutrinos. To gauge sensitivity and refine sensor design, we devised a high-fidelity simulation based in GEANT4, focusing on mDOMs and WOMs, accounting for depth-dependent ice properties enveloping the modules. The simulation allows for the direct injection of signal events, encompassing supernova neutrino flux with varying progenitor masses, as well as background events stemming from the radioactive decay of trace elements within the detector. Leveraging the mDOM simulation, we conducted an analysis of local coincidence in detected neutrinos and investigated a novel methodology termed "coincidence cuts" to attenuate background events and minimize the false detection rate of galactic CCSNe. Additionally, the WOM simulation yielded promising outcomes by shifting Cherenkov radiation—produced by the charged particles generated through neutrino-nuclear interactions in ice—from the ultraviolet wavelength to the visible range, where the detectors exhibit peak sensitivity. Consequently, we anticipate WOMs to exhibit heightened sensitivity to supernova neutrinos compared to existing detectors in IceCube. These simulations play a pivotal role in the optimization of neutrino detectors in IceCube-Gen2, enhancing their sensitivity to MeV neutrino bursts from CCSNe. Given the rarity of core-collapse supernovae occurrences in our galaxy, transpiring approximately once a century, it is imperative to maximize detector sensitivity to capture this singular astronomical event.

Aidan Karpicz

CT - University of Connecticut

Discipline: Humanities

Authors:

#1 Aidan Karpicz

Abstract Name: Patriarchy, Economy, and Puritanism: Slavery's Development in Colonial Massachusetts

Though slavery had a crucial role in the socioeconomic development of the United States, its influence in the North gradually decreased relative to the South. This paper, through a focus on Massachusetts from 1700 to 1754, takes an encompassing inspection into the factors catalyzing that divergence. First, the colony's rocky soil, short growing season, and high fertility rate reduced plantation size and owners' purchasing power. Planters often bought slaves in the spring and sold them in the winter, not having the resources to keep them for the entire year. This economic system prevented the accumulation of a stable slave labor force, exacerbated by constant fluctuations in the Atlantic trade markets. Second, many citizens of Massachusetts exerted constant political pressure against introducing more Africans to protect domestic labor. Numerous damaging public depictions of African Americans- such as semi-prominent merchant John Saffin labeling them "cowardly and cruel… libidinous, deceitful, false and rude"- illustrated an increasingly galvanized public opinion against slave importation. Finally, the majority of Massachusetts' citizens adhered to Puritanism, with its obsessive adherence to the Bible and constant discussion of religious scripture. Although not all spiritual leaders opposed slavery, the egalitarian Puritan ideology catalyzed public debate over its legitimacy. This paper examines why arguably the driving institution for the first two centuries of American history bifurcated between the North and South. Rather than augmenting the widespread notion that the Northern colonies dramatically abolished slavery because of their moral superiority, it recognizes that economic and political calculations were equally responsible for its steady, almost imperceptible erosion.

Mangalam Karuppiah

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
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#2 Anna Ramesh
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Abstract Name: Identification of novel ACSS2 inhibitors in regulating breast cancer brain metastatic growth

Triple negative breast cancer accounts for about 15% of all breast cancers. The overall survival rate of these patients is 77% but drops to 12% once tumors metastasize to the brain which equates to less than 6 months. There are currently no effective drug treatments for patients with brain metastasis, thus there is an urgent need to develop novel treatment strategies. Breast cancer cells that have metastasized to the brain depend on acetate for growth and survival rather than glucose. The acetyl CoA synthetase 2 (ACSS2) enzyme converts acetate to acetyl CoA which is critical for the fatty acid production and gene regulation in tumors in the brain. Our lab has previously shown that genetically targeting ACSS2 can reduce the growth and survival of breast cancer brain metastasis cells in the brain. Further, we have identified novel ACSS2 inhibitor analogs that can cross the blood brain barrier to treat breast cancer brain metastasis. Here, we tested novel secondary analogs of ACSS2 inhibitors for anti-cancer effects using breast cancer brain metastatic (BCBM) cells in vitro and whether they blocked downstream targets of the ACSS2 metabolic pathway. Here, we show that treating BCBM cells with inhibitors 2749, 7033 and 4855 was able to block cell growth measured by crystal violet staining with 4855 having similar effect as first-generation analog 8007. These novel inhibitors were tested further through western blotting and show that novel ACSS2 inhibitor 4855 lead to a reduction in E2F1: a downstream protein of the ACSS2 metabolic pathway. These results suggest a crucial role for ACSS2 in the regulation of breast cancer brain metastasis and identifies ACSS2 inhibitor 4855 as a potent novel ACSS2

inhibitor of BCBM cell growth and supports further testing of these drugs as novel therapeutic agents for the treatment of breast cancer brain metastatic growth.

DANIEL KASAKULA

WA - Seattle University

Discipline: Engineering and Architecture

Authors:
#1 Daniel kasakula

Abstract Name: Battery Discharge Tests Using Real Load Profiles for off-Grid Power Systems

Over 100,000 people in the U.S. lack access to grid electricity, most of whom live on Native American reservations or other Tribal Lands such as the Navajo Nation. Off-Grid renewable energy solutions using photovoltaic modules and battery banks can be used as an alternative to grid electricity. Off-grid systems can suffer outages not because the equipment has failed or the system was installed incorrectly, but because the batteries are unable to adequately serve the load. Selecting the appropriate size of battery for an off-grid system can be challenging. One reason is that the capacity of a battery is rated assuming it delivers a constant load current, which rarely happens in actual electrical systems. A battery's performance can be greatly influenced by fluctuations in load, which can lead to unexpected performance, reduced lifespan, and even safety concerns. This research aims to comprehensively investigate and analyze the performance of lead acid batteries by discharging them according to actual load profiles from residential off-grid systems on the Navajo Nation. A 183Ah gel lead acid battery is discharged using a programmable DC load to investigate how varying discharge currents affect the capacity of the battery. A better understanding of how battery capacity is affected by varying loads can improve the design of battery banks in off-grid systems. The work is part of a multi-year National Science Foundation-funded collaborative project between Seattle University (SU) and Navajo Technical University (NTU), in partnership with the Navajo Tribal Utility Authority.

Tomoya Kasakura

JPN - Musashino University

Discipline: Business and Entrepreneurship

Authors:
#1 Tomoya Kasakura
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Abstract Name: Measuring and Analyzing the Retention of Entrepreneurship Education at Musashino EMC: Through AI analysis and Measurement of the Global Entrepreneurship Monitor

In today's uncertain world, we are developing an entrepreneurship education program that takes into account the current social conditions represented by VUCA (Volatility, Uncertainty, Complexity, Ambiguity). Musashino EMC will open in April 2021 as the first four-year university entrepreneurship department in Japan. This study included all videos recorded of online-type 1-on-1 meetings between faculty and students that were conducted in April for all second-year students of Musashino EMC.Meetings were recorded using the ZOOM functionality, and AI analysis by I'mbesideyou was performed. in I'mbesideyou's AI analysis, based on emotion indices such as Happy, Angry, Neutral, Sad, Fear, and Surprise, "percentage of statements", " The mental health index was calculated based on the emotional indices of Happy, Angry, Normal, Sad, Fear, and Surprise, with three additional analysis items: "percentage of comments," "negatives and positives

of comments," and "speaking speed. By comparing these results with the Global Entrepreneurship Monitor (GEM), a representative survey of entrepreneurship, 20 participants were selected as those with large and small changes in the mental health index.In addition, the GEM model's entrepreneurial activities have a significant impact on a nation's economic growth, and are composed of "Attitude," "Activity," and "Aspiration. Questionnaires were created to check the degree of achievement of these three items from the Musashino EMC curriculum, and a questionnaire survey was conducted on 20 selected students. The survey was conducted on 20 participants to measure the effectiveness of Musashino EMC's education and to evaluate the effectiveness of Japan's first entrepreneurship department in the world. In a recent survey conducted to measure the level of achievement at Musashino EMC, more than half of the students subjectively indicated that they were able to retain their skills, but we intend to further deepen our understanding by extracting the population based on the results of AI analysis.

Hassan Kashif

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Hassan Kashif
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#3 William Bailey
#4 Francis Farhadi

Abstract Name: Evaluating Blood Biomarkers to Predict Surgical Success in Patients with Degenerative Cervical Myelopathy

Degenerative Cervical Myelopathy (DCM) is defined as age-related osteoarthritis that results in the narrowing of the cervical spinal canal, leading to chronic spinal cord compression and neurological disability. The most common treatment for DCM is decompression surgery. Currently, there is no predictive measure to assess the chances of surgical success in patients before surgery. The disparity between patients who achieve surgical success and those who don’t remains unknown. In medicine, blood biomarkers have become an incredible tool to help identify disease presence, disease severity, and surgical success. Current literature has found a strong correlation between several biomarkers and common neurological and spinal cord diseases. Currently, no such biomarker exists for DCM. In this study, the pre-operative and post-operative blood work of 15 patients has been evaluated to assess the levels of GFAP, AB42, AB40, APOE, and NeFL as potential biomarkers for DCM. Through a preliminary ELISA screening, followed by a secondary Simoa assay, APOE was the most relevant and identifiable biomarker in patients with DCM. Pre-operative blood work displayed elevated levels of APOE in patients with DCM compared to baseline levels. Post-operative blood work revealed that surgery resulted in a statistically significant decrease in APOE in patients. Patient recovery was assessed utilizing the mJOA scoring system which evaluates sensory and motor health before and after surgery. Patients with greater levels of APOE achieved greater “percent recovery” than their counterparts. The current data supports the potential use of APOE as a viable biomarker to evaluate surgical success.

Khizar Kashif

PA - Drexel University

Discipline: Business and Entrepreneurship

Authors:
#1 Khizar Kashif

Abstract Name: Data Analysis on EdTech Investments in Private Equity via Pitch

Affordability, accessibility, and relevancy remain pressing concerns within higher education. The integration of technology into educational practices presents a promising avenue for addressing these challenges. Venture Capital firms increasingly support educational technology (EdTech) companies, signaling potential shifts and innovations in higher education. Investigating these investments offers insights into forthcoming solutions within the educational sphere.This study delves into the landscape of Private Equity Funds investing in Education Technology using comprehensive data from Pitchbook. By leveraging this directory, we construct a robust database encompassing crucial metrics such as the Internal Rate of Return (IRR), Liquid Cash (Dry Powder), Fund Size, the ratio of EdTech to non-EdTech investments, alongside detailed information about investees, including funding amounts. Our analysis focuses on discerning patterns, including the average investment received by EdTech companies and disparities in capital allocation between funds solely dedicated to EdTech versus those with partial investments.Unveiling these investment trends not only sheds light on financial aspects but also facilitates strategic matchmaking between aspiring EdTech entrepreneurs and Private Equity firms inclined towards investing in this domain. Furthermore, this comprehensive dataset enriches our comprehension of the EdTech landscape, potentially guiding future innovations and policy decisions in higher education.This research aims to contribute significantly to understanding the dynamics of EdTech investments in Private Equity, offering actionable insights and fostering collaborations that drive positive transformations in the education sector. The utilization of Pitchbook data enables a nuanced exploration, opening avenues for informed decision-making and fostering a more conducive environment for EdTech advancement within the educational landscape.

Saarang Kashyap

CA - California State University - Los Angeles

Discipline: Interdisciplinary Studies

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Ethan Crofut

Abstract Name: De novo Identification of Flagellar Microtubule Doublet Proteins in Trichomonas Vaginalis Using Cryo-Electron Microscopy

Trichomonas vaginalis (Tv), the flagellated extracellular protist and causative agent of the sexually transmitted infection, Trichomoniasis, is implicated in many perinatal complications, male and female UTIs, and increased rates of HIV transmission. The Tv flagella, composed of an arrangement of outer microtubule doublets (OMDs) forming a ring around a central pair of microtubules, produces a unique undulating motility that facilitates locomotion and host cell adherence. Currently, the lack of a high-resolution structure for the Tv OMDs presents a gap in our understanding of integral proteins for flagellar assembly and their potential applications in drug development. To address this, we utilized cryo-electron microscopy (cryo-EM) to image the OMDs of Tv flagella. Using single particle analysis, we successfully resolved a high resolution 3.65 Å (.37 nanometer) reconstruction of the OMDs from around 83,000 particles. We identified ~35 distinct internal and external proteins by fitting atomic models of proteins from our mass spectrometry data into our reconstruction. We designated two previously uncharacterized proteins, CCDC_347810 and CCDC_165330, at the junction where the α and β tubule converge, forming the doublet. Based on homologous comparison with sea urchin and bovine sperm microtubule proteins, we suspect these two unidentified proteins are

involved in junctional stabilization of the OMDs and outer radial spoke association, supporting Tv's flagellar beating. This work elucidates the structures which contribute to the stability of the OMDs and the OMD's connection with other flagellar proteins. More broadly, this research unveils novel protein densities that provides a molecular basis for targeted therapies against Tv.

Ariela Kaspi-Kaneti

CA - Aspiring Scholars Directed Research Program

Discipline: Natural and Physical Sciences

Authors:
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Hannah Fahel

Abstract Name: Enhancing 3D Molecular Visualization in College-Level Chemistry Education

The ongoing research initiative is a comprehensive response to the imperative need for elevated understanding of three-dimensional (3D) molecular structures within higher education. The inadequacy of conventional teaching approaches reliant on two-dimensional (2D) diagrams and physical models has catalyzed the exploration of innovative methodologies to address this educational gap. Within the expansive landscape of higher education, this project sets forth overarching goals aimed at the enrichment of chemistry education and the fostering of inclusivity through the strategic utilization of virtual reality (VR) technology. The multifaceted objectives encompass not only enhancing student comprehension of complex 3D molecular structures but also amplifying engagement, elevating academic performance, and ensuring equitable access to cutting-edge technology, particularly among underrepresented groups. The implementation of this ambitious project involves a nuanced set of key methodologies, including the meticulous development of pre and post-VR exposure assessments, the creation of VR-enhanced educational games, and the orchestration of pilot programs accompanied by comprehensive student assessments. The significance of this endeavor transcends institutional boundaries, resonating on local and regional levels by contributing to the enhancement of chemistry education quality and actively addressing educational disparities. By deliberately extending access to state-of-the-art technology to underrepresented groups, the project acts as a catalyst for nurturing a more educated, skilled, and diverse workforce—a testament to the broader societal impact of integrating advanced technology into education.

Niftalem Kassa

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Rushit Dave

Abstract Name: Touch Dynamics: A Biometric Authentication Method for Mobile Devices

The widespread adoption of smartphones has led to a growing demand for secure and convenient identity authentication methods. Touch dynamics, which analyzes the unique characteristics of an individual's touch behavior, has emerged as a promising biometric modality for mobile devices. This paper provides a comprehensive overview of touch dynamics-based authentication, covering its underlying principles, system architectures, feature extraction techniques, classification algorithms, and performance evaluation metrics.

Additionally, the paper discusses the advantages and limitations of touch dynamics compared to traditional biometric methods, such as fingerprint and facial recognition. Furthermore, the paper explores the potential applications of touch dynamics beyond authentication, such as user profiling and affective computing.Despite its promising potential, touch dynamics-based authentication faces challenges that warrant further exploration. Enhancing robustness against environmental factors, mitigating the impact of device variations, and addressing concerns regarding privacy and security are crucial areas for future research. By addressing these challenges, touch dynamics can become a ubiquitous and trusted biometric modality for mobile devices, revolutionizing the way we interact with technology. The research anticipates that touch dynamics will demonstrate promising results in terms of authentication accuracy, robustness, and user acceptability. The discussion will address the implications of the research findings for the future of biometric authentication and mobile security.

Jogi Katende

MI - Michigan State University

Discipline: Business and Entrepreneurship

Authors:
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Delani Stull

Abstract Name: Global Sustainable Stock Portfolios From an Investor’s Perspective

Sustainability is an increasingly important aspect of our world. Yet many stock investors are unfamiliar with sustainable investments and, therefore, do not consider them a relevant alternative to traditional investments. Our goal is to compare sustainable investments to traditional investments and propose sustainable investment strategies. We used B-Lab certification as a sustainability benchmark. B-Lab certification is obtained by companies that work rigorously to maintain high scores on the globally used environmental, social, and governance scale (ESG). B-lab certification is challenging to attain and maintain, so it has become a critical standard to identify sustainable investments. To show investors how sustainable stock investments compare to traditional alternatives, we plan to compare stock portfolios of publicly traded B-Lab certified companies to the S&P 500. Our team also plans to conduct event analyses to measure the effects of particular global events on the performance of sustainable portfolios. We will consider events such as statements made by Elon Musk on social media regarding sustainability. Lastly, we are interested in analyzing sustainable investments according to traditional portfolio management strategies such as small companies vs large companies, domestic vs international, and per-industry performance. We hope to share valuable knowledge about sustainable investment alternatives and propose potential investment strategies. We are convinced our findings could potentially draw the attention of more investors to many overlooked investment opportunities.

Tapasya Katta

AL - University of Alabama at Birmingham

Discipline: Social Sciences

Authors:
#1 Tapasya Katta

Abstract Name: Recreation Centers and Youth Mental Health: A Dual Theoretical Exploration

In this presentation, I will present a conceptual framework to study the role that recreation centers play in enhancing the mental health among youth. Amidst the growing concern of mental health disorders among youth, specifically within low socioeconomic groups, these community centers can offer vital support. The presentation underscores the unique position of recreation centers as accessible and inclusive spaces that provide a range of activities to foster mental well-being and social interaction.Opportunity theory and social capital theory are employed to understand the impact of recreation centers. Opportunity theory suggests that the activities and programs available at these centers provide young people with positive experiences and skill-building opportunities, which are crucial for their psychological development. Meanwhile, social capital theory emphasizes how these centers build community bonds and a sense of belonging that lead to a social network and can buffer negative mental health outcomes.Empirical data is reviewed to demonstrate how regular engagement in recreation center activities correlates with improved mental health outcomes. These include reduced symptoms of depression and anxiety, improved self-esteem, and better social skills. This suggests that recreation centers serve not only as spaces for physical activities but also as safe environments for emotional and social development. It also sheds light on the potential of these centers in reducing the demand for formal mental health services by providing a supportive and engaging community environment.The presentation concludes by emphasizing the need for further empirical research to strengthen the evidence base for the role of recreation centers in mental health promotion. It advocates for policy changes that recognize and support these centers as vital assets in public health strategies, particularly for youth mental health.

Ali Kattee

CA - University of California - San Diego

Discipline: Engineering and Architecture

Authors:
#1 Ali Kattee

Abstract Name: Dynamic shape changing terrain for robotics locomotion

The indoor construction of terrains is a preferred approach to robotic locomotion verification due to its convenient access to various monitoring and computing equipment that is typically hard to deploy outdoors. Some standard practices include a human arrangement of bricks, boxes, and panels, and a more uniform composition with wooden blocks. Nevertheless, robotic experiments may require different terrestrial features and it is tedious and challenging to manually reconstruct various empirical environments in a timely manner.The above issue can be overcome by automating the terrain reconstruction and the literature suggests that such automation can be achieved through shape-changing interfaces concentrating more on user haptic interaction. As an adaptation to more aggressive actions, the Walkable Pin-Array target on larger scales and heavier surface payload, yet still coerces the actuator quantity agreeing with the terrain width and the pin-locking mechanism in a row-consistent manner. To this end, we propose a scalable dynamically-reconstructable terrain that is inspired by the Pin-Array but has few limits on the actuation and the pin-locking mechanism. The terrain prototype enables an independent self-locking-unlocking mechanism for each pin without compromising the pin payload. It also features a coreXY gantry that allows rapid relocating of at minimum one linear actuator to maneuver pins' height. Online planning and control are applied to locally realize the target terrain morphology in almost real time, followed by adaptation to any global scale. In this way, the proposed terrain platform can approximate more dynamically varying environments at different scales.

Kayla Katz

CA - California State University - Monterey Bay

Discipline: Natural and Physical Sciences

Authors:
#1 Kayla Katz

Abstract Name: Computational investigation of ortho toludinium carboxylate ionic liquids to increase antimicrobial activity against fungi and bacteria

Bacillus cereus, Escherichia coli, and Aspergillus niger are some of the most common bacteria and fungi which people get infected with every year. Approximately there are 63,400 cases of Bacillus cereus, 95,000 cases of Escherichia coli, and 4.8 million cases of Aspergillus niger. Ionic liquids (ILs) are a commonly used substance with unique and versatile properties, allowing them to be used in a wide range of applications due to their distinctive properties. They're commonly used in fields such as electrochemistry and energy, recently they've been rising in popularity in the medical field as they demonstrate strong antimicrobial activity. This research aims to test if ILs, specifically ortho toluidiniummethanoate, ortho toluidiniumacetate, ortho toluidiniumpropanoate, ortho toluidiniumbutanoate, and ortho toluidiniumtrifluroaccetate can be used with a range of different proteins such as Bacillus cereus, Escherichia coli, and Aspergillus niger. Optimizations of IL ligands using the Density Functional Theory and B3LYP/6-31+G(d,p) basis sets were done in Gaussian 16. Mathematica was then used to complete calculations to find LUMO, HOMO, HOMO LUMO gap, ionization potential, electron affinity, chemical hardness, chemical softness, electronegativity, chemical potential, and electrophilicity index. VINA was then implemented last to create docking poses between the substrate and the IL ligands, which allowed for the testing of binding affinities. Our results indicate strong affinity between these ligands and proteins found in these bacteria and fungi.

Kaley Katz

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Kaley Katz
#2 Tonya Train

Abstract Name: Investigating ASXL Variation in Leukemic Cell Lines

Addition sex combs-like 1 (ASXL1) is a protein involved in cellular differentiation, epigenetic modification, and transcriptional regulation. The gene that codes for ASXL1 consists of 13 exons and 12 introns. In acute myeloid leukemia (AML), as well as many other myeloid malignancies, ASXL1 is frequently mutated. These mutations have been observed in approximately 20% of patients with myelodysplastic syndrome and in individuals diagnosed with AML. ASXL mutations have also been found in lymphoid leukemias, but at a much less frequent rate (~2%). These mutations can result in abnormal splicing, termination, or missense mutations. Abnormal splicing can result in a mutated protein that is larger or smaller than normal, while a termination mutation results in proteins that are smaller than normal. Protein size can be detected through gel electrophoresis and western blot analysis, using specific antibodies that bind to ASXL. The most common splice variant of ASXL1 is 166 kDa in size. This study aims to compare the size of ASXL1 in two different leukemia cell lines. Using an ASXL1 Monoclonal Antibody (11I4), we were able to compare ASXL1 in HL60 (AML) to ASXL1 in Jurkat (acute t-cell lymphocytic leukemia). We were able to confirm the presence of alternative forms of ASXL1 in both HL60 and Jurkat. In both cell lines ASXL1 was smaller than normal. In Jurkat cells ASXL1 was approximately 45 kD, while in HL60 cells the protein was 34 kDA. This difference in size could be a result of normal alternative splicing, abnormal splice mutations, or termination mutations which result in truncated, and therefore smaller, proteins. Further research should be done to sequence the genes to determine whether these leukemic cell lines carry mutations (splice-site or termination)

or whether they are normal splice variants and whether these abnormal proteins contribute to the uncontrolled, leukemic, growth in these cells.

Iris Katzman

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Iris Katzman

Abstract Name: The Construction of a Cross-Disciplinary Space for Creative Interaction: The Gertrude Stein Salon during the formation of Modernism

This study explores the historical precedent of interdisciplinary collaborative spaces within the Parisian Salon system of early Modernist 20th Century France using the Gertrude Stein Salon as a case study. The model of the multi-disciplinary higher education makerspace and its role within the creation of student collaborative relationships in university contexts may be identified as a contemporary version of the Parisian Salon system. To understand the development of the interdisciplinary collaborative space and the dynamic relationship that such spaces create, a literature review was conducted of articles from 1958 - 2022. The primary research focuses were the Modernist Gertrude Stein Salon, the formation of relationships between artists such as Picasso and Matisse, the precedent of the contemporary collegiate makerspace, and the importance of collaborative dynamics and relationships within higher education campuses. Two major differences between the historical Paris Salons and its contemporary counterpart of the interdisciplinary makerspace were identified; The Paris Salons were characterized by a comparatively informal and personal collaborative nature while the contemporary makerspace offers technical and non-technical equipment and support that were not present in the Paris Salon system. Injecting the informal, personalized, and discussion-based nature of the 20th Century Parisian Salon into the contemporary interdisciplinary collegiate makerspace will create a space within university campuses in which students are supported and encouraged to collaborate and form interdisciplinary relationships that further foundational knowledge, form industry connections, and create career-long interdisciplinary interactions.

Harveen Kaur

TX - Rice University

Discipline: Natural and Physical Sciences

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#2 Devin McBride

Abstract Name: Evaluating the role of glycoprotein LRG-1 on delayed neurological deficits after a subarachnoid hemorrhage

Subarachnoid hemorrhage (SAH) is a highly serious condition where blood vessels in the brain burst and can cause bleeding in the space surrounding the brain. This condition has a 40-50% mortality rate and annually affects 30,000 people in the United States alone. Additionally, 20-30% of SAH survivors experience further neurological decline, the most common being delayed cerebral ischemia, and these symptoms have been identified as the leading cause of mortality for SAH survivors. It is crucial to understand why these deficits occur and how patient outcomes after a subarachnoid hemorrhage can be improved by specifically targeting

these conditions. Leucine-rich alpha-2 glycoprotein, or LRG-1, is known to cause disease progression and promote angiogenesis, and studies have shown that LRG-1 can promote apoptosis through the TGFβ signaling pathway, causing ischemic effects to be more aggressive. However, if LRG-1 is silenced, the signaling pathway is inhibited and this can lead to less inflammation. In autoimmune and cardiovascular diseases especially, the elevation of LRG-1 has directly led to disease progression, which indicates that it can be a possible biomarker and target for certain conditions. Currently, detection methods are lacking to screen patients for complications directly after SAH, which raises the questions of if LRG-1 contributes to cellular damage following SAH for patients who experience ischemic defects. Previous research has shown a correlation between increased LRG-1 levels after SAH in mice, but this study aims to evaluate and understand specific LRG-1 expression patterns after a subarachnoid hemorrhage. This will be accomplished by using cell culture models with LRG-1 and hemoglobin, immunofluorescence assays, and endoglin-specific assays with plasma and mice brains. For future outlook, the takeaways of this project will be used towards implementing LRG-1 inhibition after a subarachnoid hemorrhage to test its therapeutic potential as a biomarker.

Mayher Kaur

IL - University of Chicago The College

Discipline: Natural and Physical Sciences

Authors:
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#3 Massar Alsamraae
#4 Brandon Faubert

Abstract Name: Metabolic Rewiring Elucidates Metastatic Behavior in Non-Small Cell Lung Cancer

During metastasis, cancer cells detach from the primary tumor and migrate through the circulatory system. Most cancer cells die from oxidative stress during this process. How the remaining cells adapt to survive this stress is largely unknown, but a key hypothesis is that circulating tumor cells (CTCs) rewire metabolic programs to adapt to these stresses. In this work, we investigated the metabolic differences between anchorage-dependent and anchorage-independent growth in non-small cell lung cancer (NSCLC). A key limitation in this area is that standard cell culture conditions do not accurately recapitulate the in vivo environment. To more accurately model the in vivo environment, we cultured NSCLC cells in human plasma-like media (HPLM), which better recapitulates the physiological nutrient concentrations of the blood. To investigate differences in metabolic activity between anchorage-dependent and independent growth, we cultured cells under standard or physiologically relevant conditions. We performed stable isotope labeling with key nutrients (glucose, lactate, glutamine, etc.), and preliminary results indicate key metabolic and proliferative differences across these conditions. Cells cultured in HPLM use less glucose and glutamine to fuel the TCA cycle compared to standard culture conditions, and non-adherent cells are primarily using glutamine to fuel TCA intermediates. We are currently leveraging these metabolic differences to identify novel therapeutic strategies to target CTCs. These assays are a starting point for ongoing in vivo models of circulating tumor cells, allowing for investigation of the metabolic phenotypes of CTCs from novel patient-derived xenografts.

Arshdeep Kaur

CAN - Kwantlen Polytechnic University

Discipline: Health and Human Services

Authors:
#1 Arshdeep Kaur
#2 Mika Mokkonen
#3 Cayley Velazquez

Abstract Name: Unlocking the Seasonal Secret: How Season of Birth Shapes Adult Mental Health Outcomes

The season of birth serves as a useful proxy or indicator of the various environmental conditions throughout the perinatal period. The season of birth has been largely studied in the context of severe neuropsychiatric disorders, particularly schizophrenia. However, research pertaining to common mental health disorders remains limited. Depression and anxiety continue to be leading causes of global disability and premature mortality, significantly contributing to the large and increasing health burden worldwide. Therefore, this study sought to fill the existing knowledge gap by investigating the association between the season of birth and symptoms of depression and anxiety among adults using a survey-based cross-sectional research design. Primary data was collected using a comprehensive questionnaire developed to encompass demographics, health behaviours, health outcomes, as well as birth, early life, and family history information. Depressive symptoms were assessed with the Patient Health Questionnaire (PHQ-9) and symptoms of anxiety with General Anxiety Disorder 7-Item (GAD-7) scale. A mixture of descriptive and inferential statistics was used to analyze the data. Generalized Linear Mixed Model (GLMM) analysis was performed to determine any observed associations between season of birth, life history traits, depression and anxiety. Understanding this relationship could potentially help characterize the season of birth as an additional risk factor that influences susceptibility to certain mental health conditions in one's lifetime. Gaining insight into this association is critical for planning prevention efforts, assessing susceptibility, and providing targeted interventions for at higher-risk individuals. This presentation will present the main findings of this survey and provide insights into how the environment and genetics can influence mental health.

Jasleen Kaur Sidhu

WA - University of Washington - Seattle

Discipline: Natural and Physical Sciences

Authors:
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#3 Rachel Klevit

Abstract Name: Electrostatic Properties of Alpha-Crystallin Domain of HSPB5 and its Effect on Chaperone Activity

When a cell undergoes stress conditions, such as oxidation or ageing, an increase in protein instability can occur and prevent proper cell functions. Small Heat Shock Proteins (sHSPs) are molecular chaperones that work to maintain a healthy proteome by associating with misfolded "client" proteins to delay aggregation under such conditions. HSPB5, a human sHSP, is ubiquitously expressed throughout the body. HSPB5's disease mutant, R120G, is a defective chaperone associated with cataracts and desmin-related myopathy. It is still unknown how this mutation is detrimental despite many years of research. My research aims to understand how this mutation retunes the electrostatic properties of HSPB5, affecting its chaperone activity. Residue R120 is part of an electrostatic network that helps create an important structural feature in the folded region of HSPB5, the alpha-crystallin domain (ACD). In the unmutated (WT) protein, the ACD surface is overall positively charged. Substitution of the positive R120 to glycine alters both ACD's structure and electrostatics. I generated two mutants, R120K (retaining positive charge) and R120D (switching to negative charge) to investigate how R120 plays a role in ACD's conformation. Using a negatively-charged molecule, ATP, as an "electrostatic" probe in 2D NMR, I observed differences between its binding affinity to my R120

variants. I found that only R120K ACD behaves similarly to WT ACD, suggesting a possible correlation between charge potential and ACD's interactions with ATP. Currently, I am investigating if charge potential affects chaperone activity through aggregation assays with a client protein, human γD-crystallin, found in the lens and implicated in cataracts. I predict that WT and R120K, with similar electrostatic properties, will have similar chaperone activity. R120G and R120D, prevalently in an "active" state, will have higher chaperone activity. Understanding how such mutations affect HSPB5's conformations and chaperone activity is a step forward in understanding sHSPs' chaperone mechanism.

Khushi Kaushik

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Khushi Kaushik
#2 Thomas Murphy

Abstract Name: Fun with Fractran

Fractran is an esoteric programming language developed by a renowned mathematician, John Conway. In contrast to traditional programming languages, Fractran operates in the realm of pure mathematics, using fractions to represent the algorithm and its execution. The essence of Fractran lies in its minimalist approach to computation. Programs in Fractran consist of a sequence of fractions, each representing a transformation rule. These rules dictate how the program evolves, with the computation progressing through a series of multiplications and divisions involving rational numbers. The elegance of Fractran lies in its ability to harness the simplicity of fractions to express complex computational processes. Despite its simplicity, it is Turing-complete and has the important advantage that the Godel number can be explicitly computed for any program. This poster delves into the essentials of Fractran, the advancements made in the previously designed code– PIGAME, and a newly designed code– SQRT2GAME, together with the necessary proofs.

Korai Kayim-Yanko

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Korai Kayim-Yanko

Abstract Name: Psychological Mechanisms of Epistemological Processes: A Spinozan Model of Belief Acquisition

The questions of how and when individuals believe or disbelieve a novel proposition following mental representation have remained unresolved within epistemological discourse. Contemporary research testing belief-fixation has focused on memory activation during veridical judgements. Support for the Spinozan or "ballistic" model represents the growing challenge to the widely accepted Cartesian or "static" model. However, criticism of the ballistic model has framed its necessary assumptions inaccurately. This warrants reiterating its basic assertions, as many of these dissenting findings suggest support for the model with proper consideration. We used evidence from three experiments testing declarative memory errors to argue for the core principle of the Spinozan view: simultaneous to comprehension of novel information is initially regarding it as true. Each experiment used variations on the Dispositional Judgement Task; participants were

presented statements labeled as true or false followed by a memory recognition test consisting of half novel and half old statements. Statements were rated for similarity and mutual exclusivity relative to those initially seen initially in a pretest. These categories were then compared for differences in belief bias. Results from each experiment found greater instances of false-errors than true-errors, an imbalance in “falsification bias” that aligns with predictions following from the core features of the ballistic model, while still upholding its compatibility with features of belief previously alleged as inconsistencies. The current article aims to establish these core features, isolating them from unsupported additions and revising the original discussion of our findings using a mixed-effects model to show their true potential. An adapted version of Cook & O'Brien’s activation pattern as passive, dumb, and “smart” was incorporated to describe the relationship between propositions and extant memories. This reframing explains spontaneous disbelief and the observed falsification bias as a result of comprehension requiring propositions to be initially believed prior to being judged.

Natalya Kaza

AR - Lyon College

Discipline: Humanities

Authors:
#1 Natalya Kaza

Abstract Name: Memory and Identity in Julia's Alvarez How the Garcia Girl's Lost Their Accent

The life of an immigrant can be one of ambiguity, two languages, two faces, two identities. Trapped between two worlds, an individual often finds it difficult to discover their true self. Memories of the past surround all aspects of their lives, creating a conflict between the old and the new. An identity not yet formed faces assault from both directions, leaving an individual alone and isolated from both cultures. This clash is discussed in Julia Alvarez’s novel How the Garcia Girls Lost Their Accents (1991) through the lives of the four Garcia sisters who immigrated to the United States from the Dominican Republic as a family in order to escape political persecution under the Trujillo regime. Together they have difficulty assimilating to the culture of the United States. The parents desire the idea of the old country, but the girls crave new freedoms and experiences in New York. Yolanda, the primary perspective, struggles with this question of identity throughout her life, returning at the beginning of the book to the Dominican Republic in an attempt to understand herself. From that moment against the clock, the story is told backwards, retelling the story of the Garcia family as it was. The Garcia family is not alone in their experience. Starting in the 1950s, thousands of Dominicans immigrated to the United States in order to escape the tyranny of Rafael Trujillo. This work analyzes the effect of memory experienced by the character Yolanda in the novel, How the Garcia Girls Lost Their Accents in order to explore the multi-faces and challenges of identity often encountered and negotiated by those navigating biculturalism.

Talar Kazanjian

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Talar Kazanjian

Abstract Name: Impact of Immigration Policies on National Economies: A Global Analysis

Exploring the intricate relationship between immigration policies, political dynamics, and the economic well-being of nations, this study leverages data from The World Bank, a global institution representing member nations. Focusing on the influence of open border policies on a country's economy, my research investigates the changes in immigration policies that occur during political transitions and their consequential impact on both the influx of immigrants and the overall economic state. Using the data from member nations, I explored the correlation between a nation's acceptance of immigrants and its economic performance. The comprehensive dataset employed in this study provides a rich source of information, enabling me to analyze trends and draw meaningful connections between immigration policies and economic indicators. My findings reveal a strong correlation between countries with open immigration policies and those boasting higher GDP per capita and standards of living.This research contributes to the understanding of the global economic impact of immigration policies, shedding light on how political decisions shape a nation's openness to immigrants and, consequently, its economic prosperity. The implications of this research extend beyond individual nations, offering insights into the broader discourse on the economic consequences of immigration policies. My study aims to inform policymakers, researchers, and the general public, fostering a more informed and evidence-based discussion on the interplay between immigration, politics, and national economies.

Tahsin Kazi

GA - Kennesaw State University

Discipline: Mathematics and Computer Science

Authors:
#1 Tahsin Kazi
#2 John Oakley
#3 Maria Valero
John Oakley

Abstract Name: Exploring the Spectrum of Non-Invasive Blood Glucose Monitoring: Wavelength and Physical Factors

Diabetes and metabolic diseases are among the most pressing health concerns of our time. Currently, monitoring blood glucose, a pivotal indicator of these conditions, involves the cumbersome process of frequent blood drawing or subcutaneous needle injections. Fortunately, the drive for precise, non-invasive glucose monitoring methods has intensified, leveraging technological advancements in diverse wavelength multispectral imaging. These devices adopt lasers with photodiodes or cameras to correlate blood glucose with imaging data, building safer, cheaper, and more reusable procedures for measuring blood glucose. Nonetheless, numerous facets of this process remain unexplored. Light wavelength substantially influences estimations' accuracy due to the diverse interactions between wavelengths and skin. Additionally, several patient-related physical factors, including skin color, temperature, humidity, and skin texture, that further impact the light’s transmittance and absorption. To examine these variables, we engineered a device that harnesses a range of light wavelengths, from 650nm to 980nm, to gather data from human subjects. Concurrently, we measured physical factors, including skin temperature, humidity, skin color, and skin texture. Our methodology starts with the collection of physical factors, followed by blood glucose measurement with traditional glucometers, and ends with capturing image data from all wavelengths. Then, we construct estimation models for each wavelength. Performance is compared through three distinct methodologies and metrics: statistical accuracy with Mean Absolute Error, clinical accuracy through correlation with Clarke Error Grids, and clinical accuracy through agreement with Bland-Altman Plots. Subsequently, we extend this evaluation across all physical factors, exploring their impact on overall model performance across our chosen metrics. After reviewing recent literature, we anticipate a weak, positive relationship between wavelength and the accuracy and precision of models. Moreover, we anticipate skin color and humidity to influence performance the most with a negative relationship between wavelength and the influence of factors.

Syed Kazmi

NJ - Rutgers the State University of New Jersey

Discipline: Mathematics and Computer Science

Authors:
#1 Syed Kazmi
#2 Alisha Kazmi
#3 Anvikh Arava
Alisha Kazmi
Anvikh Arava

Abstract Name: Students Academic Success Prediction Using AI/Machine-Learning Models

This study delves into the complex relationship between students' mental health, social behaviors, and academic success. Utilizing a robust dataset from Kaggle, originally collected by Dartmouth University, we explore how factors such as depression, stress, loneliness, and everyday social and personal behaviors influence students' academic performance. Standardized questionnaires adhering to international standards, including PHQ-9, PSS, Vr_12, PSQI, Panas, Flourishing Scale, Loneliness Scale, and Big Five, were distributed among students to gather comprehensive data. Our analysis employs advanced machine learning algorithms, including LGBM Classifier, Snap Boosting Machine Classifier, and Snap Forest Random Classifier, on the IBM Watson platform. This approach builds on our previous investigation, where academic stress was linked to students' GPA. The current study's models demonstrate accuracies ranging from 70%-80%, varying based on algorithmic adjustments and enhancements like HPO-1/HPO-2/FE. This paper presents detailed project summaries, ROC Curves, and Confusion Matrices for each model, offering a comparative analysis to our previous work. The initial results indicate a significant impact of stress, depression, and loneliness on academic performance, highlighting the importance of mental health in educational settings. This study underscores the importance of holistic education, recognizing that students' well-being is intrinsically linked to their academic success. The findings of this study not only reinforce the need for holistic educational strategies but also open new avenues for utilizing machine learning in understanding and enhancing student success. This research provides valuable insights that can guide educational institutions in creating and improving student wellness programs, while also enabling the development of personalized support systems through the use of advanced machine-learning algorithms, tailored specifically to meet individual student needs. A full analysis and implications of these results will be elaborately discussed at the conference, with an anticipation that this methodology could be extended to future studies on student stress and academic achievement.

Jack Keane

MD - University of Maryland College Park

Discipline: Business and Entrepreneurship

Authors:
#1 Jack Keane
#2 Dr. Maureen Cropper

Abstract Name: Groundwater Contamination and Property Values: A Hedonic Price Analysis

About 15% of the United States population (~43 million people) rely on private wells for their source of

drinking water. This water is not regulated by the Environmental Protection Agency, and as a result, the water in these wells can contain harmful contaminants (e.g., arsenic, nitrates, and nitrites) that go undetected by homeowners unless otherwise tested. Using a dataset of housing transactions (n=3,908) in the Orlando, Florida Metropolitan Statistical Area, I examine the impact of testing well water on the property value at time of sale. In Florida, not all homes with wells are tested before sale. I address the possibility of selection bias by using a subsample of homes from this dataset (n=1566) that had all tested their well water before being sold.Using a hedonic pricing model, I test the impact of a well water test finding a contaminant above the detectable limit on sales price, controlling for housing characteristics, geospatial characteristics, and the date of sale. My results indicate a 10% decrease in property value when a well test revealed a contaminant to be above the detectable limit, relative to properties with well tests that did not reveal any contaminant above the detectable limit. The most robust, significant effects are found when homes were tested within a 3-year window prior to transaction. This has implications for the public health and financial stability of homeowners using private well water, particularly in areas that are more susceptible to extreme weather events.

Yodahe Kebede

MN - Minnesota State University - Mankato

Discipline: Education

Authors:
#1 Yodahe Kebede

Abstract Name: Cultural Learning Strategies in Ethiopia and the United States Experienced by International Students at a Mid-size Midwestern University

Cultural learning strategies refer to the methods and processes by which individuals acquire knowledge, skills, beliefs, and behaviors that are specific to a particular culture or social group. This research responded to an interest in how cultural learning strategies in Ethiopia compare to those in the United States. Ethiopian students experience cognitive dissonance, because their previous educational experiences were so different from the United States. This research will provide suggestions for current and future Ethiopians who are adapting to college in the United States. The university's international faculty interviewed current students from Ethiopia who were studying computer sciences. Open-ended interview questions will generate understandings of differences in cultural learning and how university students overcame those challenges. The outcomes of this project will guide educational policies, curricula for international student orientation, and faculty professional development.

Marissa Keeler

GA - University of West Georgia

Discipline: Natural and Physical Sciences

Authors:
#1 Marissa Keeler
#2 Farooq Khan

Abstract Name: Binding studies of Methylene Blue, Pyronin Y, and Acridine Orange with Cucurbit[7]uril and Cucurbit[8]uril using Constant Constraint Analysis

Hypothesis: The "container molecule" Cucurbit[8]uril will bind similarly to tricyclic dyes (Methylene Blue, Pyronin Y, and Acridine Orange) that have very similar structures. This study will allow a better

understanding of the binding properties of these molecules, for potential future use in reactions and medicine.The size-dependent properties of cucurbit[n]urils (abbreviated as CB[n]) as hosts for tricyclic cationic dyes (Methylene Blue and Pyronin Y) are of considerable current interest. Previous work on UV-visible spectra of host-guest complexes, using Job's plots, has shown a 3:1 ratio for Pyronin Y: CB[8] and 2:1 for Methylene Blue: CB[8]. The binding stoichiometry is generally accepted as 1:1 for the smaller CB[7] and both of these dyes. We report here on a new method to determine the stoichiometry of host-guest complexation. Applying the method of Constant Constraint Analysis (CCA), an approach previously developed to deconvolute circular dichroism spectra for the secondary structural analysis of proteins, we are able to deconvolute spectral components arising from associated and unassociated dyes. We arrived with a guest:host ratio of 2:1 for both Pyronin Y and Methylene Blue and CB[8]. Preliminary results show little or no binding with CB[7] for both of these dyes. We have also extended these studies to Acridine Orange, and preliminary data show binding patterns that are similar to those of Methylene Blue and Pyronin Y.

Trevor Keenan

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Trevor Keenan

Abstract Name: Drought and Disparities in Spain

The ever-growing threat of climate change presents increasing hazards to Spain's water supply due to its historic susceptibility to drought. This difficulty is amplified with the regional division of 17 autonomous communities, zones of Spain with their own economic organization, climates and water conservation policies. This study requires a literature review and examination of relevant government documents and secondary sources. I examine the history, climate patterns and water policy of Spain to show how Andalucía, a southern autonomous community, is unequipped to handle the impacts of climate change. The social and economic divide between the North and South of Spain stemming from the Middle Ages has created economic marginalization amid the autonomous communities. These disparities leave the South at an economic disadvantage while combatting drought related disaster. Consequences of climate change in Spain such as rising temperatures and records of drought and rainfall show that the South is at a higher risk of prolonged droughts caused by little rainfall. Furthermore, an examination of existing water policy in the South reveals archaic policies with a need for legislation reform. Overall, the North is economically secure and less prone to drought due to higher levels of rainfall. The South faces more severe impacts and has fewer resources for mitigation. The Andalucía is the agricultural epicenter of Spain, so the lack of water in this region has serious implications not only for the autonomous community but for the entire economy of Spain. This study is meant to analyze the reasons why Andalucía suffers from drought related issues. More investigation is needed to evaluate how to properly integrate changes and solutions to help assist Southern Spain with the social and economic impacts of drought.

Sophia Keis

MN - Hamline University

Discipline: Health and Human Services

Authors:
#1 Sophia Keis
#2 Gordon Buchanan
#3 Benjamin Kreitlow

Abstract Name: Seizure Mortality in Mice Lacking the Bmal1 Gene in Relation to Circadian Rhythm and Time-of-Day

Epilepsy is very common as 1 in 26 Americans will develop it within their lifetime. Seizures can result in death which is termed Sudden Unexpected Death in Epilepsy (SUDEP), which is more common during the night. SUDEP has the second highest years of potential life lost across all neurological diseases. Mouse models of seizure-associated death are also more likely to die during the night. The suprachiasmatic nucleus is the central circadian pacemaker. Circadian rhythms are maintained through a self-regulating transcription-translation feedback loop involving clock genes, such as Mop3/Bmal1. We hypothesized that when there is disruption of the molecular clock the time-of-day-dependent seizure-mortality will be eliminated. The first experiment was investigating mortality, seizure severity, and duration regarding time of day. Using heterozygote Mop3/Bmal1 mice we induced full hindlimb extension seizures with 50 milliamp shocks. The second experiment was investigating locomotor activity in a light dark cycle then transitioned to constant darkness. Using Mop3/Bmal1 wildtype and Mop3/Bmal1 knockout mice we measured location with actograms. Heterozygote Mop3/Bmal1 mice have low seizure mortality regardless of time of day. Seizure severity and duration were not dependent on the time of day or sex. The C57BL6J background strain did not exhibit the same low mortality. A younger cohort of the heterozygote Mop3/Bmal1 mice had similarly low mortality regardless of time of day. Mop3/Bmal1 knockout mice do not have time-of-day dependent locomotor rhythms when in constant darkness. Identifying the mechanism controlling the molecular clock could set the stage for chronotherapeutic strategies to reduce the nighttime risk of death for people living with epilepsy.

Clara Keller

MI - Wayne State University

Discipline: Humanities

Authors:
#1 Clara Keller

Abstract Name: Student’s Access and Agency: How are College Students Taking Control of Their Own Sex Life?

This project-oriented research thesis focuses on the importance of having contraceptvies available and accessible on college campuses, toward the goal of offering practical resources and tools to students and student groups seeking to be leaders initiating positive sexual health changes at their university. This project uses a mixed-methods approach for its research: first, I will document disparities in access that are common across campuses, using surveys and informal interviews with students and analysis of campus health websites, supplemented with phone inquiries. Second, I will be conducting informal interviews with Wayne State University's peer universities and some in-state colleges for a total of 11 universities in the participant pool. These informal interviews will be conducted with student organizations from universities across the country on changes they've been able to make for the accessibility of contraceptvies to diversify my final resource. Third, I will use my praxis-oriented activist/advocacy methodology to produce a practical online resource from my informal interviews and personal experience that outlines student organizations' possible responses to gather their data and make their own cases for reforming contraceptive access on their campuses. Interviews and gathering information from the campus health employees as well as student groups will enhance my understanding of the relationship and climate between university administration and their students, which will help me create a robust instrument students can use as a contraceptive campaign.From previous experience with this topic, the results of my research should conclude that student groups across the U.S. will have to create vigorous campaigns in addition to building coalitions with other student organizations to be able to diminish the barriers many students face when attempting to get contraceptives on

their campus. Because I am expecting this result, I intend to create a campaign plan to help students advocate for access to contraceptives.

Sami Keller

WI - University of Wisconsin-Superior

Discipline: Education

Authors:
#1 Sami Keller
David Potter

Abstract Name: Insider/Outsider Perspectives of Civil Conflict in Music and Education

In 2022 and 2023, I conducted two critical analyses. The purpose of my 2022 study was to dive deeper into music education curricula in the United States and find places where exposure to BIPOC and/or different cultures is lacking and/or not given proper representation. The purpose of my 2023 study was to explore the relationship between music, peace, and conflict in Northern Ireland. While both studies examined songs, albeit in different regions, I found several consistencies among the studies that may help to inform both the role of reflexivity in the insider/outsider perspective of musical analysis and the continuous conflicts and violence that have permeated within music teaching and learning across time. Therefore, with the intent of developing an over-arching theory of insider-outsider perspectives on music and conflict, the purpose of synthesizing these two studies was to offer a reflexive analysis of the impact that music has in civil conflict across space and time from an insider and outsider point of view. Overarching themes from my synthesis include musical “othering,” implicit and explicit violences, and representation through signs and symbols.

Amy Keller

WA - University of Washington Tacoma

Discipline: Engineering and Architecture

Authors:
#1 Amy Keller

Abstract Name: Accessibility and Recyclability for a Circular Economy

With the rapid growth of modern technology and declining focus on designing for longevity, electronics have been going to landfills more rapidly than ever. Electronic waste includes anything with electronic components in it, like cell phones, microwaves, coffee makers, washing machines, refrigerators, etc. The focus of research in circular economy is to study the ways in which we can reduce the number of electronic devices that end up in landfills and ultimately result in toxic waste. One aspect of the problem is how cultural views on recycling can be improved, and reasons why the average person would choose to partake or not in repair/recycling of the unit. However, the aspect that is being focused on in this research is from the perspective of the designers and manufacturers of the products. This research uses numerical values and procedures to assess the accessibility of recycling common household electronics. An increased amount of time and effort that goes into disassembling the product into recyclable parts could result in lowered initiative to participate in a circular economy. This issue can ultimately be addressed by things like improving material usage in the components and making the products easier to take apart, as well as building for longevity instead of planned obsolescence. With this research we begin by taking the unit apart to its most basic components, figuring out which materials it is composed of, and finding out where and how to recycle them.

While we are mainly focused on recycling, the accessibility of disassembly also has a large impact on repair culture. If the inside mechanisms are easier to reach and identify, it is likely that more people will feel that it is worth it to repair instead of replacing.

Kathleen Kelley

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Kathleen Kelley
#2 Sofía Pacheco-Fores
#3 Lifeng Dong

Abstract Name: Human vs. Animal Bone: Less-destructive Identification using Scanning Electron Microscope and Artificial Intelligence

In the medico-legal field of forensic anthropology, correctly determining whether a bone came from a human or an animal is a vital step in any case. If an animal bone is misidentified as human, resources may be wasted on an unwarranted forensic case. If the reverse occurs, the deceased may never be identified or recovered. Current best practices to differentiate human from animal on non-morphologically distinct bone fragments are destructive, requiring cross-sections or for the bone to be ground into a powder. In an effort to create a less destructive procedure for bone fragment differentiation, I have been developing a method of bone cell analysis that utilizes a scanning electron microscope (SEM) to take images of the bone cell structures. Human bone cells are typically laid out in what looks like concentric circles, called Haversian systems, while animal bones are typically laid in flat, more elongated layers called Plexiform systems. Manual classification of these images, however, proves challenging to replicate or regulate. We developed a machine learning algorithm to do this differentiation for us, based solely on observable characteristics in SEM images. Preliminary results show up to an 88% accuracy rate for differentiation. Using an SEM, samples can be directly placed inside the microscope for imaging and do not necessarily need to be thin or severely altered in order to image, thus leading to a less destructive (and often non-destructive) method of bone cell analysis. Destructive analytical techniques halt further analysis of a sample, which can run a case dry or impede the investigation process. As scientists and forensic anthropologists, we have an ethical duty to maintain the integrity of the remains we are working on out of respect for the individual and their culture and kin.

Ciara Kelley

FL - Stetson University

Discipline: Humanities

Authors:
#1 Ciara Kelley

Abstract Name: Experimental Ekphrasis: Frankenstein's Exploration of the Limits of Representation

This paper explores scenes of experimentation in Mary Shelley's Frankenstein guided by the literary term ekphrasis—the verbal representation of the visual. Shelley's linguistic descriptions of the perception and appearance of the creature communicates a paradoxically unimaginable image. Specifically, through her emphasis on light and color, Shelley's scenes of experimentation assume a painterly effect, reminiscent of historically artistic practices. As Alexandra Neel suggests, Shelley's "undeading" of her creature follows the

practices displayed in still life, but also figuratively “stills life” to fasten the creature to not only a linguistic, but also a visual medium of perception. Though Shelley’s portraits of Caroline and William are most often referred to in ekphrastic analyses of her text, I argue that Shelley’s attempts at rendering the creature in her scenes of experimentation are examples of Neel’s stilled life, and therefore, ekphrastic moments. As a result, I am able to apply a visual, artistically driven analysis of the elements in Shelley’s descriptions to reveal that in her attempts to represent the creature, she inevitably fails to represent him. Consequently, I use the broader scope of aesthetic theory as a backdrop for the issues concerning judgement and representation. Both Kant and Burke provide the foundation to analyze Frankenstein ekphrastically and aesthetically, revealing how the employment of ekphrasis itself is a limit of representation. Ultimately, the examination of the creature’s overall unrepresentability allows for the more extensive questioning of the limits of art and literature.

Brittany Kelley

IL - Eastern Illinois University

Discipline: Humanities

Authors:
#1 Brittany Kelley

Abstract Name: A Study on Feminism in Ancient Greek Theatre

As a woman who has primarily studied music and is now studying theatre as well, I have really started to wonder and consider where the women are in the creation and beginning of these art forms? For music, I had that mostly explained to me in the majority of my studies over the years. However, I have become increasingly interested in theatre and am almost baffled by how theatre was even possible without women. When looking back at the start of theatre it is impossible to notice the lack of women playwrights, actors, critics, and more. Even further, it begs the specific question of how there were women’s roles with no women? If there were men playing these roles, how did they do that and adapt? What did critics think of this at the time? Were there laws or societal standards that gatekept women from the stage? Did the lack of women impact the emotional and physical variability in these famous works when first performed? For me personally, it is a constant badgering of never ending questions of what happened here and then wondering how it evolved from there to what we have today. Using sources from William J. O’Neal, Jeffrey Henderson, Froma I. Zietlin, Sue-Ellen Case, and David Cohen I intend to discuss what a woman’s role was in society outside of theatre in ancient Greece, how that societal role specifically impacted theatre, what theatre critics’ thought of women in that time and why that was important to women’s theatre, the women’s role and stereotype itself, and the great debate on whether women were even allowed to attend theatrical festivals or other theatrical works.

Makayle Kellison

FL - Rollins College

Discipline: Natural and Physical Sciences

Authors:
#1 Makayle Kellison
#2 Whitney Coyle
#3 Kent Gee

Abstract Name: Acoustical Measurements of NASA's Space Launch System Artemis-I mission

As the global space industry expands, impacts from super heavy-lift launch vehicle noise on payloads, communities, and natural habitats are better understood with improved source models. In support of model development, this paper discusses ongoing analyses of far-field acoustical measurements made of the NASA Space Launch System (SLS) Artemis-I mission. A group of students and professors from Rollins College and Brigham Young University deployed fifteen acoustical measurement stations prior to the launch, including ten autonomous stations within Kennedy Space Center and seven manned stations off-Center, ranging from 1.4 to 50 km from Launch Complex 39B. In this paper, a brief overview of initial analyses from all fifteen stations is discussed, including sound pressure levels, waveform characteristics, and frequency spectra. Additionally, an explanation of sound power calculations is included to understand the source characteristics and compare SLS to other rockets through acoustic efficiency. Both source and propagation analysis are presented in conjunction to understand acoustic phenomena during the Artemis-I launch and prepare for Artemis-II, scheduled to launch in 2025.

Margaret Kelly

NY - Pace University

Discipline: Interdisciplinary Studies

Authors:
#1 Margaret Kelly
#2 Garrett FitzGerald

Abstract Name: TikTok, Trauma, and the Possibilities for Peace and Justice: The Impact of Trauma Language Misuse on Social Media

Trauma is a theory that explores the experiences of humans when they reach a point of such overwhelm that their higher brain function shuts down, allowing their brains to be led solely by the deep, lower brain, fight-or-flight instinct. Traumatic experiences and events are frequently mass-shared through various social media platforms that provide many with important sources of information and human connection. In this thesis, I explore the connections between trauma and social media, specifically the incorrect uses of trauma language on the social media platform TikTok, and relate my findings back to the ongoing work of the field of Peace and Justice Studies, as well as broader social justice work. As my research will show, the pervasive misuse of trauma language on social media risks obscuring the technical meaning of a theory that is being widely recognized as increasingly important for promoting peace and justice.I begin with an exploration into the literature behind trauma theory, working closely with the work of Resmaa Menakem and Carolyn Yoder, whose trauma-based approaches play into the ongoing conversations and work surrounding peacebuilding. Then I will explore the applications of trauma-informed approaches to the Peace and Justice field and evaluate the relationship between social media and trauma. Drawing on these pieces of literature, I then construct a new typology of misuse of trauma language on TikTok and analyze trauma-related content on the platform using the Categories of Misuse developed through my research and evolving social science methods. The project concludes with a summary of my findings and a discussion of the implications of misuse of trauma language on the broader field of Peace and Justice.

Konner Kemp

TX - Lubbock Christian University

Discipline: Health and Human Services

Authors:
#1 Konner Kemp
#2 Jessica Rogers

#3 Cary Chisholm

Abstract Name: Efficacy of Skin Protection Education on the Habits of Undergraduate Students and Coaches

The purpose of this study is to evaluate the effectiveness of sun protection education in leading to incorporation of more sun protective habits into the daily routine of study participants. The participants will be undergraduate students, faculty, staff, and student athletes on Lubbock Christian University's campus that are between the ages 18 and 64 years old. This study is primarily observing if sun protection education among undergraduate students, athletes and coaches of outdoor sports lead to a significant increase or change of the usage of sun protection methods in their normal routine. Improving the rates at which students utilize sun protection methods and avoid sun exposure, when possible, may reduce the incidence of skin tumors later in life. The study is currently taking place. The expected results are that a total number of participants, ranging from 100 to 200, would increase their daily habits of protecting their skin from sun exposure. Participants will be given an explanation of the study and informed consent. After an Initial Sun Prevention Attitudes and Behaviors Survey an investigator will give an explanation of the dangers of sun exposure as well as the various methods one can use to prevent sun damage. Use of sun damage prevention will be encouraged and samples of sunscreen will be given to the participants. The educational session will then conclude with a reminder of the final step of participant enrollment the Follow-Up Sun Prevention Attitudes and Behaviors Survey approximately 3 months after the date of the educational session. The data will be deidentified before being sent to the research committee. We hope to show that if undergraduate students were a target audience of educational materials, they may practice daily routines that could reduce the incidence of skin diseases later in life.

Alyssa Kemp

PA - Drexel University

Discipline: Interdisciplinary Studies

Authors:
#1 Alyssa Kemp
#2 Mathy Stanislaus

Abstract Name: Empowering a Just Transition: Integrating Climate Workforce Opportunities in Philadelphia

This research project focuses on community-based climate transition workforce opportunities as catalysts for a Just Transition. Unlike traditional employment paths, these opportunities do not require a college degree and can be a pathway for progressive employment opportunities and degrees. Further, escalating demand for skilled green workers versus traditionally educated workers is creating change in employment practices. Notably, the Shapiro administration in Pennsylvania eliminated the 4-year degree requirement for 92 percent of state government positions, reflecting the increasing preference for green skills over formal education, a sentiment echoed by Biden’s Council of Economic Advisers.This research, centered in Philadelphia, assesses the alignment of climate transition workforce opportunities with workforce development organizations, private companies, and universities. Initial findings identify key opportunities for growing Philadelphia’s green economy and establishing foundations for strategic partnerships. Valuable recommendations and insights emerged from consultations with stakeholders, including the ideas to create apprenticeships, additional skills certification, programs for training trainers, and continuing education certificates for green jobs.The future phases of this project aim to implement identified recommendations by evaluating potential collaborative mechanisms among universities, workforce development organizations, and private companies. A stakeholder-suggested convening by Drexel University will seek to unite stakeholders to collectively explore and leverage potential workforce development avenues. This inclusive approach strives to create accessible, sustainable employment pathways into climate transition job opportunities for Philadelphia residents. The initial goal is to determine how best to strengthen and supplement workforce development programs. Thus far, the collaborative strategy utilized throughout this project has begun to successfully

address challenges and capitalize on opportunities at the nexus of natural infrastructure, climate resilience, and workforce development, contributing to a more equitable and sustainable future.

Sylvia Kendera

IL - Eastern Illinois University

Discipline: Health and Human Services

Authors:
#1 Sylvia Kendera

Abstract Name: Reflection in Action: Exploring Differences between Self-Perception and Clinical Perception of Social Communication Skills in Young Adults with Autism Spectrum Disorder Through Reflective Practices

Though there are existing programs to aid the college transition, students with autism spectrum disorder (ASD) demonstrate a need for additional support for their pragmatic deficits. This study sought to investigate the potential of reflection in increasing the accuracy of perceptions of college students with ASD on their pragmatic skills. The investigator hypothesized that the accuracy of self-perceptions would increase after watching a video of their performance. All participants were students from the Students with Autism Transitional Education Program (STEP) at Eastern Illinois University (N=8, 7 males and 1 female). Each participant held a 3-minute conversation with the principal investigator and self-rated their pragmatic performance both immediately after the conversation and after watching a video of the conversation. The principal investigator also completed a rating for each participant. Ratings were completed using a rating scale designed by the investigator that assesses verbal and nonverbal pragmatic skills, as well as social cognition. Results revealed a lack of a significant difference between the immediate participant self-rating and that of the researcher, and a lack of a significant difference between the immediate and delayed participant self-rating. There was a high, significant correlation between the delayed participant self-rating and that of the researcher. A highly significant correlation between the immediate and delayed participant self-rating was found as well. These findings confirm that due to the inherit deficiencies of autism spectrum disorder, individuals with ASD need additional support in building a sense of self-awareness as they learn social skills essential for success in a college environment. Further implications for the use of reflection in building these awareness skills in students with autism will be presented.

Linley Kennedy

LA - Louisiana State University, Baton Rouge

Discipline: Social Sciences

Authors:
#1 Linley Kennedy
#2 Teresa Wilson, PhD

Abstract Name: Identifying a minimally destructive method for detecting enamel defects in human teeth

This study explores the detection of enamel developmental defects, focusing on the manifestation of Wilson Bands or accentuated Striae of Retzius —a microscopic disturbance caused by external stressors during amelogenesis. Some of the stressors that may lead to the development of Wilson Bands are low birth weight, malnutrition, and vitamin deficiencies.. The goal of this study is to test the feasibility of using tooth crown surface morphology as a minimally destructive alternative to dental histology for the detection of Wilson

Bands. Four teeth were collected from a population in Northern Jordan who lived during the Roman Period. The crowns of these teeth were (1) 3D scanned using a Faro Design ScanArm, (2) photographed using a Leica M125C microscope, (3) and molded using dental putty. This process was repeated after the surface of the crown was etched using phosphoric acid for 20 seconds. Each tooth was thin sectioned and micrographs of the enamel were taken. The 3D scans and micrographs were compared to identify changes in surface morphology at the locations of a known Wilson Band. Using molds of the surfaces of tooth crowns from specific individuals known to have experienced childhood stress, the method was tested to see if tooth surface variation could be detected on molds. By correlating disruptions evident on and beneath the crown's surface, this study pioneers a noninvasive method for diagnosing and analyzing disruptions in dental development while remaining minimally destructive to the samples.

Sidra Kennedy

NC - Elon University

Discipline: Education

Authors:
#1 Sidra Kennedy
#2 Bud Warner

Abstract Name: Learning Outside the Classroom

Research shows positive correlations between students' academic success and their involvement in co-curricular activities, however, there is limited knowledge about the accessibility of such co-curricular activities and those actively offered in public schools. This research is a pilot study looking across four different counties in North Carolina at 20 public high schools regarding the options of co-curricular activities and the barriers to access them, while comparing it to the overall school standard. This research addresses the gap in literature by obtaining first-hand accounts through interviews with senior administrators in public high schools, who actively engage in both the academic and co-curricular aspects of their schools, to look at the barriers of access to co-curricular activities and the percentage of students who participate in these activities. This study was conducted using a mixed methods approach through interviews with Assistant Principals at schools as well as quantitative research about each public school that was assessed. Within the research, the main barrier to co-curricular activities was transportation access. This barrier has caused an impact to limit the involvement from students who are in a lower-income bracket, whose parents are more often unable to drive them to and from the different co-curricular activities. There was a strong correlation ($R = 0.78$) between the schools' NC report card grade and amount of co-curricular opportunities offered.

SHAY KENT

IA - Iowa State University

Discipline: Interdisciplinary Studies

Authors:
#1 Shay Kent

Abstract Name: Evaluating the Impact of Food and Nutrition Security Support Groups in Kamuli, Uganda

The Iowa State-Uganda Program (ISU-UP) established the Food and Nutrition Security Support Groups (FNSSGs) in 2019 to address sustainable food and nutrition security for mothers and children who previously experienced malnutrition in Kamuli, Uganda. FNSSG members make nutrient-dense porridge, participate in income-generating activities, contribute to group financial savings, and participate in skills development. Since the establishment of the FNSSG program, no formal evaluation of the program had been completed before this project. The primary objective of this project is to better understand the impact that the FNSSGs have had on members and their communities. Sub-objectives were to understand the program's impact on food and nutrition security, how FNSSGs contribute to ISU-UP's strategic plan, and identify any unexpected impacts of FNSSGs. To achieve these objectives, six focus groups were conducted in July 2023 with FNSSG members to record their perceptions of the FNSSGs and the impact of FNSSGS. Key informant interviews were conducted with program staff to gather background information on the FNSSG program implementation and groups. Information received through these interviews and focus groups resulted in qualitative and quantitative data, which was analyzed using thematic analysis and descriptive statistics, respectively. From this, increases in the number of meals eaten per day and the variety of foods eaten at these meals increased across all six focus groups, demonstrating maintained food and nutrition security. Additionally, every focus group reported that all household members continue their consumption of nutrient-dense porridge as the program intends, indicating that the program is achieving its primary goals. Beyond this, members reported various social capital increases within their communities due to their FNSSG participation, highlighting the unexpected benefits reported. With these reported benefits, clear ties were found to five of ISU-UP's six strategic goals, indicating the FNSSG program is providing food and nutrition security for mothers and children.

William Kent Jr

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ashae Elontu-El
#2 Nick Sbrockey

Abstract Name: Effect on Food Storage on Vitamin C Content of A Spinach

Effect on food storage on Vitamin C of a Spinach will focus on the amount of Vitamin C that is in the vegetable. In this experiment, we explore the effect of the different sample preparation and storage methods on the vitamin c content in spinach. We have 4 samples that contained different manipulations of the forms of the spinach, including cooked spinach, cooked fresh spinach, uncooked and frozen. Our methodology investigated whether there was any effect on the percentage level of ascorbic acid in each of these samples.

Abigail Kerensky

NY - Long Island University

Discipline: Education

Authors:
#1 Abigail Kerensky

Abstract Name: Education without Barriers: Strategies for Supporting the Academic Success and Inclusion of Children who are Deaf, DeafBlind, and Deaf Disabled in the Classroom

Throughout the world, children with disabilities are being denied their right to quality education and are facing constant barriers even when enrolled in school. The purpose of this transdisciplinary qualitative case study is to explore how a school for the Deaf in New York City works to create an environment designed for inclusion and enable all of its students to achieve academic success, regardless of their disability (or multiple disabilities). The research was conducted via a three-month internship from September to November 2023 at a school for the Deaf, a school which values inclusivity and provides education for Deaf, DeafBlind, and Deaf Disabled students from birth to 8th grade. Data was collected through participant observation within classrooms at the school, semi-structured interviews with two classroom teachers, and a survey of teachers, teaching assistants, paraprofessionals, and other staff members at the school. The outcomes of this study highlight that staff preparedness, communication modes, and connection with students are key factors that impact the academic performance and inclusion of students at the school. This research adds to the limited literature on education of Deaf Disabled students by providing insights into specific inclusive teaching practices and educational methods used at a school that utilizes the best practices from current research in Deaf Education.

Micaela Kersey

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
#1 Micaela Kersey
#2 Marina Potapova

Abstract Name: Assessing Protist Diversity in Ephemeral Ponds of New Jersey Pinelands using DNA Metabarcoding

Ephemeral ponds are unique and ecologically valuable ecosystems that support a variety of organisms including protists. These microorganisms have important roles in nutrient cycling, primary production, and trophic interactions. However, the biodiversity and distribution of protists in these habitats is poorly studied. This study used 18S DNA metabarcoding to explore the protist communities in ephemeral ponds in New Jersey Pinelands, with a focus on comparing the abundance of species between sampling types. Samples were collected from 30 ponds in 2020-2023, from natural and artificial substrates. 4022 unique 18S DNA sequences were found reflecting the rich biodiversity within ponds. The most diverse and abundant prostan groups were ciliates, cercozoans, excavates, amoebozoa, peronosporomycetes, green algae, apicomplexans, and dinoflagellates. Multivariate analyses showed that protists communities are strongly impacted by water chemistry, including nutrient and road salt pollution estimated by measuring chloride concentrations. We also revealed significant differences in composition of protistan assemblages inhabiting different microhabitats. These findings provide novel insights into the understanding of biological diversity of ponds and underscore the value of modern molecular approaches to characterize microbial community composition. This study is the first step towards obtaining an accurate picture of the microbial diversity in ephemeral ponds, which would eventually allow for making more informed conservation and protection decisions for these unique ecosystems.

Gwen Kester

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Gwen Kester
#2 Shari Dunham
#3 Anastasia Thévenin

Abstract Name: Biomolecule-binding, cytotoxicity, and cellular targets of novel dirhodium complexes

Cancer is known to be an incredibly difficult disease to treat. With every cancer stemming from its own unique origin, no one treatment is effective across the board. In this work, we explore potential metal-based therapeutics, with a specific focus on rhodium complexes and their potential to be used as cancer treatments. Our aim is to correlate chemical changes on the rhodium complex to improvements in their cellular uptake and toxicity. Cellular experiments are carried out in cervical cancer (HeLa) and triple-negative breast cancer (MDA-MB-231) cell lines. Data will be shown for binding to potential cellular targets (DNA vs. proteins), ability to enter cells (whole cell uptake), ability to kill cancer cells (cell viability MTT

assays), and possible interactions with the ubiquitin-proteasome system (UPS)-an important protein degradation pathway. Preliminary results show that all rhodium complexes bind to both DNA and protein, that all complexes bind more quickly to protein than double-stranded DNA, and that changes in the rhodium complex structure affect initial binding rates by two orders of magnitude. Our results also demonstrate that adding sugars to the rhodium complex increases its solubility, but does not increase the toxicity. We plan to present data on how addition of more greasy components on the rhodium complexes impact their cellular uptake, and affect their interaction with the ubiquitin-proteasome system.

ian kester

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 ian kester

Abstract Name: The History of Emojis and Visual Communication

The emoji is fascinating in its design it takes the core of visual communication and strips it down to its simplest form. This makes it highly recognizable in many cultures. Graphic designers use visual communication in everyday life such as graphs, packaging, and street signs. The emoji takes those and turns them into a set of symbols you can recognize and use as a form of communication. The emoji breaks the language barrier as it has symbols that span over many countries. It can be seen as its own language as well people can use the imagery to form sentences and to help with the emotion of a caption or message. The first set of emojis was created in Japan by Shigetaka Kurita an interface designer, he created it for the Japanese phone company NTT DoCoMo. The set of emoji is now in the Museum of Modern Art as it has become such a cultural icon that it is considered to be modern art. The emoji can be seen as one of the most influential designs in the last 50 years since it was created. Visual communication is one of the most important things to a graphic designer. The way the human eye perceives things is the reason visual communication is so important as it allows the viewer to feel the emotion through more than words. This is why the emoji is so effective as it allows for people to show there true feeling behind the type and text.

ian kester

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 ian kester

Abstract Name: The renaissance and the printing press

The Renaissance era was an evolution of art and design because it pushed mad production and design in many ways which allowed design to develop further. The Renaissance is the era of “rebirth”; it was the revival of the classical arts of the Greek and Roman times. The way the graphic design world is today is greatly impacted by the Renaissance era. One of the most important is the printing press. It helped bring mass production to the forefront which allowed for things such as books and typography to evolve in a way that may not have been otherwise. The printing press allowed for not only printing it also allowed for a boom in the industry as a printer which can relate back to graphic design today and now us graphic designers have to know how to print and produce work. Typography grew and people started experimenting with type and having an easier time producing and using type. Typography and people finding and creating their own fonts that could be created and fit for certain occasions. Graphic design today is quick and you need to be able to produce something in large quantities at times, may it be a book, magazine, or poster. This is what the Renaissance evolving design and its scholars let us be able to do. If it was not for the past we know we would not have been able to work with such the level of digital technology we have today.

Stephen Ketola

OK - University of Central Oklahoma

Discipline: Mathematics and Computer Science

Authors:
#1 Stephen Ketola
#2 Jicheng Fu

Abstract Name: Developing a Deep-Learning Algorithm to Classify Smartwatch Data to Evaluate Manual Wheelchair Users' Pressure Relief Exercises

As wheelchair users sit for long periods of time, they are susceptible to developing pressure ulcers, which can often be painful and even deadly, accounting for 60,000 deaths in the U.S. each year. Clinical Practice Guidelines (CPGs) outline a set of exercises for manual wheelchair users and how often to perform them. However, although researchers have proven the effectiveness of these guidelines in preventing pressure ulcers, the number of cases has not decreased since their introduction into the standard. This project aims to answer why and, in the process, provide manual wheelchair users and their healthcare providers a practical method to assess whether they are following the CPGs correctly.Previous research that has used sensor data to evaluate movements of wheelchair users often depended on clunky and expensive sensors that require extra effort to install and maintain. Our project aims to overcome this issue by collecting data with a smartwatch, which takes comparatively little effort on the part of the user to install and maintain, especially if they are already accustomed to wearing and using one.We have designed and implemented a machine-learning algorithm, which employs a deep Convolutional Neural Network (CNN) to process the watch sensor data such that we will be able to classify the CPG-recommended exercises. Currently, we are collecting data and training the model. We are experimenting between fine-grained classifications with higher numbers of classes and coarse-grained classifications with lower numbers of classes to see which can achieve a higher accuracy. As sensors are subject to noise, we will implement an advanced differentiation approach that finds the difference between each adjacent measurement to negate most of the noise. The success of this project will advance research in pressure ulcer prevention and equip wheelchair users with the ability to self-assess their adherence to CPGs.

Anna Keyes

DC - American University

Discipline: Social Sciences

Authors:
#1 Anna Keyes

Abstract Name: The Silk Battalion: Sexual Violence during the 1998-1999 Kosovo War

This study addresses the causes for the immense brutality of sexual violence during the 1998-1999 Kosovo War. Employing content analysis of hundreds of international news articles, memoirs, UN reports, and HRW documents published between 1998-2000, this study applies coding for levels of brutality and common themes among accounts of sexual violence during the war to test two hypotheses: 1). that an extreme ethnonationalist agenda will result in a greater endorsement of a strategic widespread rape campaign toward Kosovar Albanians residing in Serbia and 2). that an extreme commitment to power-seeking goals will result in a greater endorsement of a strategic widespread rape campaign toward Kosovar Albanians residing in Serbia. Data supported both hypotheses, in line with the Preference-Based Theory of Wartime Rape (PTWR), which explains wartime sexual violence through an analysis of in-group mechanisms and the armed group leader's leadership ideology, or "preferences," existing as two dimensions: nationalism and power-seeking. Therefore, this study confirms the validity of the PTWR applied to the Kosovo War, finding Yugoslavian president Slobodan Milosevic's "extreme" values for both dimensions to have contributed to the higher incidence and severe brutality of wartime rape. Finally, this study also confirmed the PTWR's findings that wartime rape is unique from other human rights violations because of its gendered nature and that the ethnic component of the Kosovo War was significant to the incidence of rape, given its employment as a genocidal strategy based on its inherent reproductive function. Through corroborating the PTWR's applicability to the Kosovo War, this study challenges research by other scholars who suggest older theories of strategic wartime rape are to blame for the extreme brutality of sexual violence seen during war.

Taylor Keys

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Taylor Keys

Abstract Name: Travel Posters and the Romanticization of Destinations in Graphic Design

Travel posters are a unique art form that has evolved throughout the history of graphic design. Since the Industrial Revolution and the “Golden Age of Travel” in the 1920’s and 1930’s, travel posters have been romanticizing destinations. They use imagery and typography to sell the idea of a destination to audiences and create a sense of romance and allure for the places they are advertising. Travel posters have evolved throughout the history of graphic design alongside design movements and trends as a whole, and have even developed their own recognizable style. Examples of travel posters that have been extremely successful are the WPA’s national parks travel poster series, which revived the United States national parks and made them a point of interest. Travel posters are not only an art form, but they tell a story and sell the idea of beauty and adventure by romanticizing destinations.

Taylor Keys

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Taylor Keys

Abstract Name: The Impact of Victorian Graphic Design on Typography and Advertising

The Victorian era was a time of technological advancements that paved the way for a more modern and advanced society. New improvements to printing technology allowed for more never before used type printing and design techniques, such as woodcut type. These advancements led to a more detailed type called display type, as well as new product packaging and other new advertisement options commonly seen in Victorian era circus posters. All of these designs focused on dramatic, bold, and expressive typography to catch the attention of the viewer. Because of these new technologies and techniques the world of graphic design was forever changed and helped it evolve into what we see and use in modern graphic design today.

Rorisang Kgoadi

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

Authors:
#1 Rorisang Kgoadi
#2 Karen Luttrell
#3 David Mencin
#4 David Mencin

Abstract Name: Modelling seiche waves in Yellowstone Lake towards understanding lake volcanic interactions

Yellowstone Lake straddles the edge of the volcanically active Yellowstone Caldera. Volcanic activity, in the form of surface deformation or hydrothermal venting in the bed of the lake can produce measurable lake level changes. Changes in water level, associated with seasonal movement of water, ice, and waves on the lake surface can in turn create deformation in the nearby land. A clear understanding of how lake water loads change over space and time is an important step toward quantifying the multiple interactions between Yellowstone Lake and the underlying volcano. Here, we analyze observations of lake bottom pressure and temperature collected at 12 stations around Yellowstone Lake from July 2016 to July 2017 to determine lake level. In particular, standing waves of water, known as seiches, are representative of periodic shifts in the amount of water distributed across the lake, with dominant periods of 51 and 78 minutes. These seiche waves are present year-round, even when the lake is covered by ice, and though they are small (typical seiche amplitude was about 1-10 cm) they represent large movements of water mass. By measuring the changing amplitude and phase of these seiches at each station throughout the year, and comparing with theoretical model predictions of relative seiche amplitude and phase, we can create a 4-D synthetic model representation of water load changes during the year of observation. We find that using only

two seiche modes we can adequately reproduce the observations. The resulting model of seiche waves in Yellowstone Lake is an integral part of our further studies hydrothermal activity and caldera properties in the region.

Garooneh Khachatori

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
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#2 Houng-Wei Tsai
#3 Adren Blanco

Abstract Name: The Roles of Sex and Androgen Receptor in Object Recognition in Mice

The current study is using the novel object recognition test, commonly used for the investigation of learning and memory, with an automated animal tracking system in the male mice that lack functional androgen receptors (AR) due to testicular feminization mutation (Tfm) to test if androgens activate AR to masculinize mouse cognitive function. The behavioral assay has been conducted as follows: After habituation in an open arena (W: 30cm x L: 49cm), a subject mouse is first presented with two similar objects for 10 min or the time when the two objects are investigated for 30 sec each (familiarization). After a break of 5 min, the subject continues the test during a second session during which one of the two objects is replaced by a new object and is evaluated for the time spent on a familiar and a novel object (novel object recognition). So far, we have completed the behavioral tests of 4 wild-type (WT) female, 3 WT male, and 3 Tfm male mice. Our preliminary data show that during familiarization, both WT and Tfm males completed the 30-sec exploration of the two identical objects within 10 min while none of the four WT females finished the same task within the time limitation (18 ± sec). For novel object recognition, no effect of sex or mutation on the time spent on investigating the novel or the familiar objects was observed. However, among the three groups, the total time spent on investigating both objects were the longest in Tfm mice, the shortest in WT females, and the middle in WT males (p<0.05). Both WT and Tfm males also visited the objects more frequently than WT females (p<0.05). Our preliminary data demonstrate the uncharacterized roles of sex and AR in object exploratory behavior.

maram khalaf

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

Authors:
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#2 Wissam Jawad
#3 Morgan Kelly

Abstract Name: Snail Behaviroral Response to Heatwaves with Local and Nonlocal Predators

Extreme weather due to climate change can threaten marine biodiversity, putting them at risk. Heat waves produced by climate change are particularly threatening because they can cause mass mortalities and alter species interactions. In addition to the threats of heat waves, longer term changes in climate have led to coastal species migrating to new regions, and exposing prey to novel predators. It is thus important to understand how native species respond to non native predators as extreme weather events increase. Much organisms use behavioral thermoregulation to avoid extreme temperatures. However, little is known about how behavioral thermoregulation affects their ability to avoid other risks like predators. In particular prey response to local and nonlocal predators. In this study, response behaviors of the common periwinkle (Littoraria irrorata) in the presence of local blue crab (Callinectes sapidus) and nonlocal predator, Florida Crown Conch (Melongena corona) was studied. Using a combination of outdoor and indoor laboratory experiments, we studied the behavior of these snails.Snail height and body temperatures were measured during the outdeoor mesocosm experiment. Snails were placed in buckets in pools that contained either blue crabs, conch, or no predators. Half treatments were ambient outdoor temperature and half received a heat wave treatment. The indoor laboratory experiment focused on snail speed and direction of their behavior response when exposed to a nearby predator. The snails were placed in tanks with each of the different predator in the water. Snails show a strong response to these predators, but behavior differed depending on the predators. Heat waves

also influenced the retort to antipredator response. Findings from these experiments have important implications for species responses to local and non-local predators in future conditions.

Aiza Khalil

CA - Irvine Valley College

Discipline: Social Sciences

Authors:
#1 Aiza Khalil

Abstract Name: The Misinformed Globe: A Review of the Spread of Intentional and Unintentional Online Misinformation

Due to the speed at which information is given to consumers, very few people care to check the accuracy of information. This research study aims to discover what is currently known about how the circulation of misinformation affects individuals' information consumption habits so effective methods can be created to decrease the amount of misinformation online. I surveyed scholarly journal articles within the field of media studies to examine how consumers interact with online data and how media is tailored to provide information. While some social media sites attempt to combat misinformation, most prioritize consumers' engagement with little regard for information accuracy. The main goal for online sites is reported to be increasing viewership (Luo et al., 2021). Also, the declining accuracy of political news has resulted in the public losing trust in all types of online information. In conclusion, current consumer habits are emotionally driven, allowing social media to manipulate users to gain viewership. All parties lack concern for accuracy which is how misinformation is being spread so rapidly in the digital age. To improve the accuracy of virtual information, consumers must be more vigilant and self-aware when reposting and interacting with information online as small actions can further the spread of misinformation for years and generations to come. Keywords: misinformation, media interactions, misleading, consumers, promoting, and reputational.

Sarah Khan

CA - Medanos College

Discipline: Natural and Physical Sciences

Authors:
#1 Sarah Khan
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#4 Sam Kazemi
#5 Jill Bouchard
#6 Tess Shideler

Abstract Name: Investigating the Effects of Trichoderma on Brachypodium Plants at Different pH Levels

Soil pH is an essential factor in plant growth, and depends on environmental conditions and irrigation practices; both of which have contributed to acidity damage in plants. In recent years, it has been discovered that Trichoderma harzianum fungi have beneficial effects on plant growth and pathogen resistance. To test whether T. harzianum can protect plants against acidity damage, brachypodium plants (stiff bromes) were grown in Ecofab chambers with varying pH conditions, in the presence or absence of T. harzianum. Root length and plant stalk length measurements were recorded for four weeks. It was found that the microbes have a positive effect on the plant stalk height, while root lengths on average either remained the same or shrank. While the microbes may promote growth in the plant stem itself despite an acidic environment, it is unclear whether the roots themselves were damaged or protected from the acidity. The results may be interpreted that the roots themselves were made more efficient, discarding the need to grow larger, or imply a more parasitic relationship where t.harzianum takes from the roots composition in order to provide the growth-promoting products on the plants themselves. With this study as a baseline, future research direction encourages looking at possibly using trichoderma in soil with low pH, and looking at possible partner microorganisms that work with Trichoderma to improve plant growth.

Zayd Khan

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Zayd Khan
#2 Matthew Cheung
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#4 Dr. Anupam Aggarwal

Abstract Name: Effect of Kidney Resident Macrophage-derived C1q during Acute Kidney Injury

Kidney resident macrophages (KRMs) play an important role in kidney function and the response to acute kidney injury (AKI). We have found complement protein C1q to be uniquely expressed in KRMs but not infiltrating macrophages (IMs). Here, we studied the immune response in a cisplatin-induced model of AKI in order to test the hypothesis that C1q modulates the response of KRMs to AKI.Cx3cr1CreC1qfl/fl (n=15) and C1qfl/fl control (n=6) mice were injected with 20 mg/kg cisplatin to induce AKI. 3 days post-injury, serum was collected for serum creatinine measurements by mass spectrometry. Right kidneys were harvested for histology and left kidneys were digested to a single cell suspension and immune cell populations were assessed using flow cytometry.There was no difference in serum creatinine between Cx3cr1CreC1qfl/fl and C1qfl/fl control mice (mean 0.84 vs 0.78 md/dL, SEM ±0.2946, p-value = 0.8221) 3-days post injury. The number of KRMs remained the same among both populations. There was no difference in the number of neutrophils and IMs infiltrating the kidney 3-days after injury. KRM-derived C1q does not have an effect on kidney function and the immune response in a cisplatin-induced model of AKI. Additional studies using other models of AKI such as bilateral ischemia reperfusion injury will be needed to fully evaluate the role of C1q in AKI.

Naome Khan

NY - SUNY College at Old Westbury

Discipline: Social Sciences

Authors:
#1 Naome Khan

Abstract Name: Empathetic Autonomy: Locus of Control's Resonance in Human Connection

This study explores the intricate relationships between locus of control (LOC), empathy, and personality traits, examining their influence on individual identities and societal dynamics. LOC represents individuals' beliefs regarding control over life events, varying from internal attributions to external factors. Empathy involves understanding others' emotions, while the Big Five traits characterize distinct individual dispositions.The study aims to contribute significantly to theoretical frameworks of identity cultivation and personality development by investigating how these constructs influence one another. The project anticipates offering a nuanced perspective on the often dichotomous views of internal versus external LOC orientations and seeks to challenge the hegemony of internal LOC superiority in various contexts. Moreover, understanding this relationship can deepen conflict resolution strategies by recognizing societal structures and biases' influence on contemporary challenges. The study envisions fostering a paradigm shift towards acknowledging both internal and external factors, motivating proactive steps for societal evolution and democratic community building.The hypotheses propound multifaceted relationships between LOC orientations and empathy. The hypotheses suggest diverse connections between LOC orientations and empathy. Internally-oriented individuals may show heightened empathy, leveraging personal agency for strong connections. Conversely, they may lack sensitivity to external influences, demonstrating lowered empathy. Meanwhile, externally-oriented individuals may exhibit elevated empathy due to increased sensitivity to external circumstances, yet might paradoxically display reduced empathy by attributing blame to external factors, impacting their sense of agency.A comprehensive online survey deployed via Microsoft Forms and accessible through the SONA research pool at Old Westbury collected data from 75 respondents to date. This survey assessed demographic information, Rotter's LOC Scale, the Interpersonal Reactivity Index (IRI) for empathy, and the Ten-Item Personality Inventory (TIPI) for personality traits. Statistical analyses using SPSS will explore relationships among variables. The proposed procedure will be done by the time of the conference.

Kanchana Khat

CA - University of California - Merced

Discipline: Business and Entrepreneurship

Authors:
#1 Andrew Johnston
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Abstract Name: State Responses to Covid: Cataloguing Changes to Experience Rating

In the face of massive layoffs during the early days of COVID-19, several states decided to suspend experience rating—the practice by which states penalize firms for layoffs in the form of higher payroll taxes. In this study, I do independent research to catalog which states suspended experience ratings, when they announced the suspension, and when, if at all, each state resumed the practice of experience rating. I find that about half of states suspended experience ratings and that the decision to suspend experience ratings was not apparently correlated with a state's political leaning or eventual COVID-19 death rate. The data collection effort paves the way for future analyses on the effect of experience rating on workers and the labor market more broadly.

Aydin Khosrowshahi

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Elisa D'Angelo
#2 Aydin Khosrowshahi
#3 Madison Arnett

Abstract Name: Establishing Linkages between Nutrients, Nitrogen-fixation, and Microcystin Production by Phytoplankton Communities in Hypereutrophic Taylorsville Lake

Multiple public health advisories have been issued at lakes and reservoirs throughout the nation, due to the occurrence of harmful algal blooms (HABs) and the resulting release of toxic microcystin into the water by Cyanobacteria/“blue-green algae”. Microcystin describes a class of >200 organic compounds, which are all cyclic heptapeptide toxins. Humans, pets and even wildlife could experience rashes, hives blisters, liver necrosis, or even death after drinking or coming into contact with microcystin-contaminated lake water. These HAB events, which are more common in eutrophic and hypereutrophic environments, can be disruptive and dangerous, posing a serious risk to local ecology, public health and drinking water infrastructure. In the interest of proactive water resource management, it is vital to understand the many physiochemical and ecological variables that will influence both Cyanobacterial growth, and their production of microcystin. The main objective of this research project was to elucidate the linkage and possible correlation between nutrient amendments, nitrogen fixation, and microcystin gene expression/production by phytoplankton communities in a hypereutrophic lake. The physical experiment involved installing mesocosms in hypereutrophic Taylorsville Lake, during the HAB season of Summer 2023. Some were installed as controls, while some were amended with Nitrogen and Phosphate, and all were monitored for changes in water quality parameters (pH, chlorophyll, total N, total P, microcystin concentrations), as well as N2-fixation rates, and expression of microcystin and N cycling genes by metabolically-active phytoplankton. This project will illustrate the effects, if any, of nutrient amendments on microcystin production by the Cyanobacteria population in Taylorsville Lake. Additionally, more insight on the environmental factors influencing these events will serve state and federal agencies, further informing future nutrient management decisions in the interest of preventing and managing toxic HAB events.

Brian Kibe

FL - Embry - Riddle Aeronautical University

Discipline: Engineering and Architecture

Authors:
#1 Brian Kibe
#2 Olivia Munisi

Olivia Munisi

Abstract Name: JSR Engine

The JSR engine represents a hybrid propulsion system intended for operation across Jet/Scram/Rocket engine stages, constituting an ongoing undergraduate research project.Modeled after the Pratt & Whitney J58 engine, the JSR incorporates a variable inlet cone to manage shock positioning and angle modulation with increasing Mach numbers. Drawing inspiration from the J58's application in the SR-71, the engine aims to navigate high altitudes, achieve remarkable speeds, and endure challenging conditions characterized by elevated temperatures and substantial skin friction. These conditions closely mirror the supersonic and hypersonic environments anticipated for the JSR.To execute this undergraduate research, an array of software tools including CATIA V5, ICEM CFD, CFD ++, Tecplot, and Matlab are being employed to construct comprehensive models. Collaboration with an experienced advisor supplements the research efforts. Our current roadmap entails finalizing a conceptual model encapsulating all our research findings and efforts by December 10th, 2024.

Afwan Kibria

NY - Fordham University

Discipline: Business and Entrepreneurship

Authors:
#1 Afwan Kibria

Abstract Name: Capital Structure Implications of Options Implied Volatility

The "meme stock" mania provides an opportunity to study the relationship between implied volatility, which is used in pricing options, and securities in the capital structure of a company. Meme companies, such as GameStop and Bed Bath & Beyond, take advantage of extraordinarily high implied volatility to restructure their capital structure. The capital markets decisions taken by these firms could be studied to show that equity implied volatility is an asset for a company that is not listed in its balance sheet. However, in extreme cases the implied volatility itself is a European Put Option on the shareholder equity of the company, which creates the "meme stock" phenomenon when exercised. Through methods of Monte Carlo simulation, we can price this European Put Option and draw conclusions about the capital structure of a company.

Berinyuy Kihdze

PA - Keystone College

Discipline: Natural and Physical Sciences

Authors:
#1 Beri Kihdze
#2 Nicole Diette

Abstract Name: Investigating the anti-cancer effects of resveratrol in the SK-MEL-24 melanoma cell line

Cancer is a disease characterized by uncontrolled growth of abnormal cells. Resveratrol is a naturally-occurring bioactive polyphenol found in the skin of red grapes that is known to possess a number of health benefits including anti-cancer properties. One of the most common types of cancer in the U.S. is melanoma which develops from the pigment-producing cells (melanocytes) found in human skin. This study aims to investigate the effects of resveratrol on the melanoma cell line SK-MEL-24. SK-MEL-24 cells will be treated with both pharmaceutical-grade and commercially available over-the-counter resveratrol sources. The effect of resveratrol on SK-MEL-24 cell proliferation will be assessed utilizing trypan blue exclusion methods. Furthermore, to gain insight into the possible mechanism of action for resveratrol’s suspected anti-cancer properties, western blotting will be used to investigate the levels of apoptotic proteins as well as proteins involved in oncogenic cell-signaling pathways. The study hopes to expand on our current understanding of how resveratrol may or may not regulate cell-growth, specifically in skin cancer, possibly contributing to the future development of natural product-based skin-cancer therapeutics.

Victoria Kilgour

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Victoria Kilgour

Abstract Name: The Vietnam War: Was it a National Security Issue?

The United States' choice to enter Vietnam was fueled by a need to demonstrate to the world that they were, in fact, the global hegemon they had presented themselves to be in the wake of World War II. In an attempt to halt the spread of communism through the utilization of containment, then détente, the US deployed forces to Vietnam in fear of the "domino effect" taking place, thereby spreading communism and creating a direct threat to democracies everywhere and threatening the national security of the United States of America if not stopped. President Eisenhower was the first president to highlight this issue, and later, President Johnson sent troops to Southeast Asia in an effort to stop the spread of communism during the height of Cold War tensions, consequently starting the years-long Vietnam War. However, despite the early confidence and desire to solidify America's power on the global scale following the foreign policy failure regarding the Bay of Pigs, US intervention in Vietnam ultimately was unsuccessful, jeopardizing the lives of hundreds of thousands while simultaneously implementing irrevocable effects on both American and Vietnamese troops and civilians alike. The Vietnam War propelled the idea of the 'Imperial Presidency' in America, hence why the war went on so many years longer than it should have. Despite the US pulling out of Vietnam five decades ago, many scholars have debated if America gained anything from it. Perhaps America did. Perhaps they did not. However, the bottom line is this: The Vietnam War wasted lives and resources in the name of protecting national security, but the ‘US national security’ that officials were so worried about was never threatened in the first place.

Jasanee Killins

NC - William Peace University

Discipline: Social Sciences

Authors:
#1 Jasanee Killins

Abstract Name: Examining the Conflict Between Identity and Social Awareness in Zora Neale Hurston’s “How It Feels to Be Colored Me” and Barracoon

In what ways can identity in the United States be explored? Whether it is through lived experiences or heritage, the complexities of identity form an insight into an individual’s social awareness. However, identity can also serve as an epicenter for conflict. In the case of Zora Neale Hurston, the weight of identity can be a hindrance. Hurston captures these perspectives in her essay, “How It Feels To Be Colored Me” (1928), exploring her adolescent years and how she became familiar with race as a concept. Hurston holds a celebrative view of black culture, rejecting angst when discussing her experiences. This selective perspective on identity reflects a desire to detach oneself from the realities of marginalization while still embracing the beauty of one’s identity. Hurston’s controversial views on racial identity resulted in years of contention with her peers, yet opened an avenue for cross-generational insight on what defines black identity in the United States. In research conducted a year before the publication of “How It Feels To Be Colored Me” (1928), Hurston reveals that she does not regard her community’s marginalization with apathy. In 1927, Hurston orchestrated a series of interviews with Oluale Kossola, or Cudjo Lewis, one of the last remaining survivors of the Trans-Atlantic Slave Trade. Hurston’s research would later be published as Barracoon: The Story of the Last Black Cargo (2018). Having remained unpublished until ninety years after its completion, Hurston’s work made unprecedented strides through establishing an interpersonal relationship with Kossola rather than conforming to a traditional anthropological study. A close, parallel study of these two works reveals Hurston’s understanding of black identity as an interplay between individual and communal consciousness. This analysis determines whether an individual is capable of formulating social awareness by contextualizing their identity themselves or through their community, respectively.

Madisyn Killough

MS - University of Southern Mississippi

Discipline: Education

Authors:
#1 Madisyn Killough

Abstract Name: A Case for Educational Equity in Mississippi: An Analysis of Mississippi's Social Emotional Learning Standards From a Critical Lense

In 2021, the Mississippi Department of Education released Social Emotional Learning Standards. While these standards are not novel in development in other states, these standards are novel in Mississippi. Mississippi's SEL Standards are based off the CASEL-5 Framework, which is evidence-based and rooted in restorative justice practices. Both the Mississippi SEL Standards and the CASEL-5 Framework consider five essential domains: social awareness, self-management, social awareness, relationship skills and responsible decision making. These standards were developed in response to the COVID-19 pandemic and its ramifications. This study aims to address a lack of literature regarding SEL implementation in Mississippi's public elementary schools. This study considers Mississippi's SEL Standards for Kindergarten, First grade, and Second Grade. This study accounts for the impacts of the governmental action on SEL instruction. This is accomplished by utilizing the Ecological Systems Theory. This study considers how the macro-system (government and public policy) impacts SEL instruction in Mississippi's microsystem (local education agencies) and individual students' well-being. Public policy that is considered includes The War on Drugs, educational grants such as No Child Left Behind (NCLB) and Race to the Top Grants (RTTT), and juvenile justice laws in Mississippi. The purpose of this study is twofold. This study seeks to explore the intended outcomes of SEL Standards in Mississippi. In addition, this study aims to investigate how these intended outcomes inform the development of a scaffolding document for K-2 students in Mississippi. This study utilizes an inductive analysis that considers the language of each of the standards listed for kindergarten, first and second grade students. The inductive analysis will inform a culturally responsive scaffolding document. This study provides diverse, culturally responsive resources that inform a scaffolding document. The scaffolding document seeks to make SEL implementation more accessible by providing hyperlinked read-alouds, songs, lesson plans and other digital materials.

Johanna Kim

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
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Abstract Name: Family Satisfaction of the Self-Determination Program (SDP) in California-an Exploratory Study

Background: Enacted in 2021, Self-Determination Program (SDP) provides individuals with developmental disabilities with more freedom, control, and responsibilities in choosing services than traditional regional center services. However, whether the SDP is meeting its goals and family needs is largely unknown due to the recency of the program implementation.Objectives: This study aims to examine: families' satisfaction levels of the SDP vs. traditional services, whether the SDP achieves its program goals, and explore challenges and needs to improve the SDP.Methods: Following IRB approval, 77 adults with at least 4 months of experience in both the SDP and traditional services were recruited (n=55 self-advocate and n=22 parent/legal guardian, mean age= 33.2, SD 5.3). They self-reported information about their demographics and experiences with both services via an anonymous online survey.Results: Satisfaction with the SDP and traditional services differed significantly between the self-advocate and parent/legal guardian group in the topic of community integration and study/job skills. However, the overall difference in preference and satisfaction for services was not notable. The parent/legal guardian group showed satisfaction for the SDP in four categories. The SDP positive experience data revealed five themes: social integration, self-determination, development/improvement, enhanced-quality-of-life, and job/career. Six themes identified from the data as needs to improve in the SDP include improved online materials, personalized support/feedback, enhanced-communication, collaboration/integration, community-support, and training.Conclusions: The study findings indicate that families did not show a strong preference for the SDP or traditional system and a strong satisfaction in multiple categories. However, there were differences between self-advocate and parent/legal guardian group in 4 items which highlights the importance of self-advocate participants. Also, qualitative analysis reveals the necessity of the SDP improvement and suggests potential solutions. Further research with larger sample sizes and diverse communities is needed.

Taehun Kim

WI - University of Wisconsin-Milwaukee

Discipline: Business and Entrepreneurship

Authors:
#1 Taehun Kim

Abstract Name: Is Successful College Admission in R.O.K Becoming a Privilege of the Wealthy?

In the Republic of Korea, there is a unique private education/tutoring system referred to as ‘Hagwon’, a for-profit institution that offers additional coaching for students to produce better results in college admission. Although going to Hagwon is not mandatory, there are claims that public education offered in schools is not enough for students’ success in college entrance exams, as the exams cover far more difficult questions than what students get to practice in school. With such beliefs expanding among students, every year, Hagwon thrives more than in its previous years, and now the Korean authorities, including the government are targeting Hagwon, believing it is becoming a privilege of the wealthy and the existence of it causes inequality in fair competitions for the placement in renowned colleges. The investigations conducted by the authorities after June of 2023, indicated that there indeed were certain acts behind Hagwon and its students/parents that fostered such inequalities. It is hypothesized that the special education offered by Hagwon can be challenging for families to afford based on their economic standings. To test if this hypothesis holds to be true, I approached by comparing the earnings of Korean households, in the forms of GDP, GNI, relevant government-collected data, and the monthly fees required for Hagwon, as a means to examine whether it is becoming a privilege to certain members of society. Also, by looking into previous literature and hearing the past experiences of current students who attend such renowned colleges, I examine how helpful Hagwon is to students in their successful college admission. Based on the brief review of literature and data collected for this project, the findings support the aforementioned hypothesis.

Jin Yeong Kim

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

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#1 Jin Yeong Kim
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Abstract Name: Stress-Induced Changes in the 5' End Regulatory Structures of the TP53 mRNA

Tumor suppressor TP53 is responsible for multiple regulatory functions including DNA repair, apoptosis, and cell cycle control. Loss-of-function mutations of the TP53 gene have been found in about 50% of all cases of human cancer. Expression of the TP53 gene is regulated using highly diverse mechanisms resulting in 13 known isoforms. Interestingly, TP53 mRNA has been reported to use IRES-mediated translation, especially under cellular stress. Previous studies have implicated the role of structurally stable motifs in the 5’UTR region for mediating cap-independent translation. We present a secondary structure model of the regulatory region spanning 142 nucleotides upstream and 356 nucleotides downstream of the start codon for full-length TP53. The target region includes an alternate downstream start codon. Our model, based on SHAPE-MaP data from gently extracted total RNA from A549 human lung carcinoma cell line using 5-nitroisatoic anhydride (5NIA), confirms previously observed secondary structure motifs.We then apply the in-cell probing reagent 5NIA to detect changes in SHAPE reactivity in live A549 cells and compare reactivities with the cell-free model. We observe that the IRES-related motifs remain stable in unstressed live cells. Next, we treat cells with etoposide, an oncogenic stress inducer. Our initial studies detect measurable changes in SHAPE reactivity in a short hairpin motif downstream of the standard AUG start codon. Furthermore, base-pairing probabilities of this motif region drop from >80% to <30% under etoposide stress. Prior reports implicate the role of IRES-transacting factors (ITAFs) including Hdm2 interacting with this mRNA region, and in certain cases correlating with the translation of an N-terminal truncated TP53. We outline future directions investigating the TP53 mRNA structure under different stress conditions, and also aim to identify changes in ITAF-interaction sites using RNP-MaP.

Daehwan Kim

MD - Hood College

Discipline:

Authors:
#1 Daehwan Kim

Abstract Name: Inhibition of cellulase activity by liquid hydrolysates from hydrothermally pretreated soybean straw

Soybean is one of the world's staple crops largely grown as a protein-rich animal feedstock as well as for direct human consumption. According to the USDA report, annual soybean production in the U.S. was 4.44 billion bushels in 2021, which was 46% higher than those from the 2012 harvest and accounted for approximately 35% of world soybean production (https://www.nass.usda.gov). The one-pot biomass conversion process is a promising strategy to minimize potential product loss and reduce processing costs. However, this strategy has technical limitations due to the inhibitory effects of biomass components like lignin as well as the generated inhibitors during biomass processing. In this study, the inhibitory effects of liquid hydrolysates formed by hydrothermal pretreatment of soybean straw with either sodium hydroxide (NaOH) or hydrogen peroxide (H2O2) on cellulolytic activity were investigated. Hydrothermal pretreatment of soybean straw (10% w/v) was carried out with either sodium hydroxide (1% v/v) or hydrogen peroxide (1% v/v) at 121oC for 60 min to evaluate the effect of inhibitors released from soybean pretreatment on cellulolytic enzyme activity. The fraction of cellulose in pretreated solids (1% w/v) was hydrolyzed for 72 h with 45 IU/g glucan in the presence of either buffer or liquid hydrolysate generated from the pretreatments. Hydrolysis of NaOH and H2O2 pretreated solids resulted in 57% and 39% of glucose yields in buffer, respectively. With liquid hydrolysates, NaOH and H2O2 pretreated biomass showed 20% and 30% yield, respectively, indicating the enzyme suppression by inhibitors in the liquid hydrolysates. Of the enzyme activities in hydrolysates tested, NaOH hydrolysate showed a higher inhibitory effect on enzyme activities compared to H2O2 liquid, where enzyme deactivation has a first-order correlation and the way the filtered inhibitors were generated from pretreated soybean straw.

Susanna Kim

MD - Johns Hopkins University

Discipline: Natural and Physical Sciences

Authors:
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#4 Oscar Reyes Gaido

Abstract Name: Danio rerio as a model organism for real-time in vivo CaMKII activity measurement

CaMKAR (CaMKII Activity Reporter) is a fluorescent biosensor that has recently been engineered to accurately and efficiently quantify the activity of CaMKII (Ca2+/calmodulin-dependent protein kinase II), a serine/threonine kinase whose hyperactivity contributes to the progression of various types of lethal cardiac dysfunction including arrhythmias and heart failure. This biosensor was used to identify a novel CaMKII inhibitor that can be used clinically to prevent cardiac arrhythmias. The structure of CaMKAR consists of a circularly permuted green fluorescent protein (cpGFP) fused to a phosphorylated amino acid binding domain and substrate peptide from the CaMKII autophosphorylation domain. Upon a conformational change following phosphorylation of the substrate peptide by CaMKII, CaMKAR emits green fluorescence. Until now, CaMKAR has only been utilized in isolated cells and cell-free assays as limitations in exciting the cpGFP in CaMKAR with the excitation wavelengths have hindered CaMKAR from being utilized to report CaMKII activity in an intact animal model. To combat this limitation, the development of a transgenic line of Danio rerio with CaMKAR was sought as a novel model for in vivo CaMKII activity measurement. Boasting a transparent embryo allowing for non-invasive imaging methods as well as straightforward genetic manipulation techniques, Danio rerio has emerged as a vertebral model organism in the past few decades, making it an ideal model organism candidate. CaMKAR cDNA was first inserted into the founder fish's genome via genetic cloning and crossed with wild type Danio rerio to yield a transgenic line. The lines were screened for the amount of CaMKAR expression with fluorescent imaging technology and its functionality was further analyzed with calcium influx inducing drugs and confirmed with the Semi-Automated Optical Heartbeat Analysis Software. We aim to utilize these organisms in the development of a tool for novel compound screening.

Youjin Kim

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 Youjin Kim
#2 Shiru Lin

Abstract Name: Fe-activated CoO catalysts for oxygen evolution reactions (OER): A Computational Investigation

The production of hydrogen through water-splitting reactions is a sustainable method for storing renewable energy. However, these reactions involve oxygen evolution reactions (OER) that suffer from slow kinetics and high thermodynamic potential. Catalysts with well-defined active sites and the ability to accelerate electron and proton transfer kinetics are needed to address these challenges. In this context, researchers have turned to transition metal oxides as potential catalysts, with cobalt oxide (CoO) emerging as a promising candidate due to its abundance, low cost, and remarkable stability. Despite its favorable characteristics, such as high abundance, low cost, and remarkable stability, the OER performance of CoO still falls short of noble metal catalysts, necessitating further optimization. In this study, we explored the OER activity of cobalt oxide (CoO) catalysts through iron (Fe) activation. We used Density Functional Theory to compute the reaction energies for non-activated CoO and Fe-activated Co, for OER performance. We also computed band structures and charge transfer characteristics to analyze the two catalysts' differences. Furthermore, we verified our computed results with experimental results. This work reveals the potential of strategic elemental activation in optimizing OER performance for CoO-based catalysts, offering valuable insights for future research in sustainable energy technologies.

Andrew Kim

CA - University of Southern California

Discipline: Health and Human Services

Authors:
#1 Andrew Kim
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Abstract Name: Sleep and Cardiovascular Risk Variables Correlate Perivascular Space Morphological Alterations in the Aging Brain

Perivascular Spaces (PVS) are fluid-filled spaces surrounding the brain blood vein as part of the glymphatic system. Morphological deformities of PVS may lead to the glymphatic malfunctions, a biomarker for subsequent development of Alzheimer’s disease. Studies point to changes of PVS caused by swelling of aquaporin-4 leading to morphological alternation which could have correlative relationship with cardiovascular disease such as cerebral small vessel disease and hypertension, a possible connection between cardiovascular health and neurodegeneration. This study aims to investigate the cardiovascular risk factors that most contribute to morphological alternation of PVS in health human subjects, establishing a preliminary connection between cardiovascular risk factors and glymphatic functions/brain aging. Using a semi-supervised U-Net deep-learning model, 394 subjects from The Human Connectome Project Aging dataset’s T1w/T2w images were auto-segmented. U-Net model learned the segmentation from expert’s annotations. After segmenting, PVSs were separated using depth-first search and skeletonizing algorithm which selected top 10 PVS from each subject for tortuosity, linearity and cross-sectional diameter. We then predicted these morphology features using risk factors including Pittsburgh sleep quality index, triglycerides, blood pressure, cholesterol, and BMI using 5-fold nested cross-validation. We used a prediction model as the bootstrap random forest regression with training parameters of number of trees = 100, number of features sampled for each split = 7, minimum number of split per tree = 10. Finally, we compared the predicted values with ground-truth PVS morphology values using Pearson correlation test. The results revealed significant associations between PVS morphology and cardiovascular risk factors. This finding well-aligns with previous research linking PVS changes to cardiovascular and sleep quality factors, suggesting cardiovascular risk factors' role in deformity of PVS. The study is novel in its investigation of causative factors for PVS morphological changes, enhancing understanding of glymphatic function and brain aging.

Su Jeong Kim

AL - Auburn University

Discipline: Natural and Physical Sciences

Authors:
#1 Su Kim
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#3 Humphrey Yao

Abstract Name: Are anti-Müllerian hormone receptor type 2 (AMHR2)-expressing cells responsible for the adrenal gland development?

Adrenal gland diseases display a higher prevalence in women than men, and genome-wide studies reveal sexual dimorphism in adrenal gland gene expression. The underlying mechanism of this dimorphism remains unclear, but it is hypothesized to be linked to the shared origin of the adrenal gland and gonads during development. The receptor for the anti-Müllerian hormone (AMH), encoded by AMHR2, controls the differentiation of secondary sex organs. Mutations in AMH or AMHR2 result in Persistent Müllerian Duct Syndrome (PMDS), a condition in which a biological male develops female sex organs.Despite primarily expressing in sex organs, the pilot study indicates that AMHR2(+) cells contribute to adrenocortical cells. The present research project utilizes a mouse model with double genetic modifications, expressing the diptheria toxin subunit alpha gene (DTA) in AMHR2(+) cells. This causes the elimination of all AMHR2(+) cells and their descendants. A comparative analysis of adrenal glands between double mutant mice and wild-type littermates will elucidate the role of AMHR2(+) cells in adrenal gland development.Preliminary results show small testes and ovaries in double mutant mice, emphasizing the importance of AMHR2(+) cells in gonad development. However, despite AMHR(+) cells being in the adrenal gland, adrenal gland size remains unchanged. This result aligns with lineage tracing findings that the adrenal gland cortex continuously renews its cell population.While the preliminary data suggests no impact on adrenal gland size, ongoing research involves double immunostaining to assess the potential effect on adrenal cortex zonation. Marker genes like 3βHSD, β-catenin, CYP2F2, and tyrosine hydroxylase are used to identify specific cell types and zonation patterns. If AMHR2(+) cells play a crucial role, the expectation is a disorganized adrenal cortex in double mutant mice. This study contributes valuable insights into the role of AMHR2(+) cells in adrenal gland development and may uncover connections to sexual dimorphism.

Meagan Kim

CA - California State University - Long Beach

Discipline: Social Sciences

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Abstract Name: Does the stanol composition of animal feces impact the use of coprostanol in tracing human presence on the landscape?

Fecal stanols are a class of organic compounds that form in the digestive tracks of animals and are introduced into the environment during defecation. Soil and lake sediments can then be collected and analyzed for stanol concentrations. Coprostanol, in particular, is increasingly measured as a proxy for human presence and density in a specific region because this stanol is present in very high concentrations in human feces. However, other animals produce coprostanol, which may complicate archaeological interpretations. Ideally, a “fingerprint” of different stanols in the sediment could be used to determine if the coprostanol is from humans or other animals. We present results from a study that analyzed eight fecal stanols in thirteen wild animals that originate from Africa, North America and eastern Asia. The animals were selected based on feeding strategy-herbivore, omnivore, and carnivore- and their likely proximity to ancient humans or sediment sources. In general, herbivores produce the least amount of coprostanol, consistent with their diet. Both omnivores and carnivores produce, on average, nearly identical amounts, with chimpanzees having the overall highest amount for all animals. The relative percentage of stanols helps identify the different feeding strategies. Herbivores have the most similar data to one another with low percentages of coprostanol and cholesterol and high percentages of 24-ethylcoprostanol, a stanol derived from plants. Omnivores have more scatter in the data. They tend to have significant percentages of coprostanol and 24-ethylcoprostanol but lower percentages of cholesterol. Carnivores cluster tightly with very high percentages of cholesterol,

small percentages of coprostanol, and almost no 24-ethylcoprostanol. There are significant exceptions with some omnivores like bears plotting with carnivores, and certain wolves and African painted dogs plotting more as omnivores. Our data suggest that coprostanol values be interpreted carefully in archaeological sites.

Joshua Kim

VA - Liberty University

Discipline: Natural and Physical Sciences

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#1 Joshua Kim
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Luke Allen

Abstract Name: Detection of PFAS using molecularly imprinted polymers

PFOA and PFOS are two of a class of frequently used compounds called perfluoroalkyl substances (PFAS), or “forever chemicals.” These PFAS are released into the environment as a result of the use of fluoropolymers in industrial and consumer applications, such as construction, electronics, and products such as Gore-Tex® and Teflon®. In the environment, PFAS preclude degradation and resist traditional methods of water purification, gathering at increasing concentrations in groundwater sources. This leads to bioaccumulation in humans and animals, posing significant health risks such as decreased fertility and increased risk of cancer. Because of this, it is essential that an effective method be developed for the detection and extraction of these compounds from the environment. Molecularly imprinted polymers (MIP) are designed to bind to discrete molecules by the formation of highly selective non-covalent binding sites, and applications of MIPs for PFAS have been reported. The goal of this project was to create fluorinated MIPs with highly specific PFAS binding sites for use in sensors as a new method of PFAS detection that would allow quick assessment of PFAS levels in the field. Fluorinated MIPs (fMIPs) with binding sites for PFOA and PFOS were synthesized from novel crosslinking monomers containing fluorine in the main chain and/or on the periphery. In addition to the fMIP, a non-imprinted control polymer was synthesized for the comparative assessment of non-specific binding to PFOA and PFOS. The selectivity of the MIP was determined using quartz crystal microbalance and resistive platforms. Binding capacity was determined using HPLC-MS.

Tavish King

UT - Brigham Young University

Discipline: Social Sciences

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Abstract Name: Positive Emotion and Suicidal Tendencies: A study of daily emotional regulation use in autistic and socially anxious groups

Objective: This study examines the role of positive reframing as a strategy to mitigate suicidality and enhance positive emotions. Background: Emotional regulation difficulties have been identified in numerous psychiatric populations, potentially leading to stress, incarceration, and tragically, suicide. Amidst rising rates of suicidality among at-risk populations, this study aims to investigate the pivotal behavioral factors influencing suicidal thoughts and actions in autistic and socially anxious populations. Methods: Our investigation employed a longitudinal ecological momentary assessment study to explore the impact of various emotional regulation skills on positive emotion, negative emotion, and suicidality. We recruited 95 participants, 72 of which met criteria for inclusion, to answer daily surveys administered through a smartphone app that tracked emotional regulation use, positive emotions, negative emotions, and suicidal tendencies over time. Results: Our results indicate that for the social anxiety group, enjoying the moment affects positive emotions (E=2.14, p<.05), but this effect is not observed in the autism group. Furthermore, both groups demonstrated that accepting feelings (E=4.40, p<.001; E=2.63, p<.01) and acknowledging that feelings don’t last (E=1.69, p<.05; E=3.13, p<.001) significantly increased daily positive emotions. Conversely, hiding feelings significantly decreased daily positive emotions in the social

anxiety group (E=-1.76, p<.05). Self-blame increased negative emotions in both groups by, on average, four points. Regarding the reduction of daily average suicide composite scores, accepting feelings emerged as a significant factor for both groups (E=-1.88, p<.01; E=-2.15, p<.001). On the other hand, using self-blame significantly increased average suicide composite scores for social anxiety, mirroring its effect on negative emotions (E=1.42, p<.01). Conclusion: Positively reframing emotions is associated with increased positive feelings and reduced suicidal tendencies. This research sheds light on the complex interplay between emotional regulation strategies and their impact on mental health and emotions in these at-risk populations.

Christine King

CA - California State University - Northridge

Discipline: Natural and Physical Sciences

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#1 Christine King

Abstract Name: Flowering of Ericamerica nauseosa

Flowering of Ericameria nauseosaChristine KingInvestigation research project on the effects of climate change on the flowering and populations of Ericamerica Nauseosa.iNaturalist and r studio software analysis of climate change and the effects of climate changes on plant life. Total records 179 observations It’s growth rate is 2 to 4 years and its common name is Rubber Rabbitbrush. This shrub thrives in dry soil in full sunlight. Drought tolerant once established in the soil. There are 33 species of Ericamerica. Annotation for flowering: numerous flowerheads- tubular disk shaped. Flowers bloom from August to September. Species prevalence for the project and workability The species blooms yearly between August and September therefore it is a ideal specimen for the research project. Phenology: “Rubber rabbitbrush is a large woody shrub covered with yellow flowers in late summer and fall. Flowers occur in clusters of 5 and are small and tubular. The many thin, upward bending shoots or branches give this a plant a broom-like appearance. Stems and leaves are covered in soft hairs that give off a gray-green cast. Leaves are spatula-shaped and long. It typically grows up to 6 ft tall and is found in grasslands, disturbed areas, and riparian areas” (budburst.org). Location: Arizona , California , Colorado , Idaho , Kansas , Montana , North Dakota , Nebraska , New Mexico , Nevada , New York , Oklahoma , Oregon , South Dakota , Texas , Utah , Washington , Wyoming Similar species commonly mistaken for Ericameria nauseosa Mistaken for sagebrush when not flowering. REFERENCES Malaby, Sarah. 2023. Rubber Rabbitbrush (Ericameria nauseosa(Pall. ex Pursh) G.L. Nesom & Baird) https://www.fs.usda.gov/wildflowers/plant-of-the-week/ericameria_nauseosa.shtml#:~:text=Flower%20heads%20are%20made%20up,insects%20late%20in%20the%20summer. https://budburst.org/plants/258 https://wenatcheeoutdoors.org/2023/08/30/rabbitbrush-a-bush-rabbits-dont-eat/

Zantia King

TX - Midwestern State University

Discipline: Natural and Physical Sciences

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#1 Zantia King
#2 Elizabeth Elkins
#3 Kashif Mahmud

Abstract Name: Using terrestrial laser scanning and model optimization for characterizing urban tree structural parameters

Above-ground biomass (AGB) is an important metric used to quantify the mass of carbon storage in terrestrial ecosystems. Urban trees have long been valued for the potential to store significant AGB. However, urban environments pose various challenges for accurately recording AGB due to the plasticity of tree form, high species diversity, and heterogeneous and complex land cover. Light Detection and Ranging (LiDAR) is a state-of-the-art technology of remote sensing that offers an opportunity to assess AGB in urban trees effectively and inexpensively. Using LiDAR and geometric modeling algorithms, we can generate three-dimensional (3D) point clouds and digital tree segmentations. These 3D models can be used to estimate urban tree structural parameters such as height, diameter at breast height, volume, surface area, etc. First, we manually extract individual tree point clouds from plot-scale LiDAR data collected in an urban setting at Midwestern State University (MSU Texas). We then apply state-of-the-art digital tree segmentation and geometric modeling algorithms to estimate tree structural parameters and AGB of these urban tree species. Finally, we validate the available modeling tools by

optimizing parameters and comparing the outputs from the model simulations with extensive field measurements (harvested total biomass and branch biomass) from the campus trees. The model with optimized parameters for North Texas tree species (Red Oak and Cedar Elm) would provide a more accurate estimate of the total AGB of these urban tree species. This can offer a non-destructive approach for estimating urban tree AGB which is essential for understanding the overall atmospheric carbon sink and also has practical recommendations for sustainable urban forest management strategies.

Wil King

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Wil King
#2 Christopher Staples
#3 Ashley Hines
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Abstract Name: Acute Metabolic and Perceptive Responses to a Multi-Ingredient Pre-Workout Supplement and CrossFit®-Style Exercise

CrossFit® (CF) is a form of high-intensity functional training where trainees are often challenged to complete as much work as possible within a set time limit. Though multiple factors (e.g., strength, experience, skill) are relevant, being able to sustain a fast pace over time is dependent upon the continued supply and availability of energy to working muscle. Multi-ingredient pre-workout supplements often contain several substances known to alter blood flow and substrate utilization (i.e., fat instead of carbohydrates). However, no study has investigated the acute effects of such formulations on CF performance. PURPOSE: To compare the acute effects of a multi-ingredient pre-workout supplement on metabolic responses to 5- and 15-minute versions of the same-style workout. METHODS: Men and women (n=20: 29±8 years, 172±8 cm, 81±15 kg) with CF experience (≥2 years) were recruited for this crossover-designed, placebo-controlled study. Across four, weekly visits in randomized order, participants completed pre-exercise ratings of perceived exertion (RPE), subjective assessments of perceived energy, fatigue, and focus, along with objective assessments of blood flow (heart rate [HR], quadriceps cross-sectional area [CSA]), and metabolism (blood lactate, oxygen uptake [VO2], and respiratory exchange ratio [RER]) before consuming a pre-workout supplement (S) or non-caloric placebo (P). After resting 40 minutes, participants completed a 5- or 15-minute circuit of rowing (men: 9kcal; women: 7kcal), six barbell thrusters (men: 43.1kg; women: 29.5kg), and three box jumps (men: 0.6m; women: 0.5m) for as many reps as possible and then repeated all pre-exercise assessments. EXPECTED RESULTS: Due to physiological limitations and the likelihood that all efforts will be near-maximal, regardless of condition or time, no differences are expected in HR, VO2, and CSA. However, it is hypothesized that S will allow for more repetitions to be completed, greater perceived energy and focus, lower perceived fatigue, and lower post-exercise concentration of blood lactate.

Grady King

WV - West Virginia University

Discipline: Health and Human Services

Authors:
#1 Srinivas Palanki

Abstract Name: Impact of the Medicaid expansions on heart disease mortality in the United States: A county-level Analysis

Despite the significant changes that the Affordable Care Act (ACA) made to the US healthcare system since 2010, little statistical analysis of its impact on the deadliest chronic diseases has been made. County-level data from the United States is

used in conjunction with difference-in-difference models to isolate the effect of the Affordable Care Act on preventable deaths due to heart disease. Our national causal inference analysis found a significant decrease of preventable heart disease mortality due to the Medicaid expansions.

Nerissa Kiprotich

KY - University of Kentucky

Discipline: Engineering and Architecture

Authors:
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#2 Muhammad Yousaf
#3 Isabel Escobar

Abstract Name: Fabrication of Polysulfone/Sulfonated-polyether-ether-ketone Membranes for Removal of Organic Contaminants from Water

Per and Polyfluoroalkyl (PFAS) are surfactant chemicals formally or currently used in non-stick cookware, water-repellent clothing, household industrial products, etc. Recent studies have shown that PFAS constitutes a serious risk to human health. The presence of PFAS in water systems and sources has increased the demand for efficient, less harmful water treatment methods. Due to the structural complexity of PFAS, traditional water treatment technologies have proven insufficient for the removal of PFAS. Membrane technology is employed in this project as it is more adaptable, uses less energy, and has a smaller environmental footprint compared to other forms of water treatment. This research focuses on optimizing the functional properties of polysulfone (PSf)--based membranes by incorporating a negatively charged copolymer (sulfonated poly ether ether ketone (SPEEK)) during membrane synthesis. In this project, two types of membranes are being synthesized and compared. The SPEEK-PSf membrane composite was compared to the PSf membrane, and it was found that PSf membranes had a lower rejection of anions compared to that of the SPEEK-PSf membranes. The addition of SPEEK into the membrane matrix was observed to improve membrane performance via anion rejection, and permeability. Furthermore, the ability of the SPEEK-PSf membranes to adsorb the organic dye methylene blue was investigated. It was found that the introduction of a negative charge on the membrane surface via the incorporation of SPEEK polymer in the membrane matrix improved the adsorptive properties of the membrane. Characterization of the membranes was done through Scanning electron microscopy (SEM), Fourier-transform infrared spectroscopy (FTIR), X-ray photoelectron spectroscopy (XPS), and Nuclear Magnetic Resonance (NMR) spectroscopy.

Rishi Kiran

CA - California State University - San Marcos

Discipline: Mathematics and Computer Science

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Abstract Name: Optimizing Interdependent Security Decisions through Multi-agent Reinforcement Learning

This research project addresses optimizing security decisions under interdependent risks using a Multi-Agent Deep Q Networks (MADQN) reinforcement learning framework. The characteristic of the interdependent risk decision problem is that the agents' decision affects others' performance. The central question driving this research project is, "How can the security decisions of interdependent agents be optimized to achieve an overall increase in safety?" Traditional approaches for addressing the challenge of interdependent security decisions, such as Nash Equilibrium Analysis in Game Theory and Optimization Models, typically rely on obtaining the optimal decision based on predefined environmental models. However, the environmental model is not always accessible to agents when making security decisions. Our goal is to enhance security practices by considering uncertainties and unknown environmental conditions in the decision-making process. The methodology involves treating each agent in an interconnected network where the agent has their own Deep Q Network (DQN) model to support their decision. Each agent can observe their potential loss, their security investment decision, and the actions of other agents. Each agent's action is the quantifiable security investment they are willing to make. After each action, the agent receives a reward that considers the expected loss, probability of risk, and investment cost. The reward is used to train their DQN model to optimize their decision to minimize systematic risk. The expected results assess the

effectiveness of the MADQN framework and address the ability of the agent to learn from the environment by interacting with it. The capabilities of this framework will empower agents to optimize their decisions while also improving the overall security level of the system with cost efficiency.

Jennifer Kirchmeier

AZ - University of Arizona

Discipline: Natural and Physical Sciences

Authors:
#1 Wendy Moore
#2 Jennifer Katcher

Abstract Name: Bees of the Sonoran Desert

Tucson and the surrounding Sonoran Desert has over 800 native bees, but not all of the species present have been identified. For context, this is a grand amount of biodiversity for bees in a single region outside of the Amazon, largely due to our local Sky Islands. Very little is known about the bee diversity in the Sonoran Desert and the Arizona-Sonora Desert Museum (ASDM) is completing some initial phenology and population studies to identify what species are present during which times of year. Many bees collected by the Arizona-Sonora Desert Museum's "Bee Team" are awaiting identification, and Pima Community College (PCC) students are assisting with this backlog of bees to publish DNA sequences to the Barcode of Life Database (BOLD), an international scientific collection of DNA sequences. PCC students in partnership with Tucson Bee Collaborative, University of Arizona, and the ASDM are working to analyze and document the DNA of our diverse bee population through the use of DNA extraction, polymerase chain reaction amplification, gel electrophoresis, DNA sequencing (outsourced), and bioinformatics tools to obtain a consensus sequence for our bee specimen for publication in BOLD. As a student researcher with the Tucson Bee Collaborative, I was tasked with identifying bee #11 using DNA barcoding, employing the use of bioinformatics. When compared to bees published in BOLD, our specimen is most closely related to the Centris genus, but did not yield an exact match to published data. This means we will likely be the first to publish our specimen's DNA barcode in BOLD. When looking at the phylogenetic tree of our specimen, it may be of the Centris rhodopus species. Understanding our primary pollinators will empower us to preserve and protect our incredible biodiversity in the Sonoran Desert.

Sara Kishawi

CAN - Vancouver Island University

Discipline: Interdisciplinary Studies

Authors:
#1 Sara Kishawi
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Abstract Name: Factors that Contribute to Successful Funding Applications for Wildfire prevention and Preparedness in High Risk Communities

This study takes a journey into the heart of high-risk communities on Vancouver Island, where wildfires cast a shadow of destruction every summer. As we hear the stories and witness the devastating aftermath, it becomes clear that not all communities actively participate in available programs designed to prepare and mitigate wildfire damage. In British Columbia, Canada, high-risk communities have been identified, and programs exist to aid them. This study seeks to understand the reasons behind the lack of active engagement by some communities in seeking and accessing funding opportunities for wildfire prevention and preparedness. The findings will be navigating through the challenges of communication, information flow, and the maze of funding applications. Surveys shed light on the inner workings of organizations leading wildfire initiatives, exposing possible knowledge gaps and communication blocks. In depth Interviews with funding applicants enrich the narrative, revealing a multifaceted landscape of wildfire preparedness challenges. Beyond expected barriers, the study explores application accessibility and the nuanced prioritization of prevention programs within

each community. Drawing comparisons between communities' wildfire experiences and risk perceptions differentiates success from struggle in funding status. This research serves as a beacon, not only identifying obstacles but crafting a roadmap for effective strategies. The insights garnered become a toolkit for tailoring outreach plans to each community's unique needs, fostering collaboration. Ultimately, this knowledge emerges as a catalyst, empowering at-risk communities and fortifying their resilience against the looming specter of wildfire threats. The vision extends beyond individual communities, nurturing a collaborative environment that strives collectively towards wildfire prevention and preparedness.

Ryan Kitzan

WI - University of Wisconsin-La Crosse

Discipline: Business and Entrepreneurship

Authors:
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#2 Adam Stivers
#3 Nabamita Dutta

Abstract Name: Studying the Effects of Culture and Economic Freedom on Financial Development

While an important question, there has not been much research investigating how cultural values and economic policies work together to influence financial development globally. We think filling this gap in the literature could provide some unique insight. We will be compiling data on culture using Hofstede's framework and the Global Preferences survey, data on economic freedom from the Fraser Institute's index, plus financial and economic data from the World Bank. Then we will use some statistical analysis techniques to examine the relationships between these factors as well as how they impact things like the strength of banking systems and capital markets. Obviously, culture shapes a lot of attitudes around things like patience, risk-taking, and individualism. And those attitudes feed into financial decisions people and organizations make. Likewise, regulations and economic freedom affect how financial markets operate. However, no one has quantified exactly how those cultural perspectives and policy variables interact. This is what we are hoping to uncover. Our hypothesis based on what we know so far is that cultures with more patience, more appetite for risk, more individualism, matched up with freer, more open economies, will correlate strongly with better developed, more stable financial systems. We will empirically investigate this to test our hypothesis. The results will shed light on the financial and economic impact of culture, as well as how the economic systems and institutions of a country interact with these factors. Our work will provide suggestions on ways countries can improve their business and economic environment, given their culture, that will result in financial and economic improvement.

Insia Kizilbash

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
#1 Manda Keller-Ross

Abstract Name: Research Evaluating Vagal Excitation and Anatomical Linkages (REVEAL) on Vagal Nerve Stimulation

The autonomic nervous system (ANS) is responsible for maintaining homeostatic control and modulates the lymphatic, cardiovascular, metabolic, and inflammatory systems. The ANS consists of sympathetic (fight or flight) and parasympathetic system (rest and digest). The vagus nerve is involved in the parasympathetic function. The Vagus Nerve Stimulator has been approved by the FDA to treat epilepsy and depression, however the effects of VNS on peripheral organs are unclear. Increase in sympathetic nervous system throughout the body can cause adverse effects such as end organ damage hence understanding the influence of VNS on sympathetic function while learning about the correlation between SNS and VNS can lead to novel discoveries. The REVEAL study is a single blinded, multisite, crossover study, with a target sample size of 144 participants, 18 years or older. Participants will either have a previously implanted VNS or will be newly implanted prior to beginning study procedures. Six parameters of VNS are received by participants in a randomized order in acute and chronic phases. Blood pressure, heart rate and muscle sympathetic nerve activity (MSNA), the gold standard measure for sympathetic function will be measured acutely at rest and during handgrip exercise and a head up tilt test and after 12 weeks of VNS stimulation at a predetermined and randomized frequency and duty cycle. We hypothesize that VNS will lower MSNA and

blood pressure. Findings from this study will lead to therapeutic treatments and hold promise for refining VNS interventions and with a wide range of implications in various medical domains.

Hannah Kleppinger

TN - Trevecca Nazarene University

Discipline: Interdisciplinary Studies

Authors:
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Taegen Gann

Abstract Name: Student Views and Practices of Sustainability: A Study at Trevecca Nazarene University

This is a foundational study answering the question: “What creates a university culture that leads to the integration of sustainable practices into campus life at Trevecca Nazarene University [TNU]?” After reviewing existing literature, the student body of TNU was surveyed about their attitudes and beliefs surrounding sustainable practice. The data indicated two clear disconnects: one between student beliefs around sustainable practice and their perception of TNU’s practices, and one between student practice on campus and off campus. The study found that 96% of the survey respondents considered sustainable practice to be broadly necessary for the thriving of the earth and human life, and 92% considered the overall health of the global environment to be deteriorating. However, when asked about the institutional behavior of TNU, only 30% of participants indicated that Trevecca practiced sustainable care for the local environment. Participants were also asked what factors informed their beliefs about sustainable practice. The most selected factor was “Educational Background,” with 46% of respondents choosing it as most influential in informing their beliefs. Of the participating students, 42% indicated involvement in sustainability efforts independent from TNU, compared to 13% indicating involvement in sustainability efforts on campus. This disparity between on and off campus involvement was deemed significant because students are able to participate in sustainable practice on campus through the Trevecca Urban Farm.This study indicated clear disconnects between TNU and its student body, though a direct cause is unclear. The results of the completed survey, combined with a review of existing literature, suggest the potential need for an increase in sustainability education opportunities at TNU. Further study is encouraged to investigate this as a potential way to bridge the ideological gap between the institution of TNU and its student body.

Tara Klich

MI - Saginaw Valley State University

Discipline: Social Sciences

Authors:
#1 Tara Klich
#2 Hillary Mellema

Abstract Name: Mental Health Access on Michigan College Campuses

Despite a decline in university enrollment across the nation, there has been an increase in college student mental health pathology (Pashak et al., 2022). The age demographic of traditional college populations coincides with the age of onset for the most common mental illnesses (El-Monshed, Fayed, & Loutfy 2021). Moreover, these students are more likely than their non-college-attending peers to experience stress due to adjustments to a new academic environment, moving away from family homes, and forming new social connections (Vargas-Huicochea et al. 2022).This study aims to examine the availability and scope of mental health resources on Michigan college campuses. This research involved a manual web scraping analysis of Michigan two-year colleges (n=23) and four-year universities (n=57). We find that 81.61% of Michigan higher-ed institutions (n = 80) offer on-campus counseling services. Twelve (13.79%) institutions supplement access by investing in third-party services (e.g. Employee Assistance Programs, BetterMynd, UWill, etc). Five schools (5.75%) have no on-campus resources but refer to third-party contractors or local resources. Eleven (12.64%) schools have no evidence on their institution website to suggest any mental health support. The proportion of public institutions offering third-party mental health resources is significantly higher (76.5%) than private institutions (17.6%).While most institutions have on-campus mental health access, colleges and universities are equipped to manage school stress. They are not well-equipped to handle mental health crises or serious mental health pathology. BetterMynd, a licensed teletherapy and medication

management provider offers pricing based on anticipated student need that rolls over to the following year. ULifeline, a virtual crisis text line is offered at no charge and is intended to support individuals through an imminent crisis. While there is extensive research on the mental health of college students, there is a notable gap in the services available to them on college campuses.

Juliette Kline

MN - St. Catherine University

Discipline: Health and Human Services

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#1 Juliette Kline
#2 Rebecca Busanich

Abstract Name: Narratives of Mental Health in Professional Male Athletes as Constructed by the Media

While male athletes are often praised for being invincible, they are in no way excluded from the mental health challenges the rest of the population faces. This is especially true for those without a solid support system (Souter et al., 2018). The team developed two questions: How does the media narratively construct mental health for professional athletes? In what ways are these narratives actively resisting or reproducing the stigmas surrounding male athletes' mental health? The group first conducted initial searches in popular sports media magazines and websites. Results were limited to the top page of search finds to emulate the public attention span, and the year was limited from 2018 to the present. After initial searches were conducted, two personal athlete story articles and one media story article representing the sports' stance on mental health were chosen for football, basketball, baseball, and hockey (four sports, three stories each). After conducting narrative thematic analysis on twelve chosen articles, a dichotomy of two main narratives emerged from the data. In the redemption narrative, athletes confide in struggles they have had, but the primary focus is on the athlete's ability to overcome any struggles on their own and through their involvement in sport. In the extreme breakdown narrative, athletes get to a point where they cannot prioritize their mental health in the sporting environment and have to leave indefinitely and/or demonstrate their mental illness in extreme ways. By only showcasing these two opposing narratives, the media is constructing a narrowed version of mental health perspectives that continue to silence and stigmatize the wide variation of mental health experiences for male athletes. Despite sincere and positive messages, the underlying notion remains that male athletes must be their own mental health advocates and their stories must stay within the realms of hegemonic masculinity.

Riley Klug

WV - West Virginia University

Discipline: Humanities

Authors:
#1 Riley Klug

Abstract Name: Los Desaparecidos: Photographing Memory and Violence in Post-Dictatorship Argetina

From 1976-1983, the military dictatorship of Jorge Rafael Videla ravaged Argentina, creating a lengthy period of violence and discontent. Approximately thirty-thousand individuals were lost during this brutal period termed La Dictadura. Those who perished are referred to as Los Desaparecidos, the missing; they embody violence afflicted on citizens by the state. The mothers and grandmothers of the disappeared rose in protest against the Argentine government, forming a human rights coalition in 1977 called Las Madres de Plaza de Mayo. After this prolonged period of violence, much has been done nationally to recover the trust of the masses; however, the trauma of La Dictadura remains in the memory of those who experienced this military dictatorship. Through the artwork of Argentine artists and activists in the 1990's, including Marcelo Brodsky, Julio Pantoja, and Graciela Sacco, the aftermath of this period of violence was photographed, shedding light on La Dictadura and the continued impact of this dictatorship on generations of Argentine citizens. This paper will discuss the Argentine dictatorship and the artwork from the aftermath of this period as a tool of memorialization, investigating the portrayal of this dictatorship from an art historical perspective.

Laura Klump

MO - Truman State University

Discipline: Social Sciences

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#1 Lauri Klump
#2 Dr. Victoria Mayer

Abstract Name: Systemic Processes of Regulation Influencing the US Education System: Hindering Outcomes for Low-Income Students and Students of Color

Educational attainment is a mechanism for upward social and economic mobility in society. According to Morris, Conteh, and Harris-Perry (2018), this is especially true in low-income families. Higher levels of educational achievement are positively associated with higher-paying careers and more opportunities. However, experiences and opportunities within the education system are not identical for all. Research has shown that low-income students, students of color, and students with disabilities face additional inequities and barriers within their educational journeys. Prior research has addressed several of these barriers in the US education system; however, further research needs to be conducted, particularly in Missouri. According to Furtado et al. (2019), Missouri is one of nineteen states that permits corporal punishment within schools. Specifically, the St. Louis, Missouri region possesses a significantly wide racial disciplinary gap compared to state and national averages. In this research, taking into account the history of American racial discrimination, I plan to address the following question: (1) If and how does the historical legacy of legal discrimination, in terms of the racial and class composition of neighborhoods and student populations, school expectations, and the funding of schools, impact how schools have responded to formally neutral neoliberal state and federal regulations and laws. To do this, district handbooks and comprehensive school improvement plans (CSIPs) were qualitatively coded for numerous variables and analyzed for evidence of neoliberalism within school policies and practices. The results of this data collection and analysis demonstrate evidence of

neoliberal values through the increased measures of academic efficiency and achievement, increased punitive disciplinary approaches and presence of SROs, and the policing of students and families outside of school.

Jediah Knetter

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

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Morgan Federwitz
Breanna Kinnunen

Abstract Name: Influence of Gender and Social Support on Suicidal Ideation in College Students

Suicide accounted for nearly 50,000 deaths last year in the United States (CDC, 2023). The Integrated Motivational Volitional Model (IMV) of suicidal behavior has indicated entrapment and social support as important components of suicidal ideation and intent. Past research shows that women tend to receive more social support than men and highlights the negative societal expectations that discourage men from reaching out for social support (Turner 1994; Bannister, 2020). Some findings suggest that social support may be more important for reducing suicide among men than women. (Šedivy, 2017). However, there is little research on the moderating effects of gender within the IMV model. The objective of this study is to test the hypothesis that gender would moderate the effect of social support on the relationship between entrapment and suicidal ideation. College students (N = 350, Mage = 18.95, SD = 1.4; 86.7% White; 71.5% Female) were recruited to complete an anonymous online survey via email invitation assessing entrapment, social support, and suicidal ideation. We ran a moderated moderation regression using the SPSS PROCESS macro. The full model was statistically significant (F (7,342) = 29.41, p < .001) accounting for 37.6% of the variance. The three-way interaction of entrapment, social support, and gender was non-significant (b = -0.03, p = 0.17; 95% CI: -0.06, 0.01). The interactions between gender and both entrapment and social support approached significance (p-values < .07). Gender also had a significant main effect on ideation (b = -4.34, p < .04, 95% CI: -8.47, -0.21). Results indicate that gender did not affect how social support influenced the relationship between entrapment and suicidal ideation, but did have a main effect, with males reporting slightly higher ideation. Additional research is needed to replicate these findings and further explore how gender impacts factors contributing to suicide risk.

Erin Knight

MN - University of Minnesota - Duluth

Discipline: Engineering and Architecture

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Abstract Name: Modeling and Mapping of Microstructure of Powder Bed Direct Metal Laser Sintering Additive Manufacturing Hybrid Milling of Maraging Steel

Additive manufacturing (AM) has transformed conventional methods of manufacturing by enabling more intricate and customized part manufacturing. Industries including aerospace, medical, and advanced tooling utilize metal additive manufacturing (MAM) to increase component quality and performance. Although direct metal laser sintering (DMLS) has been extensively studied, a gap still exists in understanding the impact of hybrid milling on part's mechanical properties. This research aims to fill some of this gap by studying and establishing the relationship between the major process parameters and the resulting microstructure, energy density, and mechanical properties of Maraging steel parts by DMLS hybrid milling AM. A Matsuura LUMEX Avance 25 laser sintering hybrid milling machine was used to produce 27 separate ASTM standard samples of varying process parameters across three levels with three replicates. The experiments were designed using a L9 Taguchi orthogonal array design of experiments. The process parameters include laser power, print speed, hatch space, and powder layer thickness. These specimens were tested using the ASTM E8 testing standard, and microstructure evaluated using a scanning electron microscope (SEM). Analysis of Variance, (ANOVA), and Classification & Regression Trees (CART), in Minitab Statistical Software were used to analyze and model the quality characteristics. The results of this research would be the development of models of direct influence of the major process parameters on Maraging steel's microstructure development, energy density, and mechanical behavior in DMLS hybrid milling MAM. The developed process models will enhance predictions of microstructure and performance of components by the designer. The discussions will highlight the implications of these findings for industry standards and the potential shift towards wider adoption of DMLS hybrid milling as a manufacturing method for critical components in both aerospace, medical, and tooling industries. Keywords: Additive Manufacturing, Metal Additive Manufacturing, Direct Metal Laser Sintering Hybrid Milling, Maraging Steel, Mechanical Properties, Microstructure.

Joshua Knott

IA - Iowa State University

Discipline: Natural and Physical Sciences

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#1 Joshua Knott

Abstract Name: Optimizing Muon Collisions: Tungsten Cone-Generated Magnetic Fields in the CERN Muon Collider

The CERN muon collider team in Genever Switzerland aims to collide muons and antimuons together in a detector to understand and learn more about their nature and physical properties. One major setback with this is that muons are unstable particles, meaning they have a lifetime of 2.2 microseconds, that is, 2.2 microseconds before they decay into an electron and neutrinos. Currently, there is no working muon collider, and it is because of the instability of the particles that we cannot successfully get them to interact with each other in time. One way around this setback is to supply massive amounts of energy through the form of magnetic field solenoids to accelerate the muons so that they may interact with each other and collide before decaying. The detector segment of the muon collider is equipped with a superconducting solenoid to provide a magnetic field for the muons and antimuons to accelerate. However, due to its sheer size, it cannot produce a significant magnetic field without producing too much heat loss and incurring a lot of resistance. This is where we require the help of an external magnetic field generator. There are two cones made of tungsten pointing towards the center of the detector from either side, used to shield products of muon decay from leaking into the detector to reduce background radiation. By supplying a voltage through the cones, we could theoretically strengthen the magnetic field strength felt by the muons, allowing them to accelerate faster. This could help increase the number of collisions before decay, provided the resistance of the cones is supplying an ample amount of energy and not losing too much from heat loss. Research and investigation on finding the optimal way to supply current through the tungsten cones to generate magnetic fields is currently being done.

Abigail Knoy

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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#3 Paul Gregor

Abstract Name: Targeting heparan sulfate proteoglycan interactions with amyloid-beta: a novel therapeutic approach for Alzheimer's disease

Over six million Americans currently live with Alzheimer's disease as of 2023 (National Institute on Aging.) It is one of the most prevalent diseases of the aging population; however, most treatment options are to mitigate the symptoms of Alzheimer's disease instead of targeting the root cause (National Institute on Aging.)Alzheimer's disease pathology is characterized by extracellular amyloid beta plaque depositions accumulating in the brain leading to cell death (Hardy & Dennis). Amyloid beta fibrils can be taken up into the neurons of the brain to cause direct cell death or can block cell-to-cell signaling to induce cell death (Lindahl et. al., Zhang et. al.). Recent data show cell surface heparan sulfate proteoglycans are receptors responsible of the fibril formation of amyloid beta by stabilizing the monomer/oligomer enough to enhance the aggregated plaque in the brain parenchyma as well as being responsible for uptake and spreading of pathogenic amyloid beta (Zhang, et. al.). The goal of this study is to develop a novel Alzheimer's Disease treatment with a glycosaminoglycan inhibiting small organic molecule. The hypothesis we propose is our compound(s) will block the interaction between the cell surface proteoglycan and amyloid beta peptides to prevent amyloid pathophysiology by amyloid-beta aggregation and endocytosis. So far, thousands of compounds have been screened through enzyme-linked immunosorbent-based assays to test the inhibition of amyloid beta binding heparan sulfate proteoglycans by each experimental compound. Lead compounds have been chosen for the next phase of trials including APP/PS1 transgenic mice and evaluate the efficacy of reducing amyloid deposition in the brain. In vivo trials are ongoing, however in vitro trials have been concluded and will be presented.

Raniya Knuckles

IN - Indiana University Purdue University Indianapolis

Discipline: Social Sciences

Authors:
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Abstract Name: STINKING THINKING: A Critical Analysis of the Influence Financial Education and Banking Tools Have on Dismantling Poverty In Black Communities

Financial illiteracy in the Black community contributes to the large wealth gap that separates White and Black households in America. The lack of financial literacy in Black households leads to having less wealth than their White counterparts, which, in turn, affects generational wealth (Aladangady & Forde, 2021) Factors that contribute to financial illiteracy are the lack of access to financial education, limited or unreliable employment, and institutionalized racism (Abdullah, 2019; Angrisani et al., 2020). Poverty is a cycle that tends to predominately impact generations of Black families and is difficult to stop. This research project aims to investigate two financial institutions, Huntington Bank and PNC, digital banking tools, and educational programs offered to their patrons. This investigation will assess if these two financial institutions assist with dismantling poverty and are easily accessible to Black people. The goal is to evaluate the gaps

between so-called financial services/education and their engagement with Black people. A way to help close the wealth gap is to educate the underserved Black communities and ensure they have the same access to financial resources and education as people of other races.References:Forde, A. (2021, October 22). Wealth inequality and the Racial Wealth Gap. The Fed - Wealth Inequality and the Racial Wealth Gap. Retrieved December 7, 2023, from https://www.federalreserve.gov/econres/notes/feds-notes/wealth-inequality-and-the-racial-wealth-gap-20211022.htmlAbdullah, J. B., (2019). Examination of Black men's perceptions of personal finance and lived experiences developing financial literacy capability through the lens of institutional racism. https://doi.org/10.25148/etd.fidc007057Angrisani, M., Barrera, S., Blanco, L. R., & Contreras, S. (2020). The racial/ethnic gap in financial literacy in the population and by income. Contemporary Economic Policy, 39(3), 524-536. https://doi.org/10.1111/coep.12507

Jacob Knuerr

IA - Iowa State University

Discipline: Engineering and Architecture

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#2 Theodore Heindel

Abstract Name: High-Speed X-ray Image Analysis of an Airblast Atomizer

Sprays are commonly found in many industrial applications, from fuel injection in gas turbine engines to mixing in chemical processes to water dispersion in crop growth. Characterizing sprays in the region near the nozzle exit, called the near-field region, is important because it influences the atomization and spray dispersion process. However, visualizing the near-field nozzle region using high-speed cameras is incredibly difficult because the region is optically dense, making visual access difficult. In this study, the near-field nozzle region of an airblast coaxial two-fluid atomizer is visualized using high-speed X-ray imaging methods, which are then analyzed to characterize the spray motion. Imaging was completed for different gas-liquid momentum flux ratios, gas-liquid swirl ratios, and ambient pressures. It is shown that spray flapping frequency is influenced by ambient pressure and momentum flux ratio and is very sensitive to the gas-liquid swirl ratio.

Gwen Knutson

WI - University of Wisconsin-Milwaukee

Discipline: Visual and Performing Arts

Authors:
#1 Gwen Knutson
#2 Em Johns
#3 Laura Bogyay
#4 Nathaniel Stern
Em Johns

Abstract Name: Mother Computer: Thinking with Natural and Artificial Intelligences

Can "artificial" minds amplify human expression, or are they a threat to creative thinking? This large-scale project and traveling exhibition combines the art and research of Professor Dr. Nathaniel Stern, Ph.D., and world-renowned Artificial Intelligence artist and poet Sasha Stiles, towards poems, sculptures, prints,

installations, and artist books in collaboration with - and about - AI. Combining cybernetics and ecology, Stern and Stiles collaborate with Artificial Intelligences and material forms to create art and poetry that reflects on the nature of human creativity and technology, affect and interaction. The project comprises of six poems written in conjunction with AI and centered on the meaning and workings of non-human minds. The poems “Mother Computer”, “The Word After Us”, “0RAL B1NARY”, and “Feral Font” investigate what language is, the importance of language in human cultures and societies, the relevance of language(s) in the age of computing and AI, and the future of language(s) in a post-human world; “The E-Waste Land” and “Still Moving” are meditations on the relationship we have with our cybernetic systems and they give a hypothetical voice to man-made technology. Experimenting with custom-trained generative AI, natural language processing, various machine learning models, computer-aided design, blockchain, data visualization, computer vision, and text-to-image platforms reveals not only how computers and non-humans think and make, but how we process and imagine as well. These new technologies promote innovation and synthesis without replacing the human ‘touch,’ and Stern, Stiles, and their team of students exemplify this in how they materialize and substantiate various intelligences with traditional art-making methods such as printmaking, paper-making, and sculpture, all together exhibiting how creative thinking has never been solely a human pursuit.

Reanna Knutson

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Reanna Knutson
#2 Jonathan Wood

Abstract Name: Differences in Crash Risk at Night Depending on Headlight Lightbulb Types and Auto-High-Beam Presence

Vehicle headlamps are designed to provide visibility for the driver at night while attempting to reduce glare for oncoming drivers. High- and low-beam bulbs are traditionally halogen, yet LED and HID bulbs have been used in some newer models to provide improved illumination. Additionally, some newer vehicles are outfitted with auto-high-beam (AHB) teachnologies to assist the driver. While these are all intended to assist the driver in safe driving in the dark, no studies have provided an analysis of the relationship between headlamp types, the presence of AHB, and crash risk at night.The objective of this research is to evaluate the difference in crash rates between vehicles with the different bulb types and vehicles with/without AHB at night while accounting for potential confounding factors. The central question of this research is if the more expensive LED and HID headlamps and the AHB technologies are associated with redacted crash risk. This will be evaluated using police-reported crash data from multiple states and data collected on headlamp technologies based on the vehicle Make, Model, Model Year, and Trim Level (e.g., Ford Ranger, Model Year 2021, XLT trim). These data will be analyzed using the Quasi-Induced Exposure methodology commonly used in transportation and vehicle safety research.The results of the analysis will be discussed in terms of any safety benefits provided, their role in the safety ratings provided by the Insurance Institute for Highway Safety (IIHS), and the added cost for the vehicles the different headlamp types and AHB are available on. Additionally, should the analysis results indicate significant safety benefits, the results will be discussed in terms of how the results could be considered in regulatory decisions and automotive manufacturing policy and planning.

Robert Kobrin

NC - North Carolina State University

Discipline: Engineering and Architecture

Authors:
#1 Robert Kobrin
#2 Siena Mantooth
#3 David Zaharoff

Abstract Name: Chitosan-Glycerol Injectable Gel for Intratumoral Retention of Immunotherapeutics

Localized cancer therapeutic delivery provides several advantages over systemic delivery, including increased retention and reduction of systemic side effects. In particular, intratumoral injections are an advantageous delivery method for cancer treatment because they maximize therapeutic concentration while limiting systemic exposure. However, the dense extracellular matrix and higher pressure tumor environment severely limit injection retention, as less viscous solutions easily return via the needle track. Gel delivery systems address this limitation due to their increased viscosity and hence improved retention at the tumor site, allowing for the long-term, controlled release of therapeutics. Chitosan, a polysaccharide derived from the shells and scales of crustaceans and fish, has been used in gel creation due to its wide availability and its biocompatible nature. A novel chitosan-glycerol injectable gel was developed to improve therapeutic retention for intratumoral delivery. Different relative glycerol to chitosan volumes, ranging from 5 to 95% weight/volume glycerol, were tested to determine the optimal gelation conditions. Phosphate-buffered saline was incorporated into the solution, which was then raised to a pH of 7.8 with sodium hydroxide. After centrifugation at 10,000 rpm for 5 minutes, chitosan-glycerol gel was formed. Glycerol most significantly impacted gelation conditions independent of chitosan concentration, with gelation occurring between 70-85% relative volume glycerol. The gel was injected through a 25-gauge needle into gelatin-based tumor phantoms, and it displayed increased load retention for various molecule sizes compared to saline and chitosan-based solutions. Cytotoxicity was assessed via trypan blue staining and subsequent cell counting of 3T3 cells exposed to the chitosan–glycerol gel. After 48 hours, sustained cell counts in cases exposed to the gel via transmembrane wells indicated biocompatibility through a live:dead cell ratio within 3% of the negative control. Due to this increased retention time and biocompatibility, chitosan-glycerol gel offers a potentially effective platform for intratumoral delivery of immunotherapeutics.

Lilianna Kocai

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Jacob Erasmus
#3 Mohammad Halim
#4 Carl Saint-Louis

Abstract Name: Synthesis and Characterization of Unnatural α,α-Disubstituted Amino Acids for Peptide Therapeutics

Peptide therapies have received a lot of interest and have been extensively studied because they are highly selective, well-tolerated, and have less adverse effects than small-molecule drugs. Due the extremely acidic environment in the stomach and the proteases of the small intestine, peptide drugs must be injected into patients to avoid destruction. To enhance the stability of peptide therapeutics in these extreme conditions, unnatural-amino acids that are not recognized by the protease are inserted, preserving the peptide containing the unnatural-amino acids from proteolysis. Unnatural -amino acids such as amino acids that contains two carbon substituents on the α-carbon that bears the amino and carboxyl groups are known as α,α-disubstituted or quaternary amino acids. The synthesis of α,α-disubstituted amino acids as unnatural -amino acids has

received a lot of attention in recent years, ranging from conformational modifiers in physiologically active peptides to pharmaceutical chemistry as they are used as building blocks for the preparation of biologically and medicinally compounds. Herein, we have synthesized two α,α-methylated unnatural-amino acids, phenylalanine and tyrosine, to incorporate into peptide therapies. We hypothesize that the α,α-methyl groups will provide additional steric hindrance in the peptide backbone and promote significant π–π stacking interactions between the two aromatic phenyl rings on the same side of the peptide, resulting in a non-covalently stapled helical peptide. Because proteases do not recognize unnatural amino acids, this peptide based on unnatural-amino acids will be highly stable in serum.

Charles Koduru

GA - Georgia State University

Discipline: Engineering and Architecture

Authors:
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#2 Chelsea koduru

Abstract Name: Enhancing Pathogen Eradication: An Autonomous UV Robot System with Advanced Navigation and Intelligent Disinfection Techniques

UV-based mobile robots have demonstrated their efficacy in pathogen eradication, yet there is a growing demand for optimizing their performance and ensuring safety. Ultraviolet light can penetrate the cell membranes of microbes which destroy the nucleic acids and paralyze vital cellular functions preventing the reproduction of the cell. Using the Ultraviolet Germicidal Irradiation (UVGI) disinfection technique, we can implement UV-C light to limit the spread of pathogens specifically Gram Positive Cocci and Staphylococcus, which are common bacterium known for their ease of transmission through surfaces and air. Frequent sterilization of these pathogens in commonly used spaces is critical for limiting the spread of infectious diseases such as MERS, SARS, influenza, and COVID-19. Implementing advanced technologies such as robotic machines that are capable of disinfecting environments repeatedly in complex spaces plays a vital role in preventing the transmission of illnesses. Current UV robot systems are either placed in the center of the room or have rudimentary methods of mobility using RGB-D cameras and Ultrasonic sensors. In our study, we propose a cost-effective autonomous robot system that utilizes hyperspectral cameras and sensors including LIDAR for enhanced robot navigation. Additionally, through implementing image processing and object detection techniques we can create an intelligent system to determine better analysis of the environment. This will result in the robot system using different sanitizing methods, either by running the UV light for longer or by enabling disinfectant sprays in the selected area. To limit the amount of UV light with human interaction the robot system will have cameras to detect real-time interference if a human is in the room and temporarily disable the UV light. As the world grapples with ongoing health challenges, the integration of intelligent systems into UV robot technology is poised to make a significant contribution to our collective resilience against pathogenic diseases.

Joshua Koegel

NY - Brooklyn College

Discipline: Business and Entrepreneurship

Authors:
#1 Joshua Koegel

Abstract Name: Effects of Environmental and Economics Factors on Life Expectancy in the U.S.

U.S. governmental agencies, such as the U.S. Census, EIA, and EPA, gather voluminous data that reflect our population's statistics and the factors that impact Americans' well-being. The dataset used in this study is drawn from such sources and includes data about air and water quality, toxicity levels, solar radiation, and economic factors such as GDP per capita, unemployment rates, minimum wage, healthcare coverage, and educational attainment. This study seeks to search the mountain of data obtained during the recent U.S. Census of 2010, for all 50 states and the District of Columbia, to determine if a relationship exists between life expectancy and several environmental and economic factors. By subjecting this diverse dataset to econometric analysis, this study seeks to uncover relationships that illuminate how these factors intertwine with life expectancy and suggest policy changes to legislators, to improve longevity and health for all people. Rigorous econometric methods applied to this rich dataset aim to determine if these variables are statistically significant, elucidating the intricate relationships between these factors and life expectancy with the ultimate goal of evaluating the different governmental policies that monitor these factors. Microsoft Excel will be utilized to run an OLS linear regression to determine variables including betas, 95% confidence intervals, and standard errors. It is anticipated that the relationships determined may pinpoint key associations, demonstrating, for instance, that regions with better air quality or higher educational attainment tend to display longer life expectancies. This thorough analysis offers concrete insights into the nuanced interactions between these variables and life expectancy. By leveraging credible data and analytical methods this study will illuminate how environmental and economic factors intertwine with the length and quality of human life, potentially influencing future policy decisions within the United States and globally.

Kaylene Koelle

NY - Adelphi University

Discipline: Social Sciences

Authors:
#1 Kaylene Koelle
#2 Michael Moore

Abstract Name: The Effects of Parentification on Parental Attitudes and Beliefs

Parentification occurs when a child is placed in a parental role, forcing them to assume the duties of a parent. These duties can include contributing to family finances, caring for siblings, and/or providing emotional support to the parent(s). Parentification can be traumatic and damaging to one's sense of self, which can negatively impact one's sense of competence and security. Past literature suggests that parental competence is associated with overall self-efficacy. The experience of trauma can result in reductions in mental health which further damages interpersonal relationships. Parentification can result in a disconnect between parent and child and represent insecure attachment. This type of attachment is marked by a hesitancy to trust and rely on others, which can result in parentified children having difficulties in their interpersonal relationships as they mature. Given the established links between stressful life experiences, trauma, and parentification, the current study will try to replicate these relationships and establish further associations with attachment and attitudes related to parenting. This study will use a cross-sectional research design in which participants will fill out a series of surveys measuring their experience of parentification, beliefs, and attitudes related to parenting (e.g., appropriate responsibilities of parents, expectations related to parenting), attachment style, and adverse childhood experiences (ACEs). It is our expectation that: (1) Parentification will be associated with dysfunctional parental beliefs and (2) There will be an interaction between parentification, ACEs, and attachment on parental attitudes/beliefs, such that parentification will be more strongly related to dysfunctional parental attitudes/beliefs in participants with an insecure attachment and ACEs.

Kian Kolahdouzan

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Kian Kolahdouzan
#2 Riyan Siddiqui
Riyan Siddiqui

Abstract Name: Unravelling the Role of Purkinje Cells in Motor Deficits of MeCP2-Deficient Mice: Implications for Rett Syndrome and Beyond

Autism spectrum disorders (ASDs) are prevalent neurodevelopmental conditions characterized by social interaction impairments, repetitive behaviors, and motor dysfunction. Rett syndrome (RTT), an X chromosome-linked ASD, is a leading cause of severe intellectual disability in females. The majority of RTT cases result from mutations in the MECP2 gene, with symptoms including stereotypic hand movements and a decline in motor function. While the MECP2 deficiency in neurons overall is known to be the primary cause of RTT, the role of the specific neuronal type remains to be defined. Given the known link between cerebellar dysfunction and motor deficits in ASDs, we hypothesize that Purkinje cells (PCs) in the cerebellum contribute to motor impairments in mice lacking Mecp2. To test this hypothesis, we generated mice with specific methyl-CpG binding protein 2 (MECP2) deficiency in PCs. We validated our model by comparing these animals with constitutive MECP2 knockout mice using immunofluorescence. We assessed motor learning using an advanced pellet-reaching device that enables precise analysis of forelimb and digit movements. By employing the DeepLabCut software, we examined whether the two-dimensional reaching trajectory is impaired in these MECP2 conditional knockout mice. Additionally, we expressed the GCaMP6 indicator in Bergmann glia to investigate neuronal activity using fiber photometry recordings and determined whether calcium signaling during motor learning deviates from the normal pattern. Our study demonstrated the pathophysiological role of impaired PC function in cerebellar-dependent motor behavior, providing valuable insights not only for RTT but also for other brain disorders that share similar molecular and neural substrates.

Sprihaa Kolanukuduru

NC - University of North Carolina at Chapel Hill

Discipline: Natural and Physical Sciences

Authors:
#1 Sprihaa Kolanukuduru
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#3 Cagla Erolgu

Abstract Name: Drp1-Induced Mitochondrial Fission Controls Cortical Astrocyte Organization And Development

Mitochondrial homeostasis is essential to proper brain development and dysfunctional mitochondria are implicated in multiple neurodevelopmental disorders. Mitochondrial function and localization is regulated by mitochondrial fission, fusion, and trafficking, collectively referred to as mitochondrial dynamics, a process that is particularly important in highly branched cells of the brain. Astrocytes are glial cells characterized by their complex branched morphology that allows them to perform many functions such as inducing synaptogenesis in the developing cortex. Cortical astrocytes are organized in nonoverlapping territories in a phenotype described as tiling. Tiling is a hallmark of astrocyte maturity and is lost in disease, suggesting tiling is imperative to astrocyte development and function. However, the molecular mechanisms of how

astrocytes establish tiling during development are not well understood. Past research in the Eroglu Lab has shown that early postnatal knockdown of Drp1, a regulator of mitochondrial fission, in astrocytes in the mouse cortex leads to astrocyte clustering. Therefore, we hypothesized that Drp1-induced mitochondrial fission regulates astrocyte organization and tiling in the developing and mature mouse cortex. We found that sparse Drp1 KD in astrocytes induces clustering into adulthood up to 6-month-old mice, indicating Drp1 control of astrocyte organization is not a transient developmental mechanism. Furthermore, we uncovered that Drp1 KD astrocyte clusters are multinucleated and have disorganized cell somas, confirming Drp1 controls the tiling phenotype of astrocytes. Lastly, we found that astrocyte-specific conditional KO of Drp1 results in disorganization and reduced astrocyte coverage in the cortex, coupled with heterogeneous upregulation of GFAP, a marker of astrocyte dysfunction. These findings indicate that Drp1 controls astrocyte organization and identity and underscore the importance and therapeutic potential of mitochondrial fission in the proper development of astrocytes.

Ashna Konjeti

IL - University of Illinois at Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Ashna Konjeti
#2 Diego Zelada
#3 Natalia Saldivia
#4 Nikhil Venkat
#5 Allison Bradbury
#6 Ernesto Bongarzone

Abstract Name: Synaptic Lysosomal Dysfunction and the Effects of Acid Ceramidase on Synaptic Psychosine Accumulation in Krabbe Disease

Krabbe Disease (KD or Globoid Cell Leukodystrophy) is a demyelinating and neurodegenerative lysosomal storage disease (LSD) centered on a deficiency in the lysosomal enzyme galactosylceramidase (GALC). In physiological conditions, GALC removes galactose from the galactolipids galactosylceramide and galactosylsphingosine (psychosine) to produce ceramide and sphingosine, respectively. In KD, galactosylceramide is deacylated through acid ceramidase (ACD, another lysosomal enzyme), and, with GALC deficiency, there is a toxic accumulation of psychosine in both neuronal and glial cells, causing demyelination and neurodegeneration throughout the central and peripheral nervous systems. Although the mechanism of psychosine synthesis is known, the location and rate of psychosine synthesis in neurons is unclear. Due to preliminary findings showing that synapses in the “Twitcher” (TWI) mouse model of KD exhibit a noteworthy decrease in synaptic vesicles, we hypothesize that psychosine is locally accumulated and synthesized by ACD in the presynaptic compartment. To test this idea, biochemical analyses of synaptic psychosine levels and ACD activity/levels were conducted in KD-mouse, KD-dog models, and human infantile-KD samples to confirm that our observations in the “TWI” are not species-specific artifacts. The levels and subcellular distribution of ACD were analyzed through synaptic fractionation, western blot, and immunohistochemical analyses, while ACD activity was measured through an assay utilizing the fluorescent ceramide analogue Rbm14-12. Also, psychosine was extracted from each synaptic fraction and quantified using mass spectrometry. Our results showed a notable increase in psychosine accumulation specifically in the synaptic vesicles and presynaptic membranes. Additionally, alterations in ACD activity/levels in synaptic compartments were observed between KD models and control/wild-types. Interestingly, lysosomal distribution was also disturbed in TWI brains, thus providing the basis for further studies of lysosomal behavior and dysfunction in KD.

Peyton Kopel

MN - College of Saint Benedict/ Saint John's University

Discipline: Natural and Physical Sciences

Authors:
#1 Peyton Kopel
#2 Thomas Ellis

Abstract Name: Cushion Sea Stars (Oreaster reticulatus) Have the Ability to Respond to Disturbance

We were interested in the distance of movement among cushion sea stars (Oreaster reticulatus) located in Graham's Harbor, San Salvador, Bahamas. We hypothesized that there is a difference in distance moved when the starfish are under disturbed conditions as compared to undisturbed conditions. Based on our hypothesis, we predicted that the starfish move further when disturbed in comparison to when they have not been disturbed. The data was collected through six trials, over the course of three days (9-11 March, 2022). For the disturbed environment, we collected the starfish and placed them in a central location. From there, we measured the distance moved after one hour. For the undisturbed environment, we found the starfish in their original location, marked the location, and measured the distance moved after one hour. Distance moved was significantly different ($t = 3.46$, $df = 11$, $p=0.005$) between disturbed ($M = 22.89$, $SD = 24.95$) and undisturbed ($M = 0.328$, $SD = 0.979$). Statistical analysis suggests that we accept our hypothesis. These results suggest that sea stars have the ability to determine a change in their environment. Overall, this research contributes to the general knowledge regarding the behavior of cushion sea stars, as well as individual preferences of the sea stars.

Lisa Koranteng-Mensah

VA - Norfolk State University

Discipline: Health and Human Services

Authors:
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Donna Wolf
Kathleen Thomas

Abstract Name: Beyond Obstacles: The Influence of Group Support on Physical Activity Habits

Physical activity (PA) is a vital public health approach to reduce the risk of obesity, diabetes, and other chronic diseases. African American (AA) women is one of the most affected groups due to several barriers to PA. Lack of time, motivation, social support, knowledge of PA; chronic health conditions; and neighborhood safety have been frequently reported as obstacles. Social support in addition to wearable activity monitors and a mobile application can be a favorable approach to promoting PA. PURPOSE: This study investigates the influence of social support, specifically within exercise groups, on reducing barriers to regular physical activity. METHODS: Participants are enrolled in an ongoing 24-week tiered exercise intervention that includes both in-person and virtual exercise sessions. Each participant receives a Fitbit® to self-monitor their daily PA, including the number of steps, type of PA, and sleep behaviors. An invitation only Fitbit® group was created, and intervention participants were encouraged to use. The group provided encouragement, advice, as well as PA accomplishments. A Perceived Barriers and Social Support Questionnaire was developed via Google forms for participants to complete. This 13-item questionnaire was designed to measure perceptions of social support, satisfaction with that social support and continual barriers to PA. RESULTS: The researchers anticipate that the results will reveal a positive correlation between social support and reducing barriers to physical activity among African American women. Moreover, the participants will enjoy accessing their information to stay on track of their goals. Lastly, the researchers expect that having the

ability to see others in the groups weekly step count can assist in promoting healthy competition/motivation for engagement in PA. CONCLUSION: This data will provide valuable insights into the role of social support in creating continuous exercise habits, which contributes to the development of effective interventions for promoting long-term health and well-being.

Madison Korkeakoski

CA - SETI Institute

Discipline: Natural and Physical Sciences

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#2 Matthew Tiscareno

Abstract Name: Abiotic Reactions of Nitrogen Compounds on Ancient Mars

Although the modern Martian atmosphere contains little to no nitrogen, research suggests that ancient Mars was abundant in atmospheric species of nitrogen, including greenhouse gases and dinitrogen that raised both the pressure and temperature of the planet enough to maintain liquid water, a fact of interest to astrobiologists. The loss of nitrogen in the atmosphere has been attributed to many different factors, but as recent missions to Mars have found nitrites and nitrates locked in the crust, we propose that a nitrogen cycle involving surface Martian minerals might contribute to the loss of atmospheric species. It has previously been found that Martian troilite (FeS) can abiotically reduce aqueous nitrate and convert it into ammonia. Basalt, a ferrous mineral abundant on the surface of Mars, was the next ideal mineral candidate for investigation. We conducted various reactions by anaerobically stirring basalt in aqueous nitrate and nitrite solutions. Then we tested for the presence of ammonium, nitrite and nitrate using ion chromatography. The mineral was not conclusively found to reduce nitrite or nitrate species into ammonia. However, the amount of nitrite in the reaction decreased when reacted with basalt at neutral pH, suggesting the production of alternate nitrogenous products that weren't detected.

Mariam Koroma

MD - Bowie State University

Discipline: Natural and Physical Sciences

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#2 Anne Osano

Abstract Name: Chemical Characterization of Azadirachta indica and Its Endophytic Microflora Using Metabolomic Approaches

"Azadirachta indica", also known as Neem (Neem tree), is a well-known plant valued for its medical properties and its ability to deter pests without the use of harmful chemicals. Neem is a popular remedy in both modern western medicine and traditional systems of care in India and Southeast Asia. However, there is a need of up-to-date data on the comprehensive characterisation of chemicals and the endophytes associated with it. Therefore, it is crucial to define the plant material chemical composition and guarantee conformity with particular quality standards. The objective of this study was to analyze the bioactive compounds in the leaves, bark, and fungal endophytes associated with Azadirachta indica using metabolomic approaches such as High Performance Thin- Layer Chromatography (HPTLC), High Performance Liquid Chromatography

(HPLC), Liquid Chromatography Mass Spectrometry (LCMS), and Gas Chromatography-Mass spectrometry (GCMS). The HPTLC results revealed the most suitable mobile phase for the identification of metabolites was Hexane, Ethyl acetate (70:30 v/v). The LC-MS data for neem leaves displayed the presence of Vepinin, Gedunin, Nimbolide, Salanin, and Nimbolin A. The Bark LC-MS data revealed the presence of Gedunin, Nimbin, Nimbolide, Margolone and Catechin. The fungal endophytes found on the neem bark showed the presence of catechin which was also found in the bark. Each compound found is known to be associated with Azadirachtin indica which confirms the robustness of our analytical methods. GC-MS displayed fungal endophyte isolates B from neem tree leaves contain Acetic acid, Methyl p-tert-butylphenyl acetate, 2-Imidazolidinethione, and Cyclocolrenone with bioactivity >80%. HPLC results displayed the neem leaves, bark, and bark endophytes have peaks at 220 nm wavelengths, while neem leaf endophytes have peaks at 270 nm.

Sanjana Korpal

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Sanjana Korpal
#2 Mallory Evanoff
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#4 Alexis Komor

Abstract Name: Evaluating the Base Editing Activity of ABE7.10

Base editors are a class of genome editing tools that have the ability to make single base variations (SNVs) in DNA without introducing deleterious double stranded breaks (DSBs). My project is focused on evaluating an existing base editor, ABE7.10, and how the mutations on its corresponding enzyme, TadA—which have arisen through generations of directed evolution processes—impact the base editing activity. A number of different generations of the mutated enzyme exist, resulting in a total of 14 distinct mutations on the TadA enzyme. By analyzing a comprehensive set of reversion mutant editors, where one or more mutations accumulated in the final ABE7.10 are reverted to their wild-type counterpart, we aim to test their individual impact on the activity of the base editor; evaluating mutations' structure/function relationships provides us with insight into the value of each mutation. By creating a library of plasmids of TadA7.10 that we've manipulated to have a single mutation reversed, we can transfect them into cells alongside a gRNA plasmid, responsible for guiding the enzyme, as well as a novel reporter plasmid, which we've designed to fluoresce in response to base editing activity. These manipulations allow us to measure the relationship between individual mutations and overall efficiency—information that is crucial to future research, since it spotlights both effective mutations and isolates mutations that decrease overall efficiency—ultimately yielding a more complete, comprehensive understanding of base editing activity.

Colton Korpi

UT - Utah Valley University

Discipline:

Authors:
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#2 Brandon Ro

Abstract Name: Sacred Space Design and Spiritual Experience: A Study of Latter-Day Saint Temples

Background: The apparent design shift and style of LDS temples has changed over time moving from a traditional style into a modern era. The ornamentation and architectural style of these sacred spaces play a role in shaping the user's spiritual experience by creating a profound sense of connection to religious tradition. Insights into the evolutionary link between human perception and ornamentation inform this exploration. Architecture, initially rooted in shelter and protection, has evolved into an art form, encompassing subjectivity, creativity, and aesthetics. The effects of architecture on our psychological well-being, makes it an ideal venue to understand its influence on spiritual experiences. Purpose: The purpose of this study is to investigate how the presence of ornamentation and architectural style influences the experience of sacred ordinances within LDS temples. Method: A comprehensive study method combining surveys and Visual Attention Software (VAS) to investigate the effects of temple design on user experiences. Surveys will present participants ranging in age, race, and religious beliefs with questions and visual comparisons of diverse temple styles, form, levels of ornamentation, and site design. Complementing this, VAS will offer a technological perspective by analyzing visual attention patterns. The research includes a selection of LDS temples with varying architectural styles distributed geographically to minimize regional biases. Results: The primary hypothesis is that architectural styles and factors of LDS temples impact the emotional and spiritual experiences of visitors. These results could influence and impact the process and overall thought of designing sacred spaces Conclusion: By utilizing both traditional survey methods and VAS technology, this research aims to provide an understanding of how temple architecture shapes the spiritual journey of visitors. The outcomes could have broader implications for architectural design in sacred spaces and offer valuable insights into the evolving role of architecture in spiritual well-being in a contemporary context.

Amanda Korsah

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

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#1 Amanda Korsah
#2 Ashley Wu

Abstract Name: Targeting Mitochondrial Respiration to Overcome Therapy Resistance in Acute Myeloid Leukemia

Acute Myeloid Leukemia (AML) is a blood cancer consisting of underdeveloped white blood cells produced in the bone marrow and frequently occurs in people over 60 years. The standard care of treatment for AML is currently chemotherapy and has not changed over the past 40 years. However, chemotherapy is toxic and nonspecific, therefore there have been intensive investigations to develop new therapeutic strategies. Venetoclax, an inhibitor of anti-apoptotic BCL2 in mitochondria, has been approved by the FDA to treat AML as a targeted therapy. Despite Venetoclax leading to effective elimination of AML, patients have been shown to develop resistance to the drug. Similarly, patients treated with AC220 showed better remission rates, but not all patients responded to the treatment. The purpose of this project is to develop novel combinatorial therapeutic strategies to overcome resistance to Venetoclax or AC220. Our lab proposes a strategy to inhibit mitochondrial respiration with the use of methylating- control J protein (MCJ) mimetics to target the mitochondria. MCJ is a protein in the mitochondria that has been identified as a negative regulator of Complex I of the electron transport chain. The loss of MCJ in cancer cells leads to enhanced mitochondrial ATP production. Our lab has developed MCJ mimetics that can restore MCJ function and inhibit mitochondrial respiration. MCJ mimetics are safe since they do not affect normal cells that express endogenous MCJ. We hypothesize that the addition of MCJ mimetics will restore MCJ function, inhibit mitochondrial activity, and lead to increased efficacy of Venetoclax and AC220.

Samuel Kostichka

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Samuel Kostichka

Abstract Name: The Effects on Student Mental Health based on Living On and Off Campus

While attending college can be one of the most exciting and enriching times of a person's life, it can also be mentally taxing and stressful. In fact, previous research has found that most mental health disorders first appear before or during adolescence and early adulthood (Golberstein et. Al., 2014). Adding complexity to a student's life, many students also move off campus and navigate being a renter while balancing the demands of their education. While a more holistic understanding of what effects an individual's mental health is becoming more prominent in the literature, the relationship between mental health and factors related to living off-campus have been left somewhat unexplored. To bridge this gap, I created a quantitative survey asking approximately 700 students at a regional public University in Wisconsin about the unique potential stressors related to living off-campus and being a tenant in a local community, as opposed to being a student in a dormitory on-campus. I found that there is not a significant connection between type of housing and mental health. Furthermore, I found that there is no significant relationship between number of friends and mental health, nor is there a significant relationship between mental health and rent satisfaction and mental health and utilities satisfaction. In summary, the results show that there is a no significant relationship between mental health and housing type, number of friends, rent satisfaction, and utilities satisfaction. Although these results are surprising, these findings show that these variables are not contributing to student mental health, and researchers can focus on different variables for further study.

Aditya Kotha

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
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#3 Said Sebti
#4 John Ryan

Abstract Name: Isoprenylation Inhibition Suppresses IL-33-mediated Mast Cell Inflammatory Function

Allergic asthma is prevalent globally and has increased dramatically in the span of a generation. It is associated with systemic inflammation of the airway tract. Allergens sensitize the airway, and symptoms including coughing, wheezing, and airway hyperresponsiveness emerge chronically. It is important to understand the cellular and molecular mechanisms promoting allergic asthma to develop novel, effective therapeutics. Mast cells are a driving force in allergic asthma. These cells are activated by many stimuli, including binding of the interleukin (IL)-33 ligand to its receptor on mast cells. IL-33 is released from airway cells damaged by proteases found in many allergens. In seeking new ways to antagonize IL-33 effects on mast cells, we have investigated repurposing drugs approved by the FDA for other indications. Statins are an FDA approved class of drugs that decrease plasma cholesterol. Several studies have found that patients taking statins have a significant decrease in asthma severity, as measured by emergency room visits or hospitalization. We and others have shown that the anti-inflammatory effects of statins are due to inhibiting protein isoprenylation, a side reaction of the cholesterol synthesis cascade (Figure 1). This project determined

if inhibiting isoprenylation could decrease IL-33-mediated mast cell function. The isoprenylation enzymes farnesyl transferase (FT) and geranylgeranyl transferase (GGT) were directly targeted with the novel drugs or indirectly blocked with statins. We demonstrated that simultaneously inhibiting FT and GGT reduced IL-33-mediated inflammatory cytokine secretion by mast cells. Similar results were obtained with the use of simvastatin. In contrast, inhibiting only FT or GGT did not affect inflammatory cytokine secretion, indicating some redundancy amongst the two transferases. Our data support the conclusion that FT and GGT inhibition either indirectly via statins or directly by FGTI-2734 has potential therapeutic effects for IL-33-mediated mast cell function in allergic disease.

Anna Kovalchuk

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

Authors:
#1 Anna Kovalchuk

Abstract Name: Shred Central: Estimating the user benefits associated with large public skateparks

Skateparks, often called 'wheel parks,' are becoming increasingly common within communities worldwide. Despite this growth in parks, estimates show that the development of parks needs to catch up to users. Using a count data travel cost model, we estimate the total user benefit associated with the Lauridsen Skatepark in Des Moines, Iowa – the largest in the United States. We estimate benefits to be $61 per user per day and roughly $488,000 annually. This work contributes to the literature by being the first study to use econometric techniques to estimate skatepark user benefits. Second, we develop a simple and easy-to-apply method to assist municipalities in determining community skatepark needs. Third, our results support the notion that skateboarders are increasingly diverse.

Anna Kovalchuk

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

Authors:
#1 Anna Kovalchuk

Abstract Name: Examining a Wisconsin Farmers' Market SNAP Incentive Program - Using Administrative Data from 2018-2023

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. We have selected one Wisconsin farmers' market that sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. This presentation will show that in 2020, COVID-19 increased the number of families facing food insecurity and using SNAP. Our administrative data illustrates the increases and subsequent decreases in SNAP

shoppers at the market as we moved through the pandemic. In 2023, the number of SNAP shoppers declined significantly as did the spending, but the SNAP caseload stayed constant. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at this farmers' market using the MMP over this period. This presentation is connected to a another submission analyzing a variety of data from surveys of SNAP households shopping at this farmers' market using the MMP during these years.

Ana Kovljenic

CAN - McMaster University, De Groote School of Business

Discipline: Business and Entrepreneurship

Authors:
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Abstract Name: Autism & Employment: Challenges & Barriers in Selection for the Neurodivergent Adult

Despite anti-discrimination and employment equity legislation, adults with Autism Spectrum Disorder (ASD) face barriers to employment (Lorenz et al., 2016). and continue to experience disproportionately high and increasing unemployment rates (Wiggleton-Little & Callender, 2023). This literature review showed that negative societal perceptions of job seekers with ASD is a continued barrier to employment and that the use of two commonly used selection methods - interviews and personality tests - can result in adverse impact for individuals with autism (Wiggleton-Little & Callender, 2023). Reasons for this include vague interview questions, difficulties with episodic recall essential to behavioural interview questions, communication skills, and masking/camouflaging to display neurotypical behaviour/personality traits. Recommendations are made for more legally defensible and inclusive employee selection practices.

Jess Kowalski

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jess Kowalski

Abstract Name: Pollinator-Friendly Lawns and Landscaping: Bringing Nature to the City

Traditional monocultural turf grass lawns are ecological dead zones, especially for pollinators, with few to no flowering plants. Most people tend to remove these flowering plants if they have them because they are considered weeds. Besides contributing to biodiversity loss, the emphasis on lawns significantly affects pollinator survival because of habitat fragmentation. The research aims to introduce the concept of pollinator-friendly lawns and landscaping to lawn owners to incorporate greater biodiversity in the homeowner's landscape while reducing water, pesticide, and fertilizer usage. Pollinator-friendly lawns include native ground covers and other plants to provide this habitat. There are several aspects to this research: constructing a pollinator-lawn installation guide that will be published through ISU Extension, installing a demonstration plot at Reiman Gardens; and presenting at events throughout Iowa to spread the knowledge about pollinator-friendly lawns. A presentation at the Iowa Winter Gardening Fair saw great success in the attendants' interest in supporting pollinators: the seats in the room were full, and the attendants had many questions showing their consideration of installing pollinator-friendly lawns. This research will result in a practical and hands-on guide for increasing the diversity of plants and insects in urban areas.

Hannah Kowanes

FL - The University of Tampa

Discipline: Health and Human Services

Authors:
#1 Hannah Kowanes

Abstract Name: College Students and Nutrition Misinformation: Correlation Between Perceived Health and Social Media

The promotion of nutrition fraud can be driven by many forces and can impact citizens in numerous ways. For instance, the economic gain with companies marketing toward uneducated individuals makes it difficult for consumers to decipher what products, diets, supplements, etc. are harmful or potentially useless in terms of results. Additionally, the continuation of false nutrition information portrayed online contributes to the increase in mental health issues in society. Influencers promoting unrealistic diets or ineffective products can deeply alter the mental state of their viewers (Bissonnette-Maheux et. al, 2015). Lastly, misuse of dietary products can also impact the physical health of humans. If people are misguided into overconsuming foods they shouldn't indulge in, or disregarding products they shouldn't be, it can impact their nutrient retention to exert proper physical functions (Husain et. al, 2021). Overall, nutritional misinformation and lack of dietary education have impacted society due to false advertisement of products for economic gain, harming consumers' physical health, and even altering their overall mental state. This project aims to address a critical issue with implications for college students and society. The sample population for this study will be composed of undergraduate students ages 18-21 at the University of Tampa. Students who will participate in the study will range from those in a nutritional course required for allied health majors, to an entry-level class containing non-health majors. These classes were focused on in the hopes that they'll provide a good comparison of diverse nutrition knowledge in health and non-health-related majors.

Michael Kozlov

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Michael Kozlov

Abstract Name: Reevaluating the Severity of Punishments: Do We Believe Legal Offenses Warrant Stricter Penalties than Social Norm Violations, Irrespective of Perceived Harmfulness?

The optimal functioning of society requires order—which is typically enforced either through written law with codified punishments or through unregulated social sanctions. My project examines whether we believe legal violations should be punished more harshly than social norm violations regardless of the harm attributable to the behavior. I will discuss cases, especially when social norms uphold core societal values, in which social norm violations are deemed as more punishable than legal violations regardless of the harm we attribute to the behavior. Violations of social norms have a direct influence on how we perceive legal violations themselves and impact the ways in which we interact with others. Rarely enforced laws are seen as notably more wrong when accompanied by a violation of a social norm, and may serve as codified ways to indirectly punish normative violations. Since normative violations spark the drive to punish rarely enforced laws, there likely exists at least a subset of laws which are seen as less morally wrong or harmful than

normative violations. The project will probe perceptions on how legitimate norms/laws are, whether breaking them is ever okay, how common violations are, how wrong violations are, and how harmful violations are. The data that will be analyzed for this project will come from a survey investigating people's perspectives on many different normative violations—such as putting ice in wine or yelling at a server—and many legal violations, such as jaywalking or committing murder. Finding that normative violations are seen as more harmful than legal violations has implications on our legal system; morality alongside perceived guilt are relevant in criminal contexts and must be investigated to ensure a greater level of justice in our society.

Kayla Kraeuter

PA - Duquesne University

Discipline: Interdisciplinary Studies

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Abstract Name: Virtual Insights into Pain Management: A 3-D Computational Model of Pain-related Neurons in the Amygdala

Neuropathic pain is caused by injury to the nervous system and involves brain areas such as the central nucleus of the amygdala (CeA). Within the CeA, two populations of neurons play opposing roles in pain modulation. Neurons expressing protein kinase c-delta (PKC-δ) are pro-nociceptive (increase pain) while neurons expressing somatostatin (SST) are anti-nociceptive (decrease pain). We developed the first 3-D computational model of PKC-δ and SST neurons in the CeA and used this model to explore the role of these two neuron populations in pain regulation.Our computational model simulates the behaviors and interactions of 13000 neurons and 22000+ neural connections in a 3-D spatial domain that captures the structural properties of the CeA. Neuron-specific properties, including firing rates and connectivity parameters, are estimated from wet-lab data. During each model time step, neuron firing rates are updated based on an external stimulus, inhibitory signals are transmitted between neurons, and a measure of pain-related output from the CeA is calculated as the difference in cumulative firing rates of PKC-δ neurons and SST neurons. A sensitivity analysis of our model was performed to study the impact of select model parameters on pain-related output. Additionally, model simulations were conducted to investigate the impact of spatial heterogeneity of PKC-δ and SST neurons on model predictions of pain and the ability of spatially-targeted inhibition and activation of select neurons to reduce pain-related output.Our results show that the quantity and localization of PKC-δ and SST neurons within CeA subregions are key parameters governing pain-related output. Further, the spatial distribution of these neurons across the entire CeA is shown to greatly influence the ability of targeted neural manipulations to reduce output. These results highlight the importance of computational modeling in exploring spatial and neuron-type specific properties to inform future wet-lab experiments and aid in drug discovery.

Daysha Krahn

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Daysha Krahn
#2 Krysti Knoche-Gupta

Abstract Name: Electrochemical characterization of recast Nafion® film modified electrodes in nonaqueous systems

The behavior of recast Nafion® films on platinum working electrodes in nonaqueous solutions is characterized by cyclic voltammetry and rotating disk voltammetry. The behavior of recast Nafion® films in nonaqueous solutions has been observed to be different from the well-studied behavior in aqueous solutions. This work seeks to extensively study that behavior. The reversible redox couple tris(2,2′-bipyridine)ruthenium(II) hexafluorophosphate is studied in nonaqueous solvent acetonitrile with different electrolytes (tetrabutylammonium tetrafluoroborate, tetrabutylammonium trifluoromethanesulfonate, tetrabutylammonium hexafluorophosphate, and ammonium trifluoromethanesulfonate). The effects of the electrolytes will be compared against each other and controls (an unmodified platinum electrode and a recast Nafion® platinum electrode equilibrated in aqueous solutions of the redox couples). Electrolytes have been chosen for a variety of ion charges and ion sizes; in aqueous solutions, Nafion® is a cation exchange polymer and will exclude neutral and anionic redox molecules, however, this does not necessarily occur in nonaqueous solutions. The effects of Nafion® thickness will also be tested using control as above, and in the electrolyte tetrabutylammonium hexafluorophosphate. Additionally, there is some preliminary evidence that trifluoromethanesulfonate electrolyte may interact with the Nafion® sulfonate groups, so this will also be explored. Studies of each electrolyte variation will involve both transient cyclic voltammetry and rotating disk voltammetry; the relationship between scan rate and peak current will be explored for transient cyclic voltammograms and the relationship between rotation rate and limiting current will be explored for rotating disk voltammetry. The data from both techniques will be combined to identify the thickness of the in situ film and the diffusion coefficient for each variation.

Rachel Kramer

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
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#4 Glory Omodia
#5 Erin Harberts

Abstract Name: Fibrinogen Accumulates in the Spleens of Wildtype and Toll-Like Receptor 4 Deficient Mice Over the Course of Endotoxemia

Sepsis is the currently the leading cause of death within hospitals and is most often caused by a bacterial infection in the bloodstream. Due to overactivation of immune responses, this infection can rapidly becomes fatal if left untreated. In humans, sepsis first presents as fever, pain, and confusion which evolves into septic shock leading to rapid inflammation and organ failure. Fibrinogen is an acute-phase glycoprotein that contributes to fibrin-based blood clots, it is produced in the liver, then transported to other organs. Toll-like receptor 4 (TLR4) is a canonical receptor for lipopolysaccharide (LPS), the Gram-negative bacterial lipid used to induce endotoxemia and associated symptoms of septic shock. Without the presence of TLR4 physiologic symptoms of sepsis are not observed. This study investigates the accumulation of fibrinogen in the spleen of wildtype (WT) and TLR4 deficient (TLR4-/-) mice over the course of endotoxemia. Organs from WT and TLR4-/- mice were collected and lysed at 0-, 6-, 12-, and 18-hours post-induction of endotoxemia. The presence of the fibrinogen α subunit in the spleen is detected using Western Blot analysis. Results show that fibrinogen is found at higher levels in spleens of both WT and TLR4-/- mice during endotoxemia, supporting the presence of a compensatory immune mechanism outside of TLR4 that is being activated. Immunohistochemistry was performed on spleen sections to confirm the presence of fibrinogen. A

qPCR array was completed to investigate which immune pathways are activated in the TLR4-/- mice during endotoxemia. From this screen, genes associated with the complement immune pathway are found to be activated. Identifying these compensatory immune mechanisms activated in the absence of classic receptors can help develop therapeutics to result in better prognoses for immune suppressed patients in septic shock.

Emma Krapels

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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#1 Emma Krapels
#2 Annette Dabbs

Abstract Name: The Relationship Between Psychological Distress and the Quality of the Relationship with the Family Caregiver After a Lung Transplant

Undergoing lung transplantation is a physically and emotionally taxing experience for patients, but having the support of a primary caregiver can mitigate psychological distress associated with managing the post-transplant medical regimen. The purpose of this study was to describe the relationship between psychological distress reported by lung transplant recipients (LTRs) and the quality of the relationship with their primary caregiver.A descriptive, correlational design was used to collect data from a sample of 88 LTRs at baseline, 3-months, and 6-months after transplant. The participants, with a mean age of 57.93 years, predominantly underwent double lung transplants (92%), were mostly white (88%), and married or living with their partner (72%). Psychological distress was measured using the SCL-90 Depression and Anxiety Subscale Scores, where higher scores indicated elevated distress. The quality of the patient-caregiver relationship was assessed using the Dyadic Adjustment Scale (DAS), with higher scores denoting better relationship quality. Spearman's rho was used to estimate correlations.Notably, anxiety scores decreased from 0.39 at baseline to 0.31 at 6 months, while depression scores decreased from 0.57 to 0.55 during the same period. DAS scores remained consistently high (65.85 at baseline to 63.49 at 6 months), indicating stable caregiver support. A small negative correlation was found between DAS and anxiety scores at baseline (rho= -0.265), and significant negative relationships were found between DAS and depression scores at all three time points (-0.289 to -0.385).Our findings revealed an inverse relationship between psychological distress and DAS meaning the quality of the caregiver relationship increases as the level of psychological distress decreases. The high and stable DAS scores reflected ongoing caregiver support, which could explain why symptoms of anxiety and depression decreased over time. This study supports the importance of promoting a strong patient-caregiver relationship to optimize levels of psychological distress.

Vivian Krause

NC - Elon University

Discipline: Engineering and Architecture

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#1 Vivian Krause
#2 Jonathan Su

Abstract Name: Addressing Bias in Medical Technology: Developing a Dual-Sensor System for Pulse Oximetry

Pulse oximeters are widely accessible health monitoring devices that estimate oxygen saturation non-invasively and continuously through optical measurements. However, many studies have reported biases in pulse oximetry based on numerous factors, including skin tone. In 2021, an FDA briefing warned about inaccuracies in these devices, coming after a large-scale multi-cohort study, which found that the occurrence of occult hypoxemia in darker skin patients was three times that in light-skinned patients. Occult hypoxemia refers to patients with arterial oxygen saturation below 88%, despite pulse oximetry reading between 92% and 96%. The impact of occult hypoxemia and the unreliability of pulse oximetry was especially magnified during the COVID-19 pandemic, as pulse oximeters were widely used for both at-home health monitoring and in clinical settings. In this work, we present a dual-sensor system for pulse oximetry that objectively classifies user skin tone and corrects for skin pigmentation in oxygen saturation readings. A low-cost dual-sensor system for pulse oximetry was prototyped and calibrated experimentally for skin color classification through an IRB-approved study across 20 diverse participants. Skin tone classes for device calibration were developed through K-means clustering. To account for skin pigmentation in pulse oximetry readings, Monte Carlo simulations were used to model light behavior through multilayer biological tissue with MCMATLAB. Pulse oximetry measurements were modeled across various melanin concentrations and oxygen saturations to determine calibration curves that were specific to the set melanin concentration, which were programmed into the prototype to estimate oxygen saturation based on user skin tone. Here, we present a prototyped dual-sensor system for pulse oximetry that reads user skin tone and takes skin tone into account when computing SpO2. This study demonstrates the potential for a device that provides an objective measurement of user skin tone to correct pulse oximetry readings and addresses a published unreliability in these devices.

Anuradha Krishnan

CA - Pomona College

Discipline: Mathematics and Computer Science

Authors:
#1 Anuradha Krishnan
#2 Ami Radunskaya

Abstract Name: “All disease begins in the gut”: Presenting a Computational Model of the Gut-Brain Axis and Tryptophan-Serotonin Pathway

Nearly 2,500 years ago Hippocrates linked health with the gastrointestinal tract, but it was not until recently that the human gut microbiome energed as a key player in researching disease progression and regulation. It was discovered that the gut microflora's compositional diversity regulates the host's health through bidirectional communication of its genes and the release of neurotransmitters. While the majority of prior studies that seek to explore the mechanisms behind the gut-brain axis rely exclusively on animal models, recent progress has shown tremendous growth in utilizing the mathematical modeling of tissues to expand our understanding of this complex system. This project studies the link between diet and brain development and eliminates the presence of various limitations, ethical considerations, and interprecies differences from animal models in this field. We conducted a literature search for existing computational frameworks on the gut-brain axis, formed a set of equations that describe the conservation of state variable in the gut and brain, and developed the compartmental model, validating it and studying its implications. Our work highlights shifts in engineering more robust human gut-brain models and their potential to explore new therapeutic approaches to treating mental health disorders and neurodevelopmental conditions.

Dillion Krisik

WI - University of Wisconsin-Superior

Discipline: Humanities

Authors:
#1 Dillion Krisik
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Abstract Name: Ojibwe Spiritual Practices from the 1930s-1978

There are few studies that discuss Native American spiritual practices during the period between John Collier's reforms of the 1930s and before the passage of the American Indian Religious Freedom Act (AIRFA) of 1978. Most studies of Native American religion during this period focus on federal policies toward Native American spirituality and Native resistance to those policies, while cultural studies that focus on how Native American people engaged in their spiritual practices during the period of study are rare. Interviews with members of the Red Cliff Band of Ojibwe reveal that during this period, some Red Cliff Band of Ojibwe members, a part of an older generation, still engaged in their spiritual practices despite the restrictions around doing Indigenous spiritual practices. Although some Red Cliff Band members still performed their Indigenous spiritual practices, many people did their practices secretly to avoid the repercussions. They avoided passing down the knowledge of their Indigenous spirituality for a variety of reasons. This resulted in the generation following these people suffering from a considerable loss of their Indigenous spirituality. In the later parts of this period, the younger generations of people began efforts to revitalize their Indigenous spirituality.

Richard Kroncke

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: The Effects of Weather Conditions on the Detection of Radon

Radon is a naturally occurring radioactive element. Elements such as uranium or thorium underground naturally decay into radon. Radon rises to the surface and into the air as a gas. This is the stage of the process we focus on because weather conditions could affect how much radon we detect. From here, radon decays quickly, releasing many radioactive particles. These particles, such as polonium, lead, and bismuth, are dangerous. If they are inhaled, they stick to the cells that line the lungs. Alpha particles released generate enough energy on impact to cause mutations in cells. These can cause physiological issues, most notably lung cancer. We are detecting radon using electronic instrumentation. There are two detectors currently in operation. These detectors take daily averages, which are monitored daily. This will give us a better understanding of radon levels locally and how they fluctuate daily. Barometric pressure, humidity, precipitation, and temperature variations may affect how much radon gas is detected in the air. Of course, we know that the amount of radon truly present is determined by the amount of uranium and polonium in the ground. Despite this, weather conditions may affect how much of this gas makes it to the surface and how much we can detect in our homes. Finding a correlation between our detected radon and weather conditions will be crucial for the future of radon detection and mitigation.

Cole Krudwig

NE - Creighton University

Discipline: Mathematics and Computer Science

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Abstract Name: Advancing Cochlear Analysis: Deep Learning Algorithms for the Segmentation and Detection of Inner and Outer Hair Cells

Hearing loss is a significant global health issue, impacting over 1.5 billion people, or roughly 20% of the world's population. Among them, 430 million suffer from disabling hearing loss, a figure projected to rise to 700 million by 2050. The repercussions of hearing loss are profound, especially in education and employment. Children with hearing impairments often receive less education than their peers, while adults face higher unemployment rates or are relegated to lower-level jobs. The World Health Organization estimates that unaddressed hearing loss incurs an annual global cost of US $980 billion. This staggering amount encompasses the expenses for hearing devices, educational support, lost productivity, and broader societal costs. In the realm of hearing health research, particularly the study of auditory hair cells (HCs) in the cochlea, traditional methods have relied on manual counting of these cells, a process that is both laborious and time-consuming. Recognizing the need for a more efficient approach, we have developed a novel deep learning-based method for the automatic detection of both inner and outer HCs along the entire length of the cochlea. This innovative technique not only expedites data collection and analysis, but also significantly reduces time, effort, and labor costs. Our approach entails using advanced deep learning algorithms to detect inner and outer HCs from mouse inner ear images and for HC segmentation. To ensure the reliability and accuracy of our method, we conducted a validation study, comparing the results with ground truth values. This new approach stands to revolutionize the study of auditory health, offering a faster, more accurate, and less labor-intensive method of data collection and analysis, which is crucial in addressing the growing global issue of hearing loss.

Derek Krumwiede

MN - Minnesota State University - Mankato

Discipline: Engineering and Architecture

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Abstract Name: Evaluating Effectiveness of Aging Stormwater Ponds

Stormwater ponds are designed to treat water before being released into the environment. A good quality pond will have a long enough retention time for sedimentation and for nutrient absorption in the pond’s vegetation. Moreover, permanent pond water should satisfy Environmental Protection Agency (EPA) requirements for water quality. However, as a pond ages, its pond water quality and treatment efficiency may

decrease. In this study, two ponds of different ages and surface area were selected to be evaluated for water quality. One pond was made in 2018, while the other pond was made in 2006. Water quality in this study is determined by its turbidity, density, phosphate concentration, and nitrate concentration. Turbidity is a measure of suspended particles in the water. Nitrate and phosphate are nutrients, which in excess can lead to algae blooms, which are bad for the environment. That makes it necessary to measure. Density, while not a direct measure of water quality, can give an idea of any microbiological matter suspended within the water. The water samples were taken within a grid setup one foot below the surface. Samples were also taken during each season to give a good idea of how each pond performs at various times in the year. The results showed that while both ponds are meeting MN water quality standards, the older pond consistently has equal or higher water quality compared to the younger pond. Originally, it was anticipated that the older pond would perform worse due to sedimentation and reduced water quality. However, the older pond has better vegetation growth than the younger pond, which is a result of both aging and pond size. The younger pond, being a smaller size, was much drier during the summer months, which reduces the vegetation footprint, and therefore its effectiveness.

Lydia Kruse

WI - University of Wisconsin-Eau Claire

Discipline: Interdisciplinary Studies

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Abstract Name: An Investigation of the Geospatial and Religious Dimensions of the Forgotten Jewish Community of Aizpute Latvia

The Jewish community of Aizpute, Latvia is one of the many undocumented tragedies of the Holocaust. Despite significant cultural and economic contributions, the Jewish community fell victim to Nazi and local antisemitic violence. After being forgotten for eight decades, the exact burial grounds of the 501 Aizpute Jews that were murdered remains unknown. A Christian Latvian, born and raised in Aizpute has placed a memorial of the twelve tribes of Israel at the potential burial site. The Aizpute community hopes to find the exact burial site in order to properly memorialize the forgotten Jewish community. The collaboration of Jewish heritage associations, anthropologists, and scientists has led to research endeavors to uncover the killing site and burial grounds of the Aizpute Jewish community. The research employs geospatial tools such as ground penetrating radar (GPR), Lidar, topographic laser leveling, alongside soil boring, historical insights, and individual testimonies. A (17X4.5M) GPR grid was collected using a pulseEKKO Pro system using a 500 MHZ antenna frequency. GPR grid was processed using EKKO_Project software. The grid was placed according to local testimonials in the forest of Aizpute. The project aims to utilize geospatial tools to generate 2D and 3D models of the potential burial site in Latvia in a non-invasive manner. Additionally, the project aims to uncover the motivations behind a Christian Latvian's determination to memorialize Jewish burial sites.

Nicole Krysiak

MT - Montana State University - Bozeman

Discipline: Natural and Physical Sciences

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#4 Christine Foreman

Abstract Name: Determining if Microorganisms Could Survive in Ocean World Environments

Scientists hope to find life on other planets. Research on Earth's moon, Mars, and icy moons (such as Europa and Enceladus) has begun and much has been learned. NASA has created a "Roadmap" describing characteristics necessary for life to be possible on other planets/moons and has taken particular interest in one of Saturn's icy moons, Enceladus. The Cassini satellite (created and launched by NASA) collected much information on Enceladus, by measuring the salt grains shot through hydrothermal vent plumes on the surface of the ice. With this information scientists have made many predictions on what the conditions of Enceladus are. These predictions prove favorable to the possibility of life existing on Enceladus as Cassini collected evidence of silica and phosphorus. In this research, microorganisms isolated from polar regions (an Antarctic bacterial isolate (PL17) and Psychrobacter arcticus) are grown aseptically in Enceladus-like saltwater conditions. As there is some debate about the actual concentrations of phosphorus and silica on Enceladus, these microorganisms are exposed to three different possible concentrations of each of these compounds to determine under which set of conditions life could grow. Bacterial activity is determined by the incorporation of two isotopic labels, either heavy water (D2O) amended with acetate or deuterated acetate (d-acetate). The uptake of D2O or d-acetate by individual cells is measured using Raman Spectroscopy. This research aims to provide supporting evidence that life is possible under the geochemical conditions present on Enceladus.

Aida Krzalic

IL - University of Chicago

Discipline: Social Sciences

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#1 Aida Krzalic

Abstract Name: Online Diaspora Portals and Economic Development: The Case of Bosnia-Herzegovina

Since the 1990s and the success of Taiwan's and India's Silicon Valley diasporas, diasporas have been known to be a powerful force for the economic development of home countries. As a result of these positive experiences and the connective power of the internet, many development programs are now starting to focus on using online diaspora portals for boosting economic development in target countries, and Bosnia-Herzegovina is no exception. With a large diaspora and a population that has quality access to the internet, Bosnia-Herzegovina seems like the perfect candidate to take advantage of knowledge transfers from diaspora through online diaspora portals. However, Bosnia-Herzegovina's political structure is highly hostile to business growth and innovation, a hostility that could render the power of diaspora knowledge transfer for economic growth completely worthless. Thus, this research focuses on the following question: what effect do online diaspora portals have on the Bosnian economy, given the difficult political conditions in the country? To answer this question, I interviewed diaspora and local, active and non-active members of a currently running online diaspora platform, as well as representatives of the platform. Questions covered members' motivations for joining the platform, activities and projects in which they were involved, the impact of these

projects and activities on local citizens, and personal experinces with the political environment in Bosnia-Herzegovina. While research is still ongoing, preliminary data point to online diaspora portals as having the potential to have small-scale, positive impacts on the economy; nevertheless, major institutional changes must occur before any large-scale impact can be had. These findings suggest that online diaspora portals are not a cure-all for economic stagnation. Consequently, development programs should take care to analyze country political conditions to ensure that these are receptive enough for online diasporaa portals to have a strong impact.

Rachel Kuehn

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

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#4 Heather Himburg

Abstract Name: The Role of Myeloid Derived Suppressor Cells in Radiation Resistance in Head and Neck Cancer

HPV-Negative Head and Neck Cancer (HNC) is known for high rates of radiation therapy (RT) resistance and disease recurrence when compared to other cancers. This likely contributes to the five-year survival rate for patients suffering from locoregionally advanced disease remaining below 50%. In order to address this grim prognostic outlook, the role of Myeloid Derived Suppressor Cells (MDSCs) as a contributing factor to RT resistance has become a point of interest for researchers in recent years. MDSCs are a population of immature myeloid cells that are interrupted during the early phases of differentiation and have been shown to be present in greater amounts in samples from treatment resistant tumors versus naïve samples. MDSCs have also been linked to increased cancer cell proliferation through secretion of immunosuppressive cytokines. The secretion of these cytokines then serves to recruit more MDSCs to the tumor site, increasing resistance to RT and likelihood of disease recurrence. To investigate this, an experiment was devised using an IRB-approved protocol through partnership with surgical oncologist, Dr. Zenga, to obtain primary patient tumor samples following surgical resection. Patient samples were then processed accordingly and maintained in culture in order to isolate patient-derived fibroblast and malignant cell lines. Eight pairs of patient-matched fibroblast and malignant lines were plated and exposed to one dose of 8 Gy irradiation, along with healthy oral epithelial cells and lymphatic cells. Treated samples were then collected either one day or one-week post-radiation respectively, and an untreated control sample was collected at the seven-day mark alongside the treatment group. Following collection, samples were analyzed via RT-PCR for acute changes in the tumor microenvironment following RT. While data analysis is ongoing, results indicate several MDSC recruitment factors of interest that will be investigated further upon conclusion of this study.

Devika Kumar

PA - University of Pittsburgh

Discipline: Natural and Physical Sciences

Authors:
#1 Devika Kumar
#2 Matthew Payea

#3 Showkat Dar
#4 Emmanouil Maragkakis

Abstract Name: Investigating the Effects of DNA Damage on mRNA Decay in Human Cells Using Long-Read Sequencing

Senescence is a state of virtually permanent cell cycle arrest that occurs in response to sublethal genomic damage. Senescent cells accumulate with age, where they cause several aging-related diseases through hypersecretory phenotypes. Several open questions remain regarding how cells commit to senescence as opposed to apoptosis upon DNA damage and what changes accompany this decision, particularly in response to acute DNA damage. Recent studies have shown that acute stress can result in immediate changes in mRNA metabolism and the induction of novel mRNA decay pathways to quickly remodel the transcriptome. In this study, we examined whether treatment of cells with the senescence-inducing drug Etoposide would induce immediate changes in mRNA stability that would be predictive of commitment to senescence. To accomplish this, we used long-read direct-RNA sequencing to authentically monitor changes in mRNA metabolism and capture mRNA decay intermediates after Etoposide treatment. We found that long-read sequencing detected evidence of two mRNA decay processes after Etoposide treatment: 5' mRNA shortening and decreased poly-A tails, both globally and for specific genes known to decrease with senescence. Furthermore, we found that cell cycle and DNA metabolism genes were enriched among those with evidence of decay, suggesting that there is a period of transcriptome remodeling after DNA damage.

Sanjana Kumar

TX - The University of Texas at Austin

Discipline: Health and Human Services

Authors:
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#2 Eugen Resendiz
#3 Deborah Salvo

Abstract Name: Application of the Global Observatory for Healthy and Sustainable Cities Urban Policy Indicators to Austin, Texas

Urban policies are crucial in establishing and regulating built environments, which can shape citizens' health behaviors. This study aims to assess the urban planning policies of the metropolitan area of Austin, TX, USA as part of the Global Observatory of Healthy and Sustainable Cities (GOHSC) 1000 Cities challenge. Urban planning policy documents of relevance for assessing the city's commitments and investments to healthy and sustainable lifestyles through urban planning and transportation for the metropolitan area of Austin were identified through a desk review. This included reviewing official government websites and NGOs. Using the policy checklist tool of the Global Observatory of Healthy and Sustainable Cities' 1000 Cities Challenge, the presence, government sectors and levels involved, alignment with health and sustainability promotion principles, and the existence of measurable targets are evaluated. Next, twenty-four urban policy indicators from eight categories will be generated. GOHSC indicators open source software are being used to conduct the analysis. Data collection is still underway, current findings suggest that Austin has a demonstrated interest in healthy and sustainable policies. Policies that regulate components of sustainability and health such as transportation, air pollution, parking management, etc. have been found. Many policies exist to satisfy different aspects of health and sustainability, but they do not consistently feature measurable goals or strive towards evidence-based standards. As data collection continues, more accurate information about the strength of Austin's policymaking will emerge. Ultimately, this study can help set a precedent for streamlining how governmental structures monitor health indicators in the city, informing policymakers about necessary changes, and setting the foundation for Austin's long-term sustainability.

Madeline Kumar-Montei

IL - Loyola University of Chicago

Discipline: Humanities

Authors:
#1 Madeline Kumar-Montei

Abstract Name: Drive, Desire and the Political Subject: the Import of Lacanian Psychoanalysis to Materialist Political Analysis

In a Lacanian account of subjectivity, desire plays a foundational role in the constitution of the subject, who is structurally undermined and symbolically alienated by the "constellation of signifiers" that situates it. An important move here is away from the Cartesian subject for whom the extension of their thought is what secures the consistency of their being, to what Lacan describes as the "sexed" subject, the subject that is mediated by their embodiment in language (the negation of the supposed totality of this certain mind-subject) and conditioned by it. This mediation through the signifier is what constitutes the subject as desirous, with the gap in totality as the point from which the unconscious originates. In this paper, I will argue that a key import of psychoanalysis is to move from a traditional theory of ontology to a theory of the drive, which to locate subjectivity not in some essential kernel of being, but in the structure of failure (and repetition of said failure) in the constitution of subjectivity as lacking. This structure of desire entails an ideological fantasy that facilitates both this relationship to the "lost object" of desire, and the undermining of said relationship through the drive, which secures a psychic enjoyment in the frustration of desire. I will further argue that this theorization provides a unique import for a materialist theory of politics. Psychoanalytic theorization of the social field, language, and the role of the subject's unconscious desire allows us to theorize complex social and political dynamics (i.e. why would someone vote against their interests?) where, contrary to the rationalist schema of homo economicus, pleasure is sacrificed for psychical enjoyment. The focus on the role of the drive highlights the tension between conscious belief and unconscious desire, which is useful for understanding investments conditioned by capitalist subjectivity.

Adrien Kurth-White

CA - Mt. San Antonio College

Discipline: Natural and Physical Sciences

Authors:
#1 Adrien Kurth-White

Abstract Name: Examining Predation Damage in Shells of Chione to Assess Marine Biotic Interactions During Environmental Changes in the Late Cenozoic of Southern California

During the geologic time interval of ca. 5-0.13 Ma, much of coastal Southern California was underwater and was rich in invertebrate life, including marine bivalves and gastropods. Many environmental changes, due to the changes in climate, occurred in that interval. However, according to previous studies, even with that environmental change, the predator-prey relationships between drilling gastropods and shelled bivalves appeared stable throughout. This study aims to shed light into these biotic interactions and the impact of the environmental change in the ancient Southern California marine ecosystems, to compare them to those of modern ecosystems and their reaction to current day environmental change. We searched the Los Angeles Natural History Museum's database of invertebrate fossils for occurrences and stratigraphic information to find specimens to study. To measure drilling predation, we used LANHM specimens of the bivalve genus Chione and did point counts of drilled vs non-drilled fossil specimens. We sampled geologic formations ranging from the late Pliocene to Pleistocene from the San Diego, Los Angeles and Ventura Basins, in order to get latitudinal and water depth gradients. Additionally, we visited field localities to look for new exposures revealed by erosion during winter storms and collect more samples. Results indicate that, within the genus Chione, there appears to be an increase in the frequency of drilled shells from the mid to late Pleistocene and predation appears to vary with changes in latitude.

Alex Kurtt

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Alex Kurtt
#2 Amy Toth
#3 Erika Ibarra-Garibay

Abstract Name: Potential factors of non-flight thermogenesis variation in Bombus impatiens

Bumble bees (Bombus spp.) face diverse environmental conditions, making thermoregulation an essential adaptation for foraging and nest construction. Despite their critical role in commercial food production and ecosystem stability, there is insufficient information on how thermal physiology may vary between both groups and individuals. With climatic conditions changing at an unprecedented rate, this variation in thermal physiology may be key to understanding how populations will react. Recent research has begun exploring how non-flight thermogenesis differs between species, however, numerous other potential factors require investigation.This study aims to acquire a deeper insight into whether physiological differences such as caste (queens, workers, and drones), mass, and seasonality (fall and spring) may influence non-flight thermogenesis to determine its role in the varying rates of decline across populations. Using Bombus impatiens as a model generalist species, we collected specimens from Central Iowa, USA, which were then subjected to a 20-minute cold-induced “coma”. Subsequently, thoracic temperature was measured during rewarming using non-destructive infrared thermal imaging to compare the rate of change and final

temperature. Thus far, the data suggest that final temperature is not influenced by caste or seasonality, but size may influence this trait in males.Analysis of rewarming rates is ongoing. Current investigation shows that warm-up rates are not constant over the trial period. To reflect this, a new multipoint model would be beneficial in distinguishing the newly found phases in the rate of change. These data will be valuable in unraveling the intricacies of non-flight thermogenesis, shedding light on how its variability influences bumble bee populations, and aiding in conservation strategies.

Lynn Marie Kutch

PA - Kutztown University of Pennsylvania

Discipline:

Authors:
#1 Lynn Marie Kutch
#2 Sara Aschenbrenner
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Sara Aschenbrenner
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Abstract Name: A Collaborative Student-Faculty Model for Introducing and Developing Research Skills in a First Year Seminar Course

In an increasing effort to, among other objectives, increase retention and five-year graduation rates by emphasizing high-impact practices (HIPs), our university submitted an ultimately successful proposal for United States Department of Education “Title III Strengthening Institutions” funding. Not surprisingly, the grant’s overarching goals correspond to well documented outcomes of Undergraduate Research (UG), namely supporting student success and boosting academic excellence. While a majority of faculty members acknowledge advantages of HIPs and involving undergraduates in research, a far smaller percentage, many of whom teach First Year Seminar (FYS) courses, think about embedding research practices in these required, and academically early, general education settings. This presentation—a collaborative faculty and first-year student effort—presents a curricular model for introducing and developing research skills from as early as the first semester and with an emphasis on appealing to a broad cross-section of students. The model supports the principle that, as our students’ needs, areas of expertise, and levels of previously acquired research training change, so should course-embedded research components evolve and adapt. Setting this model apart is the fact that the faculty member created the pedagogical plan and products in close cooperation with first-year students. The presentation consists of two parts. First, the presenters share a field-tested modifiable curricular structure for encouraging UG in general education courses (and especially FYS) across institution types and with a specialization for diverse student populations. Second, FYS student researchers will offer their observations on their research processes and present versions of their original projects that emerged from the scaffolded research model. The aim is that the student voices can help convince general education, and especially (often reluctant) FYS instructors dedicated to student success and academic excellence, to not only adopt and adapt similar models for use in their classrooms, but also to share with colleagues on their home campuses.

Shannon Kutcher

NC - Elon University

Discipline: Health and Human Services

Authors:
#1 Shannon Kutcher

Abstract Name: "Homegoing": Death and Dying in the Rural South and Urban North

The way different cultures relate to death and dying not only impacts individuals' perceptions of death, but it also impacts end-of-life (EOL) care for specific marginalized groups. The underrepresented experiences are constructed because of individualistic, Eurocentric views that govern services and support. Macro-level regional socio-political-cultural differences in end-of-life culture between the urban North and rural South are a testament to the diverse tapestry of customs and values that shape how individuals and communities approach the end of life. These findings contribute to a gap in understanding of how regions in the United States differ in community support and cultural perceptions of death and dying. The aim of this poster presentation is to discuss these differences in the urban, Northeastern region and the rural, Southeastern region of the United States. The data is collected through narrative interviews from New Jersey and North Carolina. Participants from each region include hospice personnel and members of the regional communities. Utilizing qualitative research software ensures a rigorous and systematic examination of the qualitative data, allowing us to draw meaningful conclusions from the rich narratives the study participants share. The data suggests that both regions demonstrate themes of avoidance and racial/ethnic inequities in EOL care. There is different spiritual/religious significance and community support in the rural Southeast than the urban Northeast. This analysis is also demonstrating variation in post-death rituals and grieving processes between the two regions. Through this interactive poster presentation, the recognition, respect, and sovereignty of these regional distinctions will be given voice. Participants will explore how the regional differences are woven into the fabric of end-of-life care and can lead to more culturally sensitive and personalized approaches to supporting communities during this profoundly significant life transition.

Alaina Kutsch

PA - Westminster College

Discipline: Social Sciences

Authors:
#1 Alaina Kutsch
#2 Jessica Rhodes

Abstract Name: An Examination of the Mediating Role of Emotional Impulsivity in the Relationship Between Attention-Deficit/Hyperactivity Disorder Symptoms and Nicotine Consumption in College Students

This study aims to examine the role of emotional impulsivity in the relationship between Attention-Deficit/Hyperactivity Disorder (ADHD) and nicotine consumption (via vaping) among college students. Previous research has demonstrated a strong relationship between ADHD and nicotine consumption, including both combustible and electronic cigarettes. Due to the high levels of use of electronic cigarettes among young adults, especially those with ADHD, and the negative health-related consequences associated with vaping, it is important to examine the mechanisms that may mediate the relationship between ADHD and nicotine consumption to better inform intervention strategies. One such mechanism is emotional impulsivity (acting impulsively when in a positive or negative mood state) which has been previously associated with both ADHD and Substance Use Disorders and has been demonstrated to mediate the relationship between ADHD and problematic alcohol use. Participants will be recruited from an undergraduate sample and will be remunerated $10 for their time. Following informed consent, participants will complete a series of questionnaires (demographics, emotional impulsivity, ADHD symptoms, attention/concentration) and an affective Flanker Task that will include viewing images that are positively, negatively, and neutrally valenced. It is hypothesized that: a) ADHD symptoms will predict greater nicotine consumption and emotional impulsivity, b) emotional impulsivity will at least partially mediate the ADHD-nicotine consumption relationship, c) Flanker Task performance in each affective condition will be correlated with the matching emotional impulsivity domain (negative, positive), d) ADHD symptoms will predict poorer performance on the Flanker Task, and e) performance on the affective blocks of the Flanker Task will

at least partially mediate the ADHD-nicotine consumption relationship. A better understanding of the mechanisms, such as emotional impulsivity, that contribute to the use of e-cigarettes among individuals with ADHD can lead to improved treatment and prevention efforts.

Yejun Kweon

HI - University of Hawaii at Manoa

Discipline: Humanities

Authors:
#1 Yejun Kweon

Abstract Name: North Korean Science Fiction: Marine Resources and Futurity of a Nation

This paper examines three North Korean science fiction: Green Seedlings (P'urŭn isak, 1988), Two Arrows (Tugae ŭi hwasal, 1989), and “Make the Ocean Blue” (“Padarŭl p'urŭge hara”, 2004). These three texts express the necessity of advancement in medical technology, active international relations, and the restoration of the environment by involving marine resources. North Korean literature is often viewed as propaganda due to its ties to the party’s ideals and national campaigns. However, by examining North Korean science fiction that deal with marine settings, I argue that some writers commonly challenge the idea of collectivism and emphasize the significance of women’s role upon further development of marine industries. In Green Seedlings, scientists try to cultivate rice plants to treat and prevent cancer. In Two Arrows, specialists from North Korea are working in South Africa to develop useful marine resources that could boost the country. In “Make the Ocean Blue,” different ways seaweed can benefit the country are specified: as reagent energy for factories and as a method to rehabilitate the polluted environment. I propose that these three examples of North Korean science fiction texts address contemporary issues while expressing apprehensions about the future. Providing subjectivity and agency throughout the narrative, the authors challenge and complicate party ideals. Moreover, the significance of the marine setting in North Korean science fiction is to point out the ongoing scientific and environmental problems of the nation the readers should be aware of as well as the key roles the ocean can play in North Korea.

Che Ku Kyet

NY - Colgate University

Discipline: Natural and Physical Sciences

Authors:
#1 Che Ku Kyet
#2 Engda Hagos

Abstract Name: Krüppel-like factor 4 plays a role in regulating ferroptosis-related genes

Krüppel-like factor 4 (KLF4) is a zinc-finger transcription involved in regulation of a wide range of cellular processes including proliferation, differentiation, apoptosis, autophagy, and genomic stability. Previous research has suggested that Klf4 could either act as a tumor suppressor gene or an oncogene in context-dependent manner. Ferroptosis is a newly discovered form of iron-dependent, programmed cell death as a result of intracellular iron accumulation, excess reactive oxygen species and lipid peroxides. In recent studies, Klf4, has been hypothesized to regulate ferroptosis-related genes. However, the molecular mechanism of how Klf4 regulates ferroptosis is yet unknown. Therefore, we sought to characterize the expression of genes involved in ferroptosis in Klf4-deficient cells as compared with cells that expressed Klf4. In order to

determine the levels of glutathione dependent pathway, xCT/SLC7A11 and GPX4, primary mouse embryonic fibroblasts null and wild type for Klf4 were treated for 72 hours with erastin, a drug that induced ferroptosis. DMSO was used as a control. We found that ferroptosis inhibitor genes such as xCT/SLC7A1 were up-regulated in cells that lacked functional Klf4. In addition, immunostaining analysis revealed that cells lacking Klf4 exhibited higher levels of xCT/SLC7A11. Furthermore, the human colorectal cancer line (RKOs) treated with PonA to induce KLF4 expression showed lower levels of xCT/SLC7A11 than DMSO treated RKO cells. Taken together our data suggests that KLF4 functions as a positive regulator of ferroptosis and offers a possible mechanism for how Klf4 maintains genomic stability. Thus, understanding the molecular mechanisms of Klf4 and how it regulates ferroptosis may illuminate possible targets for directed or combination therapy for cancer treatments.

Kory Kyro

MN - Minnesota State University - Mankato

Discipline: Engineering and Architecture

Authors:
#1 Cade Predmore
#2 Kory Kyro
#3 Derek Utecht
#4 Fatih Bektas
Cade Predmore
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Abstract Name: Using 4-in cubes to determine compressive strength of concrete

Concrete strength is mainly defined by its compressive strength for design purposes. Construction industry in the Unites States uses cylinders, 4 inches in diameter and 8 inches tall, to determine concrete compressive strength. The cylinders are axially loaded in compression until failure and the strength is calculated as the peak load divided by the cross-sectional area (i.e., $\pi \times r2$, where r is the radius). Size and shape of test specimens are not constant historically and geographically. 6-inch-diameter and 8-inch-long specimens used to be the industry standard. Considering a 6-inch concrete cylinder weighs about 30 lb. whereas a 4-inch concrete cylinder weighs only 9 lb., it was a matter of practicality to research if 4-in cylinder could replace 6-in ones. Furthermore, the construction industry in Europe uses 6-inch (i.e., 150 mm) cubes to determine concrete compressive strength. In this experimental study, 4-inch cubes were used to determine concrete compressive strength and the relationship to 4-inch cylinder strength is established. . A 4-in cube uses ~35% less concrete than a 4-in standard cylinder. This could amount to a significant reduction in material use, hence, less environmental effect. Three different concrete mixes having different binder types were produced in the laboratory. Cube and cylinder specimens were cast and tested at the ages of 2, 7, and 14 days. The results showed a high correlation between the cube and cylinder strengths. A conversion factor of 0.90, from cube strength to cylinder strength, is recommended.

Anngelyk La Luz Maldonado

FL - The University of Tampa

Discipline: Natural and Physical Sciences

Authors:
#1 Anngelyk La Luz Maldonado
#2 Emily Durkin

Abstract Name: Identifying macrochelid mites of Tampa Bay and determining their relationship with Drosophila spp. hosts using scanning electron microscopy (SEM)

In nature, many organisms develop symbiotic relationships, such as mutualism, and parasitism, with other organisms. Mite species are commonly involved in symbioses but are understudied, likely due to their small size. Macrocheles spp. mites attach to flies for transportation. However, whether the mites damage the fly while attached is unknown. The purpose of this research was to culture and identify Macrochelid mites in Tampa Bay and find evidence for whether they are harming fly hosts using scanning electron microscopy (SEM). Mites were collected from the wild and four populations were generated in the Durkin Lab. Mites from two of the populations were exposed to fly hosts. Those that are attached were used for SEM imaging. Through trial and error, I determined the best SEM protocol for imaging using a Jeol JSM-6010 LA analytical SEM. While imaging, we found that fly and mite appendages were obstructing the view of the mite's mouthparts. Thus, whether Macrocheles spp. mites damage fly hosts remains unknown. We plan to continue modifying SEM protocols for better images and try other methods, such as bio-staining fly hosts, to determine the exact nature of the relationship between these mites and fly hosts.

Cori Laatsch

IN - Valparaiso University

Discipline: Humanities

Authors:
#1 Cori Laatsch

Abstract Name: Life's Not Black-and-White: Identity Expression and Race in Invisible Man

Throughout Ralph Ellison's Invisible Man, an unnamed narrator partakes in a journey of self-discovery, coming to terms with the effect that race has on his identity and role in society. While some argue that the narrator's invisibility refers to how white society perceives him, I argue that this invisibility is three-fold: black America is invisible to themselves, to each other, and to white society. Furthermore, this invisibility is not the cause but is a symptom of an "identity expression discrepancy." While white Americans can choose who they are, what they do, and how they are perceived, black Americans' identities are limited to the perceptions of their race, and these limitations are assumed within oneself, between members of the same race, and by white society. Ultimately, despite Ellison's criticism of the polarization of race, he does not advocate for a colorblind society. For Ellison, the ideal society is one in which the identity expression discrepancy within black Americans is eliminated, meaning that black Americans would have the freedom to express themselves by their own individual identities, not by the color of their skin. In this way, black Americans could even choose to define themselves outside of the black historical experience. This balance is one that 21st century America has yet to perfect, but should continue to strive toward.

Ella Lacy

MI - University of Michigan - Ann Arbor

Discipline: Social Sciences

Authors:
#1 Ella Lacy

Abstract Name: Navigating Uncertainty: Examining the Impact of COVID-19 on Undergraduate Student Flourishing and Resilience

This study explores the multifaceted effects of the COVID-19 pandemic on the flourishing and resilience of undergraduate students. In the years following unprecedented disruptions to all realms of life, this project explores the factors related to the psychological well-being of students, in particular, concerning their experiences with the pandemic. Employing a quantitative approach, data was gathered through survey measures from a diverse sample of undergraduate students participating in the MI-Louis Stokes Alliance Minority Program. The findings reveal that the higher the level of COVID-related stress that students experience, the less likely they are to exhibit both flourishing and resilience. The continuing decreased levels of both resilience and flourishing highlight the importance of mental health support services for students and the need for flexibility in academia. These results may inform further research in the discipline of positive psychology within academia and the effects of the 2020 Pandemic. In a prolonged era of uncertainty, these findings contribute valuable insights to guide institutions and students in promoting positive undergraduate mental health and well-being.

Kristopher Laffred

WI - University of Wisconsin-Parkside

Discipline: Social Sciences

Authors:
#1 Kristopher Laffredi

Abstract Name: Navigating Media Overload: Exploring Social Media Consumption, its impact on consumers' mood, and adherence toward social scripts

Recent studies have shown that social media is increasingly becoming the medium by which individuals receive news and information on recent events. As the number of people receiving their news from social media increases further focus and study on the risks of political polarization, and the risks of mis and dis-information should be pursued. This study uses the many insights obtained from social research to explore the types of relationships individuals have with social media and content creators. Using survey research this study seeks to determine how social media consumers conceive of their engagement with social media, along with how social scripts and methods of socialization impact social media use. Also, of focus is determining how social media impacts the mood of the consumer. Employing the sociological theories and concepts of Mills, Durkheim, and Goffman, this study aims to investigate and explore the many ways social media operates as a social institution impacting behavior, mood, and social relationships. As time spent on social media increases, alongside the number of individuals using it for information on important life-decisions, it is more critical now than ever to enquire into the impact of these interactions both online and offline. By measuring these interactions this study can better inform the way social media impacts and is itself impacted by the social interactions it hosts, and how these interactions fit within broader social-psychological frameworks.

Leniha LaGarde

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

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#1 Leniha LaGarde
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#6 Ashley McCarley

Abstract Name: Synergistic Effect via Combinational Therapy of Native Chumash Plants in Southern California

Antibiotic resistance is a prevalent global health threat. Due to the progressive ineffectiveness of antimicrobial drug treatments, there is a need for discovery of new antibiotics while also testing combinational therapy. In combination therapy, multiple drugs are tested as a combination to see if their combined effect is more effective or synergistic than their individual outcome. Preliminary work shows that some native California plants used by the Chumash Native Americans have antimicrobial activity. Therefore, the aim of this research is to determine the synergistic effect of six plant extracts of indigenous plants (Lemonade Berry, White Sage, Manzanita, Coastal Sage, Yarrow, Rue). The plant extracts were tested for synergistic antimicrobial activity by combining two extracts using a 1:1 ratio. The susceptibility of Bacillus subtilis, Pseudomonas fluorescens, Escherichia coli to the plant extracts was tested using the Kirby-Bauer disk diffusion method. The zones of inhibition were examined by performing a needle inoculation to test for bactericidal/bacteriostatic properties. B. subtilis and P. fluorescens displayed higher susceptibility compared to the E.coli plates. Lemonade Berry mixed with White Sage and Coastal Sage displayed higher zones of inhibition (greater susceptibility) compared to individual plant extracts tested against B. subtilis. The combination of Manzanita and Yarrow produced a greater antimicrobial effect on P. fluorescence. Yarrow mixed with Rue indicated higher antimicrobial effects compared to when individually tested against E.coli. Further investigation needs to be done to understand the potential in drug treatment of the synergistic combinations identified in this study.

Leniha LaGarde

CA - California State University - Channel Islands

Discipline: Natural and Physical Sciences

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#7 Ashley Mccarley

Abstract Name: Synergistic Effect via Combinational Therapy of Native Chumash Plants in Southern California

Antibiotic resistance is a prevalent global health threat. Due to the progressive ineffectiveness of antimicrobial drug treatments, there is a need for discovery of new antibiotics while also testing combinational therapy. Preliminary work shows that some native California plants used by the Chumash Native Americans have antimicrobial activity. Therefore, the aim of this research is to determine the synergistic effect of six plant extracts of indigenous plants (Lemonade Berry, White Sage, Manzanita, Coastal Sage, Yarrow, Rue). The plant extracts were tested for synergistic antimicrobial activity by combining two extracts using a 1:1 ratio. The susceptibility of Bacillus subtilis, Pseudomonas fluorescens, Escherichia coli to the plant extracts was tested using the Kirby-Bauer disk diffusion method. The zones of inhibition were examined by performing a needle inoculation to test for bactericidal/bacteriostatic properties. B. subtilis and P. fluorescens displayed higher susceptibility compared to E.coli plates. Lemonade Berry mixed with White

Sage and Coastal Sage displayed higher zones of inhibition (greater susceptibility) compared to individual plant extracts tested against B. subtilis. The combination of Manzanita and Yarrow produced a greater antimicrobial effect on P. fluorescence. Yarrow mixed with Rue indicated higher antimicrobial effects compared to when individually tested against E.coli.

Avani Laharia

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Avani Laharia
#2 Giang Nguyen
#3 Dipali Sashital

Abstract Name: Characterizing the Role of MsDNA in Bacterial Retron Ec48 Antiphage Defense System

Bacteria have developed several defense mechanisms to fight phage infections. Retron systems are a type of bacterial antiphage defense system composed of a reverse transcriptase (RT) protein, a non-coding RNA called msr-msd RNA, and a transmembrane effector protein. The RT uses msr-msd RNA to synthesize msDNA, an RNA-DNA hybrid and a central regulator of retron-mediated defense. My research aims to understand the specific role of msDNA in the Ec48 retron system. The Ec48 retron system protects E. coli against phages that inhibit RecBCD, a cellular nuclease and first-line defense mechanism. Inactivation of RecBCD by phage proteins triggers the activation of the retron system. Our central hypothesis is that phage proteins inactivate RecBCD, preventing msDNA degradation and allowing msDNA to accumulate, which activates the effector protein, causing cell death. I have tested the effects of cellular nucleases RNase H and RecBCD on msDNA degradation, both in the presence and absence of RT. My results have shown that msDNA is protected from degradation by cellular nucleases in the presence of high concentrations of RT. These results suggest a model, which we are currently testing, in which RT protects msDNA when RecBCD is inhibited during phage infection, allowing activation of the retron effector protein. My research contributes to the broader understanding of bacterial defense systems, which is fundamental for potential applications in phage therapy.

Audrey Lai

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
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#2 Na Yeon Kim
#3 Qianying Wu
#4 Ralph Adolphs

Abstract Name: Using Machine Learning to Classify Autism from Oculomotor Features

Quantifying gaze behavior through eye tracking has unveiled distinct patterns in autism, offering potential for screening and diagnosis. However, it has been difficult to identify reliable visual features that can be used to distinguish autism across different studies. This project investigates whether autism can be classified using oculomotor features obtained over a sufficiently long and diverse set of stimuli, without needing to

decompose the stimuli into specific objects such as faces. Participants with autism (N = 13) and control participants (N = 19) completed a series of tasks using a Tobii eye tracker. These tasks consisted of well-validated measures to prompt specific eye movements, as well as naturalistic viewing of images and movies. We established an optimal method for characterizing oculomotor events (e.g., fixations, saccades, and smooth pursuit) through the application of a machine learning-based algorithm. We then compared properties of those events, such as duration, velocity, and acceleration, between the autism and control groups. Preliminary results show that autism participants exhibit greater randomness in the lengths of their fixation periods than control participants ($t(30) = 2.75$, $p = 0.009$). They also demonstrate that control participants exhibit a higher number of fixations per image than autism participants ($t(30) = -2.86$, $p = 0.008$). We expect to identify additional key differences in oculomotor features between participants with and without autism, and the findings will advance our understanding of oculomotor signatures in autism. This research has the potential to enhance early detection of autism, which can increase opportunities for early support and intervention.

Audrey Lake

TX - Tarrant County College

Discipline: Social Sciences

Authors:
#1 Audrey Lake

Abstract Name: The Gender-Affirming Care for Children Controversy

Should children have access to gender-affirming care? This is a complex and controversial topic with no straightforward resolution in sight, especially now that this issue of identity has been converted into a politicized moral dilemma. Twenty-two states in America currently have bans prohibiting minors from accessing gender-affirming care, and nineteen of them have legislation that penalizes medical professionals and/or parents who try to assist minors in accessing this care. I have conducted exploratory research on stakeholders' varying opinions on whether or not children should have access to gender-affirming care. The first group is primarily conservatives who believe that children should not have access to gender-affirming care unless they are intersex infants for whom this group advocates gender reassignment surgeries. The second group is primarily progressives who believe gender-affirming care should be accessible to children, especially in the form of puberty blockers and hormone therapy. The final third group consists of intersex advocates who call for regulation in the accessibility of gender-affirming care for children. In my work, I provide relevant context and go in-depth on each group's respective reasoning, supplemented by scholarly sources and popular sources within various databases. My research will also include my personal interviews with a sampling of the stakeholders (e.g., conservative and progressive political figures, intersex advocates, gender-diverse individuals, and allies) within this dispute. From this exploratory research, I have concluded that many bans on gender-affirming care for children with the underlying theme of "protecting minors" are hypocritical and potentially life-threatening to children with gender dysphoria who have a much higher rate of suicides and attempts when they cannot access care and support. The legislation only further proves the idea that these minorities have become pawns in the never-ending political chess game powered by fear-mongering, Christian nationalism, and propaganda.

Aaron Lam

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:

#1 Aaron Lam
#2 Taylor Davies
#3 Emily Doffing
#4 Kevin Tran
#5 Danielle Kohfeldt
Taylor Davies

Abstract Name: If you can’t empathize, at least sympathize: Webcomic fans with endometriosis confronting non-support

When studying non-apparent chronic pain, research has shown that it affects all aspects of an individual’s life, including impaired interpersonal and psychological functioning. Research highlights the juxtaposition of maintaining a personal and social life while struggling with constant pain (Grogan et al., 2018; Roomaney & Kagee, 2016; Schwab et al., 2021). Utilizing Kafer’s (2013) political and relational model of disability, this study examines the webcomic series Chronic Pain is a Party through the author’s struggles with her disability, endometriosis. This study interprets 16 analyzed webcomics and 99 fans’ comments from Facebook and Instagram between March 3rd, 2019 to March 4th, 2020. Our aim is to spread the knowledge of individuals with endometriosis. The analysis represents an asset and strength-based system on the barriers encountered by chronically pained individuals, including social isolation and inequality. Individuals with chronic pain face new demands that affect the wellbeing of relationships including lack of acceptance in interpersonal connections, isolation, and indifference from others. These individuals reflect on their experiences of non-support by having a critical lens on society, coping with the complexities of relationships, and fostering personal development as well as community growth. Turning a critical lens on society means challenging and redefining social and cultural norms such as undermining gender constructs and defying societal expectations. The lack of support that these individuals experience can be an attributing factor to the tension of forming and maintaining meaningful personal relationships. Being chronically pained leads to the development of new coping mechanisms, medical interventions, and healing through shared experiences. This webcomic had a profound impact in which the fans and the creator expressed their frustration concerning their endometriosis symptoms and indignation against ableist social settings. When facing non-support with their in-person relationships, fans of this webcomic built a platform that represented self-empowerment, advocacy, and community.

Nick Lambert

MT - Montana State University - Bozeman

Discipline: Social Sciences

Authors:
#1 Nickolas Lambert

Abstract Name: LGBTQ+ Undergraduate: Resilience, Trauma, and Success

In recent LGBTQ+ history, research has evaluated the affects of trauma and academic achievement which suggests resilience may have influence over queer-student performance. Across the literature, there are increasing numbers of all students seeking psychological assistance from their universities so it’s becoming more feasible to understand resilience than to eliminate risk. This inquiry examined the relationship between resilience, childhood adversity and academic success of LGBTQ+ undergraduate students in their ability to predict academic success based off university data. In efforts to better support undergraduate students, highlighting the strengths of marginalized populations is just as important as finding out in which area they need greater support and access to resources. It is hypothesized that Lesbian/Gay/Bisexual undergraduate students will have similar experiences and scores of heterosexual/cisgender undergraduate students leveraging greater academic success by comparison of those that identify as Transgender, Queer or other fluid identity. Data will be collected from participants via participant pool at a public university, using the 25-item

Connor-Davidson Resilience Scale (CDRS-25); Early Trauma Inventory Self Report-Short Form (ETISR-SF) and self reported demographic information which includes undergraduate GPA. Data collection is currently in progress and expected to be completed by October 2023. This study has great implications on the avenues universities can pursue for further research. Understanding which populations are succeeding despite life-setbacks and which ones need more support gives schools information to create stronger networks for supporting their student populations.

Courtenay Lampert

PA - Lafayette College

Discipline: Natural and Physical Sciences

Authors:
#1 Courtenay Lampert
#2 Michael Butler

Abstract Name: The Potential of Birds as Indicators of Microplastic Pollution in the Terrestrial Environment

Plastics are ubiquitous in the marine and terrestrial environment and pose a threat to ecosystem health. Microplastics, plastics under 5mm in size, are an emergent area of concern in ecology. While marine environments have received significant attention, terrestrial microplastic research remains limited, despite the abundant levels of microplastics found in terrestrial environments. Marine birds have been studied extensively in regard to microplastic ingestion while terrestrial birds have been largely ignored. The few prior studies on terrestrial birds have primarily attributed differences in microplastic ingestion to dietary variances, overlooking the potential impacts of water intake strategy and foraging methods, crucial avenues of ingestion worth exploring. Thus, I conducted a study to examine the abundance, type, and size of microplastics in the GI tracts of various terrestrial birds to gain a better understanding of local terrestrial microplastic pollution and the transfer of microplastics from environment to bird. I isolated and identified the microplastics in the GI tract of terrestrial birds, starting with a dissection of the bird to remove the GI tract, then a chemical digestion to isolate the inorganic material, a filtering, and finally an examination of particles of interest under a microscope. Over 400 microplastics of varying color and type have been found in the 10 birds dissected thus far. Within the next 3 months, I will complete an analysis of 20 more birds that use multiple foraging strategies. I will present data from 30 birds total of differing species, diet, foraging strategy, and habitat to gain a more expansive understanding of terrestrial microplastic pollution. Birds have direct interaction with the terrestrial environment through ways of diet, foraging strategy, and water intake, ways that have extensive variation. The prevalence and diversity of birds within terrestrial ecosystems render them excellent candidates for the study of microplastic pollution.

Delainey Lancaster

MN - University of Minnesota - Crookston

Discipline: Natural and Physical Sciences

Authors:
#1 Delainey Lancaster
#2 Alyssa Stillman

Abstract Name: Toxicant Sensitivities Among Closely Related Strains of the zooplankter rotifer Brachionus plicatilis

This research compares differences in toxicity sensitivity within and among eight strains/species within the Brachionus plicatilis species complex. Due to its importance in aquaculture, this species complex is the most extensively studied rotifer group. However, a study to directly compare ingestion toxicity sensitivities within this species complex has not been completed. Therefore, we proposed to use a simple ingestion assay to investigate the differences in toxicant sensitivities. The ingestion assay is a sub-lethal test that can quickly evaluate toxicity. The following toxicants were picked to be analyzed: cadmium, chromium (VI), mercury, and carbofuran. The closely related species include B. rotundiformis (Hawaii, USA), B. manjavacas (Azov Sea, Russia), B plicatilis (Salebrejo, Spain), B. rotundiformis (Adriatic, Italy), B. manjavacas (Pettaquamscutt, RI, USA), B. manjavacas (Manjavacas, Spain), B. species (Almenara, Lost Lake, USA), B. plicatilis (Tiajin, China). Results demonstrate there are significant differences between the species in all four toxicants. Despite the results not corresponding with the three named species groups, namely, B. plicatilis, B. manjavacas, and B. rotundiformis, the data does reveal differences among these species. Further research into the differential toxicity sensitivities is warranted.

Hailey Landry

NY - Long Island University

Discipline: Humanities

Authors:
#1 Hailey Landry

Abstract Name: The Double Penalty: Examining how the Vienna Family Network Assists Immigrant Mothers in Vienna, Austria

At some point in their lives, many women will encounter social, familial, and career disadvantages due to being working mothers, or the so-called ‘motherhood penalty.’ In Vienna, Austria, a city where 34.2% of the population are foreign nationals and 44.4% were born abroad, additional challenges such as language barriers and legal complexities impede the accessibility of employment and social benefits (Stadt Wien, 2023; Reeger & Josipovic, 2020). The Vienna Family Network (VFN) is a Vienna-based non-profit organization that provides support services specifically tailored to immigrant mothers living in Vienna. This transdisciplinary qualitative case study explores immigrant mothers’ unique experiences of the motherhood penalty while living in Vienna, as well as the ways in which the VFN aids in the mitigation of its effects. Research was conducted in Vienna over a three-month period from September to November 2023 via a feminist and decolonial framework, utilizing a series of semi-structured interviews with both leaders and members of the VFN, a survey of the members, and field observations of VFN groups and events. The study demonstrates that working immigrant mothers living in Vienna use the VFN because it helps them overcome challenges within their social, work, and family lives by serving as a community building and information hub. The findings thus identify the VFN as a significant contributor to enhancing the overall well being of working immigrant mothers. Shedding light on the unique challenges faced by working immigrant mothers and highlighting the role of community-based organizations in mitigating the motherhood penalty, this research contributes valuable insight for the development of supportive family and immigration policies and practices.

Jennifer Lane

OK - Cameron University

Discipline: Natural and Physical Sciences

Authors:
#1 Jennifer Lane
#2 Susmita Hazra

Abstract Name: Analyzing Light Curve of Wasp-59b using EXOTIC

In this project we are presenting our work on exoplanet Wasp-59b based on data by ground-based robotic telescopes. We are using NASA's official data reduction software for exoplanet watch, EXOTIC (EXOplanet Transit Interpretation Code), to analyze the raw data in the form of FITS images. EXOTIC selects the best configuration of comparison stars, aperture, and sky annulus and then fits the observed transit with a model light curve. Based on the light curve graph, we found significant detection rating of 0.0225 (+- 0.0057) and a mid-transit time of 2459497.726 (+- 0.034) BJD. Using this information, we are able to calculate the exoplanets mass: 0.863 (+- 0.045) MJ, orbital period: 7.919585 (+- 1e-05) day, eccentricity: 0.1 (+- 0.042), angular velocity: 74.0 (+-15.0) degree, radius: 0.775 (+- 0.068) RJ, and its temperature: 670.0 (+- 35.0) K. Studying exoplanets is important as it helps us to understand other solar systems as well as our own. This study will aid in the more accurate big ground-based or space-based observatories, help monitor the variation in brightness of stars, as well as identifying and confirming any new exoplanets that are orbiting in our solar system. Ultimately, this research allows us to comprehend more fully whether there are other planets where the requirements needed for life might exist.

Ethan Lane-Blake

NC - Elon University

Discipline: Humanities

Authors:
#1 Ethan Lane-Blake
#2 Dr. Vanessa Drew-Branch
#3 Dr. Sandra Reid

Abstract Name: Erased: The Hidden Stories of Queer People in the Civil Rights Movement

"Erased" is a thirty-minute six part mini series biographical digital story series that profiles the lives and contributions of four Black LGBTQIA civil rights activists: Pauli Murray, Bayard Rustin, James Baldwin, and Audre Lorde. The screening of this 6 episode biographical narrative will serve as a call to action, for viewers to educate themselves on both Black and Queer history. The history that is currently being erased through the silencing of "Critical Race Theory" and the passing of the "Don't Say Gay Bill". The social identities of being Black or Queer deviates from cultural demands and social norms, causing social marginalization and silencing. The first episode will serve as an introductory episode leading the viewers into the next four episodes. The Cass Identity model is the guiding framework for this project. This model serves as a lens from which to gain understanding about the experiences of the Black sexual minority. The final episode will lead to a call to action for the viewers. Historically marginalized Queer and gender non-conforming individuals whose stories have been intentionally excluded; this project aims to give them back their voices. The current socio-political trends are actively working to diminish the experience and existence of Black Queer individuals. In doing so, this will cause Black Queer individuals to ask questions such as where is my role model in the fight for equity & will my freedom ever ring?! The lack of visibility and representation of Black Queer social justice in these social movements has erased their impact on society. This project aims to pay homage through storytelling and right the wrongs of history by highlighting the contributions of historical Black Queer activists while simultaneously inspiring the next generation of Black Queer social change makers.

Simone Lang

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 Simone Lang
#2 Shiru Lin

Abstract Name: Low Dimensional Materials as additives to High Density Polyethylene for Space Applications: First Computational Investigation

Advanced Space suit materials are composed of synthetic plastic, polymers like nylon and spandex, that shield astronauts from the harsh lunar environment. Protecting astronauts from radiation and severe temperatures, conserves a material that needs to be lightweight, flexible and holding tensile strength over a cycle of long missions. High density polyethylene introduces resistance of secondary radiation, thermal and mechanical properties due to their rich hydrogen and carbon atoms. However, to enhance HDPE properties low dimensional materials like graphene, graphene oxide and boron oxide have been a popular additive to HDPE to increase the materials tensile strength and conserve important properties. Density Functional Theory (DFT) computations are carried out to investigate the adsorption energy dependence of HDPE angle. Molecular Dynamics (MD), were used to inspect the new material system for thermal and electrostatic properties.

Madison Lange

IL - North Central College

Discipline: Natural and Physical Sciences

Authors:
#1 Madison Lange
#2 Jonathan Visick

Abstract Name: Investigating Transcriptional Changes in the Absence of PCM During Stationary Phase in Escherichia coli.

Over the lifespan of an organism, proteins in its cells will become damaged either from unfolding or misfolding or from chemical damage. This can lead to a loss of function of a protein necessary for an organism's survival. Our laboratory studies isoaspartyl protein damage, which occurs from the spontaneous isomerization of aspartate amino acids in proteins. Damaged proteins have been linked to Alzheimer's, aging, and various autoimmune diseases. The enzyme PCM can reverse the isomerization and repair the protein. This method of "recycling" molecules can improve the longevity of a protein and potentially an organism. The survival of mutant Escherichia coli lacking pcm is affected by protein unfolding stressors such as oxidation, osmosis, or heat stress. We hypothesize that PCM increases long-term survival of E. coli by maintaining protein folding. We examined E. coli's response to the lack of repair at the level of gene expression by sequencing total mRNA from normal and pcm mutant cells. The bioinformatic analysis from the RNA sequencing of pcm+ and Dpcm strains revealed gene insH1 that was overexpressed by 5-fold and genes cysD and csrC that were under expressed by at least 6-fold. Of particular interest, we found that ibpA, encoding a heat-shock chaperone which prevents protein unfolding under heat stress, was overexpressed by 7-fold in a Dpcm strain, supporting our hypothesis. Testing of double knockout mutants lacking pcm and ibpA will be done under protein-unfolding stress conditions to further examine the gene's role in E. coli.

Melanie Langgle

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Melanie Langgle

Abstract Name: Archaeological Analysis of the Burns Spoke Burial Mound (8BR58) at Cape Canaveral Space Force Station and the State of Florida

At Cape Canaveral, Florida, the Burns Site (8BR85) is a burial mound consisting of various active phases starting in the Late Archaic through the Malabar II period. The mound displays a Native American mortuary practice called ‘radial burials.' Radial mounds are a type of burial pattern that contain indigenous human remains oriented in a spoke wheel pattern, the heads of the individuals pointed toward the center of the mound and the feet pointing outward. Some researchers credit it as a response to deaths of the indigenous peoples following European contact. Other evidence suggests it is a custom that predates colonialism. Using quantitative and qualitative data collection, an ‘Attributes Table’ was formulated to help determine if there are any anomalies associated with the radial burial pattern and other Native American burial mounds.

Jessica Langlois

PA - Lafayette College

Discipline: Social Sciences

Authors:
#1 Jessica Langlois
#2 Susan Wenze

Abstract Name: Undergraduate Students' Opinions of Exercise as an Alternative Mental Health Treatment on US College Campuses

Since COVID-19, college student mental health is significantly declining. University counseling services are understaffed relative to the increasing numbers of students seeking care, and many are experiencing increased counselor turnover. Colleges are in need of accessible strategies for maintaining student mental health. Exercise is proven to be an effective mental health treatment, with recent work suggesting equivalent efficacy to pharmaceutical interventions and cognitive behavioral therapy. Exercise significantly reduces depression and anxiety and negative affect. However, college students encounter barriers that inhibit exercise.The present study aims to explore undergraduate students’ knowledge, attitudes, and opinions about exercise as an alternative mental health treatment on United States college campuses. Following recruitment via SONA, student participants will complete a baseline demographics questionnaire, and measures of depression, anxiety, stress, and self-care behaviors. Focus groups of 4-5 students will be conducted to explore students’ experiences with campus mental health resources, their mental health and physical activity habits, and campus barriers inhibiting physical activity and access to mental health care services. Focus groups will be recorded and transcribed verbatim, and transcripts will be coded by a team of 3 researchers, with coding disparities discussed until consensus. Findings will be compared between upperclassmen and underclassmen, athletes and non-athletes, and higher and lower mental health levels (median split), to see if there are common themes among these groups.We expect to find students will know the mental benefits of physical activity and will be accepting of it as a treatment. However, students will express difficulty with finding time for exercise and self care in their schedules, due to other commitments. The conclusions from this study will be brought to the College administration, counseling center, and recreation services to emphasize the need for accessible exercise options to support mental health on college campuses.

Julia Lapinska

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Julia Lapinska
#2 Natasha Woods

Abstract Name: Impact of Salinity and Burial on Morella cerifera seedlings

On Virginia barrier islands shrubs have encroached into grasslands due to warmer winter temperatures; however, it is unknown if they will continue to grow when hurricane frequency increases. Encroaching native shrub, Morella cerifera (hereafter Morella) is protected by high dunes but when dunes are destroyed, the habitat of salt and burial sensitive species is disturbed. The goal of this study was to examine the independent influences of salinity, burial, and the combination of both on the growth of Morella. The experiment took place in a light and temperature controlled environment. A single pot contained one Morella seedling and three grasses to simulate the natural microhabitat. There was one control and three treatments, water only, no burial (control), salinity only, burial only, and salinity and burial. Seedlings that were subjected to salinity were treated with 35 ppm salinity and seedlings under the burial treatment were buried to 75% of their height. There were seven replicates of each group. The growth metrics were height and canopy growth. After seven weeks, the average height growth of Morella seedlings in the control group was 7.93 (±1.65cm) and the average for the burial only group was 4.74 (±1.60cm). Similarly, the average canopy growth of Morella seedlings in the control group was 482.83 (±88.52cm) and the average for the burial only group was 254.20 (±91.75cm). The treatments that contained salinity only or salinity and burial showed no appreciable growth for height or canopy. The average height and canopy growth for the control group was significantly greater than the salinity only group (p<0.01) and the salinity and burial group (p<0.01) but was not significantly different from the burial only treatment group. Salinity appears to be the primary factor that deters the growth of Morella.

Marisa LaPlante

MN - College of Saint Benedict/ Saint John's University

Discipline: Humanities

Authors:
#1 Sucharita Mukherjee

Abstract Name: Spotlight on Female Leadership: How a College Education at the College of Saint Benedict Can Foster Female Leadership

For many years the U.S. has tried to have more women leaders as senators, governs, supreme court justice leaders and have a woman as president. But there are still many boundaries that exist in the United States relating to female leadership such as stereotypes between men and women leadership experiences and women not feeling confident in themselves to run for a leadership position. This leads us to never having a women president and having less women leaders in the United States. I find this topic to be important because in the United States women are not seen to be leaders and are seen to not be a good role model for the government. In 2018 only 125 women were elected to the United States Congress and in 2023 only 60 women served as senator. Only 28 percent of American CEO’s are women. We want more women leaders because it will inspire more women to make an impact in our world and help us have more diversity in leadership. To find out more information on different leadership experiences I sent a survey out to students and staff at the College of Saint Benedict and Saint John’s University. From the survey I received over 40 responses that

were 5 males and 44 women. Many of the women responses included that they did not feel comfortable in the leadership position they have held or still hold to this day. Compared to the male responses that felt to be more privileged to have been treated fairly in their leadership role.

Elizabeth Lappano

WI - University of Wisconsin-Milwaukee

Discipline: Visual and Performing Arts

Authors:
#1 Elizabeth Lappano
#2 Ralph Janes

Abstract Name: Inclusion and Accessibility in Theatre

The present study is exploring the lack of inclusivity and accessibility within the theater industry. It investigates the relationship between audience members with disabilities, and their attending of shows in which accessibility measures were taken when compared to previous shows with no accessibility measures. We are comparing multiple pre-built AI accessibility programs. These programs include GalaPro- an application used on Broadway that provides subtitles and audio description, Azure AI Vision which provides Optical Vision Recognition, as well as programs like HARPA which has the capability of providing video descriptions. Through our research, we found that, while there are a few programs on the market that address these specific issues, many of them are inaccessible as a result of high prices, slow running systems, as well as not addressing all of the issues listed above. In order to combat this, we have started to develop our own programs using open-source codes as a way to integrate these systems into our machines and combat many of the issues that come with using pre-made programs. The study further tests whether or not solutions presently enlisted in theaters can achieve the proposed goals, as well as other possible plans of study that can solve these issues of inclusivity. To answer these questions, during our 2023 theater season, we integrated different accessibility measures into our live shows, and are currently exploring further paths of inclusivity. In our previous theater season, we enlisted the help of ASL interpreters, to live-interpret our showing of Sweat, a contemporary play written by Lynn Nottage. By doing this, we found a way to combine the worlds of hearing theatre with deaf culture. We plan to continue this study to find more ways of combining inclusivity and theatre.

perla larios ramos

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Perla Larios
#2 Qiang Chang

Abstract Name: Surgical procedure to monitor neuroactivity and expression in freely moving animals for the advancement of Rett syndrome therapy.

The overarching goal of this research project is to better understand how altered neural activity at the circuit level underlies behavioral phenotypes in a mouse model of Rett Syndrome (RTT). We will focus on the social interaction behavior in the RTT mice, as it is a robust phenotype with clinical relevance. Previous work from our lab and others has also found altered network activity in the hippocampus of the RTT mice, a brain

structure known to play a role in social memory. To establish causality between abnormal hippocampal network activity and deficient social interaction in the RTT mice, we plan to simultaneously record population neuronal activity in the hippocampus and monitor animal behavior in freely behaving mice. By employing this innovative method that acquires time-locked neuronal activity patterns and animal behavior, the study aims to contribute crucial insights into the RTT disease mechanism. The ultimate purpose is to leverage this understanding to inform the development of targeted therapeutic strategies, thereby advancing the prospects of effective treatments and, potentially, a cure for Rett Syndrome

Isaac Larson

CO - University of Northern Colorado

Discipline: Natural and Physical Sciences

Authors:
#1 Isaac Larson

Abstract Name: Developing an HPLC Method to Evaluate the Impact of Deafening Noise on GABA and Glutamate in the Central Auditory System

The analysis of the levels of gama-aminobutyric acid (GABA) and glutamate in the brain are important, as they influence behavior and indicate the physiological state of the subject. GABA and glutamate are respectively the primary inhibitory and excitatory neurotransmitters within the brain. In addition, they are implicated in hearing loss and tinnitus. However, the analysis and quantification of GABA and glutamate in brain tissue is challenging, as a result of their lack of fluorescent and ultraviolet/visible light absorbent characteristics. The process of derivatization provides a way to work around these challenges. Naphthalene-2,3-dicarboxaldehyde (NDA) has been observed to be superior in derivatizing amino acid based neurotransmitters to ortho-phthalaldehyde (OPA). Additionally, NDA provides a more intense signal of fluorescence after reacting with a primary amine, when compared to OPA. On the other hand, fluorescamine (4'-phenylspiro[2-benzofuran-3,2'-furan]-1,3'-dione) has been shown to readily react with primary amines under alkaline conditions. Fluorescamine is primarily used to detect amino acids with primary amines. Fluorescamine is also known to create an intense fluorescent signal after reacting with primary amines. Since GABA and glutamate contain primary amines, the present work explores the ability of fluorescamine to derivatize GABA and glutamate and subsequently, analyzing the derivatives with high performance liquid chromatography (HPLC). The current data demonstrates unique advantages of the fluorescamine derivatives of GABA and glutamate over that of NDA and present a new HPLC-fluorescence detection method for analysis of GABA and glutamate. This method has been used to compare the levels of the two neurotransmitters in noise exposed subjects versus their control counterparts. Overall, the work does not only provide an efficient chromatographic based method of analysis of GABA and glutamate but also reveals changes in these neurotransmitters that could underline noise-induced hearing disorders.

Corban Larson

WI - University of Wisconsin-Whitewater

Discipline: Mathematics and Computer Science

Authors:
#1 Corban Larson

Abstract Name: Landslide Detection System Using RPi and Strain Gauge

This project is a part of more extensive research on landslides to make a multimodal device for landslide prediction. Landslides are a force of nature that causes loss of life and property damage. Detecting a landslide before it happens would allow these consequences to be mitigated. The sensors used for landslide detection in the lab sandbox experiments include a type of load cell (commonly used in digital scales) that detects strain applied, temperature sensors, and moisture sensors. Our strain gauge sensor's previous data collection was based on sampling multiple data points a second. Recording until a landslide occurred in the experimental sandbox often created a file that is difficult to work with in Excel. Our project is to create a program for our Raspberry Pi (RPi) to collect strain gauge data at variable rates. Varying the data collection rate removes superfluous data points when no significant change is recorded with the sensors in the sandbox and improves the long-term usability of the data collection system. We have revised the data collection program to decrease the data collection rate when little activity in the simulated geological slope is detected and drastically increase data collection when something starts happening. The program monitors the data collection and looks for abrupt changes in the recorded values that may signify a shift in the slope before a landslide.The path leading up to this project included timestamp synchronization between two RPis and imaging the RPis' micro SD cards. After installing real-time clocks, the RPis saved their system time through power cycles. With SD card images, we have created backups, allowing us to easily experiment with the current program on other test RPis.This presentation will showcase the algorithm that changes the RPi's sampling rate when it detects changes in the slope before a landslide.

Breann Larson

TN - University of Tennessee at Chattanooga

Discipline: Natural and Physical Sciences

Authors:
#1 Breann Larson
#2 Azad Hossain

Abstract Name: Spatio-Temporal Analysis of Algal Blooms in Lake Pontchartrain Using Landsat

Located in New Orleans, Louisiana, Lake Pontchartrain is the second-largest brackish estuary in the United States and is connected to the Gulf of Mexico. The elevation of New Orleans varies from -13 feet elevation to 328 feet, averaging 3 feet of elevation. This makes New Orleans susceptible to flooding events from the Mississippi River. This susceptibility to flood events led to the Bonnet Caraway Spillway (BCS) building in 1937. The purpose of the BCS is to divert flood waters from the Mississippi River into Lake Pontchartrain. The BCS aids in preventing significant flooding events but leads to major changes in water quality in Lake Pontchartrain. Among some of these changes are excess nutrients and organic matter, which leads to eutrophication and algal blooms. Algal blooms can significantly affect the delicate marine ecosystem. Since the building of the BCS in 1937, it has been opened 15 times; since 1997, the BCS has been opened 8 times. With an increased frequency of BCS openings within the past 25 years and climate change leading to changes in atmospheric conditions, we can expect to see even more BCS openings occurring. Using remote sensing and NDVI, we can assess historical algal blooms in relation to the BCS openings. This study uses Landsat 5 and 8 data and NDVI to derive a thematic map of algal blooms near the BCS opening dates to assess changes in algal content in Lake Pontchartrain. Results show that algal blooms are detectable using NDVI in non-turbid waters.

Christina Lasdin

NC - North Carolina State University

Discipline: Engineering and Architecture

Authors:
#1 Christina Lasdin
#2 Kyla Bosh
#3 Brian Hua
#4 Jacqueline Cole
#5 Katherine Saul

Abstract Name: Effect of Nerve Injury on Shoulder Muscle Fibers in Brachial Plexus Birth Injury Rat Model

Brachial plexus birth injury (BPBI) occurs when the nerves innervating the shoulder are damaged by excessive stretching of an infant's neck during childbirth. It is one of the most common pediatric neuromuscular injuries, occurring about 1 in every 1000 live births. Up to 40% of those affected by BPBI have long-term limb impairments including musculoskeletal deformities, paralysis and reduced range of motion. The underlying changes to muscle architecture throughout development are unknown. Previous murine studies at 4 and 8 weeks post-injury have reported decreased optimal fiber lengths in shoulder muscles following BPBI. Our goal is to establish when these muscular changes occur and how they persist throughout development following BPBI. Sprague Dawley rats underwent surgery on one forelimb at postnatal days 3-6 (postganglionic or preganglionic neurectomy, forelimb disarticulation, or sham) and were sacrificed 2, 3, 4, 8, or 16 weeks post-injury. Eleven muscles surrounding the glenohumeral joint were dissected from injured and uninjured limbs (pectoralis major, acromiodeltoid, spinodeltoid, supraspinatus, infraspinatus, teres major, teres minor, subscapularis, triceps, biceps long head, and biceps short head). Mass and length were measured, and then muscle fibers were dissected and sarcomere length was measured using laser diffraction. Optimal fiber length and physiological cross sectional area (PCSA) were calculated for each muscle. Metrics were compared for each muscle between groups via 2-Way ANOVA with tukey post hoc test (GraphPad Prism 10, α<0.05).Preliminary results indicate that at 4 weeks post-injury, sarcomere length tends to be shorter for postganglionic and disarticulation groups relative to sham and tends to be shorter for disarticulation relative to postganglionic for the injured and uninjured biceps short head. PSCA tended to be smaller for postganglionic injured acromiodeltoid relative to sham. Understanding the changes occurring to muscle architecture throughout development following BPBI may inform treatment planning.

Brooklyn Lash

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

Authors:
#1 Brooklyn Lash
#2 Cansu Acarturk
#3 Wil Srubar III

Abstract Name: The Effect of Algal Biomass Replacement on Fresh and Hardened Properties of Metakaolin Mixes

Ordinary Portland cement (OPC) is the predominant concrete binder due to its cost-effectiveness and wide availability. However, the process of OPC manufacturing contributes significantly to greenhouse gas emissions, necessitating the exploration of more sustainable alternatives. One promising approach is the use of alkali-activated metakaolin geopolymers. Obtained through kaolinitic clays, metakaolin offers greater abundance and accessibility compared to other geopolymer binders. Despite its benefits, metakaolin's calcination process still emits carbon dioxide, and its formulation demands a substantial amount of alkaline activators to achieve desired compressive strength, as highlighted in prior research. In order to overcome these challenges, this research explores the incorporation of algal biomass, specifically Chlorella algae and algal biochar, into metakaolin geopolymer mixes with the aim of enhancing sustainability and properties of

metakaolin mixes. To address these challenges, this study evaluates the fresh and hardened properties of metakaolin mixes with varying percentages (1%, 5%, and 10%) of algae and biochar. The testing of fresh properties includes setting time and hydration kinetics, while the evaluation of hardened properties contains compressive strength, phase development, and morphological changes. The outcomes of this study are anticipated to provide a comprehensive understanding of these novel metakaolin geopolymer mixes and contribute to the development of more sustainable building materials, addressing the environmental concerns associated with traditional cement production.

Wey Hom Lau

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Wey Hom Lau
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Abstract Name: Optical Coherence Tomography-Based Indentation to Measure the Elasticity of Engineered Tissues

Fibroblasts are a type of cell that synthesizes and organizes the extracellular collagen matrix. These cells apply traction and tensile forces that are essential for maintaining the form and material characteristics of the collagen matrix, which in turn impact cell differentiation and functions. The goal of this study is to characterize the changes in mechanical elasticity of the fibroblast-populated collagen matrices (FPCM) during development and treatment and to correlate these changes with corresponding cellular processes. Using a microsphere-based indentation system with optical coherence tomography (OCT) imaging, we measured the regional material properties of the FPCM during development. We found that the stiffness of these engineered tissues increases during development, which is correlated to their increased compaction and contraction mediated by fibroblasts. Our findings suggest a substantial influence of cell type and initial arrangement on morphological and mechanical alterations during tissue development. The results from this project will improve our understanding of the biomechanics and mechanobiology of tissue during developmental, fibrotic, and wound healing processes.

Nicole Lav

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
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#4 Lisa Flanagan

Abstract Name: Rapidly assessing the cellular composition of neural stem and progenitor cell populations using qRT-PCR

Neural stem and progenitor cells (NSPCs) differentiate into neurons, astrocytes, and oligodendrocytes during

embryonic development to form the central nervous system (CNS). NSPC transplantation has therapeutic potential for CNS ailments since CNS tissue poorly regenerates. However, previous NSPC transplantation studies found variable effects in alleviating symptoms, partly due to difficulties in predicting transplanted NSPCs' cell fate. To improve NSPC therapeutic potential, our lab sorted NSPCs to enrich neuron- and astrocyte-biased sub-populations. However, assessing cell fate of the sorted cells was time consuming. In this study, we aimed to develop a reliable qRT-PCR assay to rapidly identify fate-biased NSPCs by their gene expression signatures. We hypothesized that differences in mRNA expression for neuron-, astrocyte-, and oligodendrocyte-biased NSPCs can be detected using qRT-PCR and that specific gene expression combinations will reliably predict the cellular composition of NSPC populations.Primers were designed to assess cell fate based on highly expressed genes found in scRNAseq data. Fate-biased mNSPC samples for analysis were generated by either sorting or isolating NSPCs from different embryonic stages of cortical development or different brain regions. The qRT-PCR data for each cell population was compared to analysis of differentiated cells (neurons, astrocytes, and oligodendrocytes) by immunocytochemistry to identify genes reliably expressed by each progenitor type.I found NeuroD1, Dclk2, and Mgat3 reliably detected neuron-biased progenitors and of these, Mgat3 is a newly identified neuron progenitor marker. For glial progenitors, I found Egfr and Sparcl1 detected astrocyte-biased progenitors and Pdgfra and Pcdh15 identified oligodendrocyte-biased progenitors.A rapid qRT-PCR assay for cell fate will improve the efficiency and efficacy of cell therapeutics by providing a quick assessment of the fate bias of cells for transplantation, making it possible to better tailor the cell type utilized for each neurological condition.

Kiara Laverty

TX - Tarleton State University

Discipline: Social Sciences

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Abstract Name: Obstacles for Senior Citizens Obtaining Basic Needs

Poverty has increased among Americans 65 and older from 8.9% in 2020 to 10.3% in 2021. An average of 13.7% of Texas households experienced food insecurity between 2019 and 2021. Texas is one of many states that experience food insecurity above U.S. average prevalence rates. Most Texas residents live in completely rural counties where resources are not easily accessible. Older adults have reported they have had to face the decision between paying for food, medicine, medical care, utilities, rent or mortgage, transportation, or gas for a car. This research focuses on barriers seniors experience to obtain basic needs in rural communities. The study also focuses on the extent transportation impacts the ability to obtain basic needs. The student researchers thoroughly analyzed 15 peer reviewed journal articles to inform their study to advocate for seniors to more easily obtain basic needs. Within the last year student researchers have also participated in volunteering with their community partner, a local church who provides basic needs to seniors. The student researchers developed an English and a Spanish survey with demographics, close ended and open-ended questions. The student researchers target a sample size of 100 participants. This research generates new knowledge of barriers and helps inform solutions to resolve the issue at hand. The student researchers will distribute a hard copy of the consent form to willing participants during the Thursday weekly food pantry gathering. The results will help student researchers to better advocate and support the needs of seniors in rural communities.

Cory Laverty

CAN - Queen's University

Discipline:

Authors:
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Klodiana Kolomitro

Abstract Name: Student Perspectives on Inclusive Education: A Framework for Teaching and Learning

Inclusive education involves cultivating learning environments where all students feel they belong because they are treated equitably, have equal access to learning, and feel valued and supported in their pursuit of knowledge. Listening to student voices can help educators understand what an inclusive classroom looks like and consider how inclusivity attributes can be addressed within the dynamic of research engagement. In this qualitative research study, students from a graduate course at a Canadian institution were invited to complete a survey and participate in follow-up interviews. Survey data from four open-ended questions (13 students), interview responses (6 students), and information collected from a teaching workshop (12 instructors) comprised the data set. The following three themes were identified as key factors contributing to inclusive education: persona, practice, and partnership. In persona, students named the characteristics and actions of educators that made them feel included. For practice, they emphasized the learning environment, including setting the tone, teaching strategies, learning materials, and assessments as essential in shaping and fostering inclusion. Partnerships were manifested as building relationships amongst students, and between students and the instructor and Teaching Assistant. These findings reveal how persona, practice, and partnership translate into a holistic learning environment centred on becoming, belonging, and well-being as depicted in our inclusive framework. The researching classroom is one approach to supporting student professional and interpersonal development (becoming), working together for a shared goal (belonging), and engaging in a nurturing and caring space that values the individual (well-being).

Rachael Lawler

KS - University of Kansas

Discipline: Humanities

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Abstract Name: Modesty and Modernity: A study on French modest fashion brands

Current scholarship on post-Orientalism and other ways of framing and centering the narratives of Muslim women allows the deeper exploration of how Muslim women navigate the sometimes-conflicting intersections of faith, fashion, and identity, particularly in secularized Western spaces. Moreover, current research on modest fashion and Muslim women within the sector, particularly those living in Western countries, places less of an emphasis on modest fashion designers in comparison to modest fashion bloggers, consumers, and/or models. The primary data of this project will include the official Instagram accounts of three specific modest fashion brands. To analyze the data, this project will utilize a two-pronged approach revolving around a semiotic analysis of the data, followed by the coding of any recurring themes apparent in the data. In doing so, the recurrence of specific concepts (i.e., modernity, ethical consumption, and environmental consciousness) begins to materialize. Overall, this research project will demonstrate how modest fashion brands utilize certain motifs—like modernity, ethical consumption, and environmental consciousness—to market their brands and products to a secularized French society.

Katie Lawrence

AL - Auburn University

Discipline: Health and Human Services

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Abstract Name: Teaching Away Anxiety: The Efficacy of a Short-Term Interactive Anxiety Program on 2nd and 3rd Grader's Mental Health with College-Aged Mentors as a Mediating Factor

Anxiety impacts children of all ages and has increased greatly over the past five years. While interventions are frequently used on a case-by-case basis to assist students in navigating this disorder in school, few studies have addressed anxiety within the collective classroom. Research has indicated the promising impact of school-based intervention methods that help individuals for anxiety, in addition to those with no formal diagnosis.School-based interventions for anxiety in children involve the creation of a comprehensive and inclusive support system that includes counseling services and a nurturing environment to address the specific needs of individual students, as well as the school population at large. The purpose of this cross-sectional study is to address the deficit in anxiety interventions and treatment for clinical and subclinical anxiety for school-aged children at this larger scale.This study uses the COMPASS for Courage curriculum from PBS, which has been validated for children struggling with anxiety. The curriculum dictates a short-term interactive group anxiety education program, which is being implemented in a non-profit afterschool program for 2nd and 3rd grade children for the purposes of this study. Children's anxiety levels, understanding of mental health concepts taught by the program, their perception of their assigned mentor, and their acceptance of the program will all be measured. Additionally, volunteers that are apart of the study will be measured for their evaluation of their assigned students' reception to the material, as well as their active participation in the program.Results generated from this study will provide important information for afterschool programs, anxiety education instructors, mentor-based programs, and general children's anxiety intervention research in the future. Programs such as these have the potential to greatly improve children's mental health across all diagnoses and clinical significance, in school settings of all kinds for children of all ages.

John Layosa

CA - California State University - Fullerton

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Abstract Name: Study on CubeSat Technology for Early Detection and Prevention of Chaparral Ecosystems

This research project focuses on the innovative application of CubeSat technology for the early detection and prevention of wildfires in delicate and fire-prone Chaparral ecosystems. The study recognizes the increasing threat posed by wildfires to these unique ecosystems, which are vital for biodiversity and environmental stability. The primary aim is to explore the feasibility of utilizing CubeSats as a cost-effective, real-time monitoring solution to safeguard Chaparral regions. The research encompasses CubeSat design, remote sensing instrumentation, and data analysis techniques. By harnessing satellite technology, this project seeks to revolutionize our capacity to detect and respond to wildfires in these ecosystems, offering a proactive approach to wildfire management. The study underscores the potential for CubeSats to protect these valuable environments and contribute to global wildfire prevention efforts while also providing a practical educational experience for aspiring aerospace engineers and environmental scientists.

Giovanni Lazare

MA - Bridgewater State University

Discipline: Humanities

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Abstract Name: Escaping the Stigma: How Black Men in America Can Overcome Negative Connotations Towards Mental Health and Emotional Exhaustion

As a young black man, I have personally experienced the impact of mental health challenges in the black male community. Through my documentary film project, I aim to delve into this crucial issue and promote greater awareness and healing. Through personal storytelling and a series of interviews with experts and black men who have gone through emotional stress and are dealing with mental health issues, I hope to shed light on the stigma surrounding black men and mental health. This project is driven by a dual purpose: to create a thought-provoking cinematic experience and to shed light on mental health in the Black Male community. The film blends fiction and non-fiction elements, emphasizing emotional vulnerability and open communication. The authentic narratives will benefit a broader audience, highlighting the urgency of addressing mental health in Black communities where such conversations are lacking. My goal is to shed lights on the stigmas and to create a safe space and encourage other black men to become more introspective and embark on a journey of self-improvement. As the director of this film, I am committed to using my storytelling abilities to challenge the prevailing stereotypes and create a brighter, more hopeful future for the black community.

Tristan Le

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

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Abstract Name: Expression of an Antibody-Antifungal Hybrid Protein with Potential Therapeutic Effects Against Candida Infections.

Candida albicans is a human commensal fungus that can cause superficial infections, but it has also emerged as the fourth leading cause of hospital-acquired bloodstream infections. Hematogenously disseminated candidiasis is life-threatening and associated with an extremely high mortality rate despite treatment with currently available antifungal therapies. Therefore, there is an urgent need to develop novel therapeutics to combat this pathogen. Previously, we have developed human recombinant antibodies against C. albicans that have been shown to be protective in a mouse model of hematogenously disseminated candidiasis. These antibodies promote phagocytosis, but they do not have a direct fungicidal effect. Our current goal is to identify anti-fungal proteins that can be fused with these anti-Candida antibodies as a hybrid protein where the antibody directs the fungicidal protein to C. albicans cells for direct killing. This project aimed to express recombinant chitotriosidase in bacteria. Chitotriosidase is a human chitinase that breaks down chitin in the fungal cell wall and is therefore expected to be fungicidal. The pET expression system was utilized for recombinant protein expression in Escherichia coli. A 6X-HisTagged human chitotriosidase gene (CHIT1) was cloned into the pET28b expression vector. DNA sequencing and restriction digests confirmed correct DNA sequence and proper orientation of the chitotriosidase gene in the pET28b expression vector. SDS-PAGE and western blots probed for human chitotriosidase and 6X-HisTag showed bands consistent with predicted protein size. Cell lysates tested by ELISA were positive for both human chitotriosidase and 6X-HisTag. Taken together, these data suggest the successful expression of recombinant human chitotriosidase in bacteria. Biological assays performed with recombinant chitotriosidase showed an inhibitory effect on C. albicans germ tube formation. The CHIT1 gene was subsequently subcloned into the anti-Candida antibody construct to create an antibody-antifungal hybrid protein that may be used as a potential therapeutic for Candida infections.

James Le

WA - University of Washington Tacoma

Discipline: Engineering and Architecture

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Abstract Name: Design and Implementation of Modular Thermoelectric Generators for Energy Harvesting

The utilization of thermoelectric generators (TEGs) for low-yield power generation has broad and promising applications in environmental monitoring. Harvesting energy from a temperature gradient between a tree's internal temperature and ambient air provides a stable, low-maintenance solution for powering sensors and other low-power electronic devices, without the need to replace batteries in the field. A rod-shaped thermoelectric harvester design using a single TEG has been developed. The rod-shaped harvesters are inserted in pre-drilled holes in the trunk of a tree. The harvester prototype design in this study emphasizes modularity and stacking of multiple stages to allow the harvester to maximize the thermal energy of a wide range of tree trunk diameters, in contrast to past prototypes that use a solid metal rod connected to one external TEG, which limits power output and thermal transfer efficiency. This study documents the design process, manufacturing considerations, final specifications, and experimental power output of a 2 inch diameter prototype unit. The design's idealized output wattage of 36.7 milliwatts is estimated using a numerical model of n and p-type Bi2Te3 using material properties at room temperature (constant property

model) for a given temperature difference. This will be validated with experimental testing of the developed TEG harvester.

Vivian Le

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: More May Not Mean Better: A Senegalese Consortium on Pearl Millet

Senegal is a country whose agricultural system currently relies on traditional, unstable practices and is very sensitive to climate change. The combination of these factors has resulted in very vulnerable crops, which ultimately impacts their availability negatively, leading the country to be food insecure. To address this, research is underway to innovate the agricultural system. Previous studies have analyzed the effects of plant growth-promoting rhizobacteria (PGPR), which have resulted in improved plant growth and yield. Recent investigations extend upon this work, exploring bacterial consortia, and reveal their potential to surpass individual strains in enhancing plant growth. This study focuses on creating a consortium using indigenous bacterial strains from Senegal: Bacillus depressus (NLLB3), Bacillus subtilis (TYB11), Priestia megaterium (MKR2A5) (formerly Bacillus megaterium), and Cellulosimicrobium cellulans (MKLB1). Additionally, a nitrogen-fixing bacteria, Azospirillum lipoferum (B-4469), from the United States Department of Agriculture was incorporated. Although compatibility between the strains was observed, the data revealed no significant enhancement with the consortium in comparison to the negative control and individual strains control. This suggests that the key to an effective consortium may involve factors beyond solely selecting strains with plant growth-promoting properties. This research sheds light on the complexity of bacterial interactions in enhancing crop productivity, emphasizing the need for a nuanced approach in developing effective bacterial consortia for sustainable agriculture in Senegal.

Huynh Anh Nhu Le

CA - Irvine Valley College

Discipline: Social Sciences

Authors:
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Abstract Name: Flicker to Fade: High Schoolers' Perceptions of Self and Fast Fashion

From little black dresses to ballgowns, fashion dancewear is iconic for high school students. Popular fast fashion brands such as ZARA and Shein target teenagers exposed to social media (Tokatli 25) identify these brands “send manufactured clothes to their stores almost immediately” (qtd in Reinach 23), aggressively hyping their products on Instagram and TikTok as the anticipation for these events grow. As students know the risk of duplicate fashion styles at dances, pressure to find cheap and unique styles that stand out rises (Hemphill & Suk 1153). However, due to the yearly pressure to innovate, this encourages students to relegate their garments to their closet, creating space for their next significant dance purchase.I hypothesized that because of the increasing social media pressure, high school students prefer to purchase different dance attires for each dance. To investigate this, I conducted a survey with a random sample of high school students. The survey questioned participants about their grade, gender identity, presence of dance dates, frequency of

dance attendance and dance attire reuse, and motivations for shopping for dance attire to analyze the correlation between social media and the pressures put on high school students to stand out amongst their peers. As a result, we intend to discuss the variations in preferences for high school students' motivation to their dance attire. By researching how fast fashion's characteristics alters high schoolers' mindsets, we can improve students' confidence while encouraging them to reconsider how they approach fast fashion and its highly publicized business model.

Ha Le

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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#2 Pratanu Ghosh

Abstract Name: Addressing ASR Challenges in Concrete through Cutting-Edge High-Performance Concrete (HPC)

The Alkali-Silica Reaction (ASR) presents a significant challenge to the longevity and safety of transportation structures, necessitating considerable financial investment for effective mitigation. This research investigates the pervasive issue of ASR by thoroughly examining material factors influencing concrete structures. ASR, resulting from the interaction of alkalis in cement with silica in aggregates, leads to gel formation, volumetric expansion, and eventual structural failures. Recognizing the limitations of the current assessment model, which often overlooks testing condition variabilities, this study advocates for more extensive research to enhance our understanding of ASR.The research focuses on evaluating various supplementary cementitious materials (SCMs) (such as fly ash, slag, and silica fume) in conjunction with Ordinary Portland Cement (OPC) to identify their efficacy in mitigating ASR. Emphasizing statistical analysis, the study compares the performance of different concrete mixtures (binary and ternary) to OPC under varying testing conditions, addressing the existing limitations in testing methodologies. Additionally, the study explores the overlooked impact of different aggregate types on ASR and aims to develop guidelines for optimal concrete mixtures, considering aggregate types and gradings.The research involves statistical analysis of datasets provided by one of the Federal Highway Administration comprehensive reports, examining parameters like shrinkage strain and compressive strength. It establishes correlations between ASR expansion testing (ASTM C1567) and other tests to identify the factors affecting concrete mixture performance. Varying aggregate reactivity is considered, and controlled environmental conditions are employed to minimize errors.The objectives encompass comparing High-Performance Concrete (HPC) mixtures with OPC, determining optimum blends, offering insights into aggregate effectiveness, and providing practical guidelines for transportation-related projects. The research aims to optimize concrete mixtures for improved performance, durability against ASR problem, and cost savings, thereby contributing to the sustainability of transportation infrastructure.

Matthew Le

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

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Abstract Name: SEX DIFFERENCE IN RECOVERY IN A NOVEL RODENT MODEL FOR PRETERM HYPOXIC-ISCHEMIC ENCEPHALOPATHY

Preterm infants are susceptible to maternal stressors whose subsequent inflammatory response can heavily influence neuronal and motor development over short- and long-term post-natal timescales. Preterm hypoxic-ischemic encephalopathy (pHIE) can occur in utero, yet commonly-used rodent models do not accurately mimic the events occurring in pHIE in the developing brain. Our laboratory has developed a novel rodent model that more accurately represents human HIE. In this model, we induced HIE in preterm neonatal mice by producing an inflammatory response in the maternal rodent using lipopolysaccharides (LPS) injection followed by preterm and post-natal exposure to hypoxia (10% O2). This method incorporates a direct interaction between the maternal inflammatory response and the mouse fetus as opposed to the Rice-Vannucci (RV) model that involves direct insult to the infant mouse brain. Using this model, we assessed differences in pHIE recovery between males and females as is seen clinically. We conducted behavioral tests testing general motor function in preterm mice, by running front- and hind-limb suspension, negative geotaxis, surface righting, and ambulation. We hypothesize that sex differences in recovery from preterm hypoxic-ischemic injury in neonatal mice will be observed, with females showing a more robust recovery in motor function than male littermates. Our results, gathered through behavioral analysis of the preterm mice, show no significant sex bias in female and male neonatal mice using our model. This is in contrast to the commonly used RV model of HIE. Our results suggest an absence of post-injury recovery in response to the pHIE seen in the RV model. Overall, our behavioral data provides evidence that a pHIE model that incorporates both maternal and neonatal factors more accurately mimics the melange of effects seen in human HIE, further highlighting the importance of involving the maternal inflammatory response in pHIE studies.

Vu-Anh Le

WI - Beloit College

Discipline: Natural and Physical Sciences

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Abstract Name: Life Cycle Assessment of Biodegradable Plastics Packaging Subject to Comprehensive Organic Sorting

Organic waste rotting into methane in landfills causes approximately 14% of methane emissions in the United States, and a significant portion of the world's energy is used to generate plastic packaging. A holistic solution for reducing energy in packaging and organic waste could have significant environmental benefits. This paper presents a potential solution called "The Big Green Loop" (BGL), in which high-performance organic packaging is generated from organic waste diverted from landfills. This value chain is enabled by recent advances in organic waste valorization and a high-value packaging technology developed by a startup,

Corumat, Inc. This new packaging technology enables high-performance packaging to be made from as little as one-third of the material of competitive technologies, and prototypes have been made from organic waste diverted from landfills. The paper systematically analyses each step in the BGL process value chain and calculates the impacts based on various scenarios and scopes. Calculations estimate that sourcing organic waste diverted from landfills, displacing traditional packaging with reduced amounts of environmentally friendly material, and enabling the diversion of additional organic material through superior value chain economics could reduce greenhouse gas emissions and may also have other positive environmental effects.

Vu-Anh Le

WI - Beloit College

Discipline: Natural and Physical Sciences

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Abstract Name: Monitoring Subsidence Trends of Underground Water Exploitation Areas in Vietnam Using DInSAR Technique

Land subsidence is an escalating concern in Vietnam, particularly in urban centers like Ho Chi Minh City, Hanoi, and the Mekong Delta region. A 2019 report by the Copernicus EMS program highlights trends in ground subsidence, using InSAR technology. Subsidence rates vary spatially and in intensity, with hotspots in certain areas. Techniques like deep boreholes and traditional methods are employed to monitor subsidence in the Mekong Delta region. The project aims to delineate, assess, and monitor subsidence using InSAR technology in key regions. Results indicate diverse subsidence patterns from 2007 to 2010, with varying levels across different provinces. Notably, certain regions experience higher subsidence funnel centers. However, while the SBAS-INSAR technique ensures accurate monitoring, natural and human-induced factors must be considered during data acquisition, affecting actual subsidence rates. Despite challenges, this technique offers reliable insights into the complex phenomenon.

Sophia Lebakken

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

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Abstract Name: Exploring the Effects of Antidepressants on the Human Microbiome

IntroductionThe gut-brain axis (GBA) involves bidirectional communication between the gastrointestinal tract and brain, which contains many species of bacteria that play an important role in this communication. Major depressive disorder is often treated with antidepressant medications (ADMs) that pass through the gastrointestinal tract; however, the possible adverse effects of ADMs on the gut microbiome are not well characterized.MethodsThis project investigates the impact of three selective serotonin reuptake inhibitors, sertraline, fluoxetine, citalopram; one norepinephrine and dopamine reuptake inhibitor, bupropion; and one

tetracyclic antidepressant, mirtazapine, on the growth of seven species of gut bacteria, Bacteroides fragilis, Bifidobacterium longum, Bacteroides uniformis, Collinsella aerofaciens, Prevotella copri, Escherichia coli, Akkermansia muciniphila, and Lactobacillus plantarum. Bacteria were treated with various concentrations of each ADM to determine potential impact on growth. We calculated the concentration of drug needed to inhibit growth by 50% (IC50) using spectrophotometry.ResultsSeveral ADMs inhibited gut bacterial growth. At 50% bacterial growth inhibition, the most prominent was sertraline (28.742 μM), followed by bupropion (43.976 μM), then fluoxetine (76.449 μM). Citalopram (244.738 μM) and mirtazapine (294.316 μM) exhibited far less inhibition. DiscussionThese findings suggest ADMs have antibiotic effects that disturb the microbiome resulting in potential consequences for microbiota-GBA interactions. Building on these results, future experimentation will measure uptake and metabolism of ADMs by exposing bacteria to each drug longitudinally. Metabolites will be characterized using liquid chromatography-mass spectrometry.ConclusionGiven the profound impact of the gut microbiome on the gut-brain axis, these data provide novel insights into potential mechanisms by which ADMs could have unintended consequences on the gut that may perpetuate, instead of treat, mood disorders thus the microbiome should be further investigated in relation to ADMs.

Miles LeBlanc

AZ - Northern Arizona University

Discipline: Business and Entrepreneurship

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Abstract Name: Impact of NIL Deal Announcements on Issuing Company Stock Prices: An Event Study

This research examines the impact of the announcement of Name, Image, and Likeness (NIL) deals with college athletes on the stock prices of partnership companies. As the sports industry undergoes significant changes with the allowance of NIL compensation for college athletes, this study seeks to shed light on the financial implications for businesses involved in such agreements. The research employs an event study methodology, leveraging data aggregated from various news and sports announcements related to NIL deals. By analyzing stock price movements surrounding these announcements, we aim to identify trends and patterns in the market response. Preliminary findings indicate that NIL deals, particularly those involving high-profile athletes, have a discernible influence on the stock prices of issuing companies. This suggests that investors and market participants are reacting to the potential marketability and revenue impact associated with these agreements. As the sports landscape continues to evolve in the era of NIL compensation, this research provides valuable insights for investors, analysts, and stakeholders interested in understanding the financial dynamics at play in this emerging market.

Diogo Ledesma

TX - St. Edward's University

Discipline: Natural and Physical Sciences

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Abstract Name: Adhesion of Metal-Complex Particle Free Inks Using Low Temperature Cures on Polymetric Substrates

Metal-complex particle free conductive inks are a new class of conductive inks with applications in printed circuits, displays, and wearables. These particle free inks hold an advantage over the current generation nanoparticle inks since they can achieve conductivities as high as 90% of bulk silver with annealing temperatures as low as 40 C. In this study, the adhesion and resistivity of a screen printable metal complex ink was investigated based on the surface chemistry of the substrate used during printing. A 1.5-micron layer of silver was deposited and cured at temperatures as low as 60 C. Using ASTM Tape test, profilometer, and multimeter, the resistivity and adhesion of the particle free ink on each type of substrate was analyzed. The type of substrate printed on was found to largely affect adhesion and resistivity of the ink with certain polymetric substrates showing a resistivity of 20 uohm-cm with adhesion at 60 C. This study offers an insight regarding which substrates offer the best adhesion and lowest resistivity values when printing conductive inks. Further studies are needed to evaluate the long-term adhesion and resistance values of the ink prints.

Diogo Ledesma

TX - St. Edward's University

Discipline: Natural and Physical Sciences

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Abstract Name: Fluorescent Probes for Detection and Quantification of Heavy Metals in Disposable Vaping Products

The United States has witnessed a troubling surge in the consumption of disposable vaping products, which currently lack adequate regulation by the FDA compared to traditional tobacco products. This rise in popularity has raised concerns due to potential health risks associated with heavy metal contamination. The accumulation of heavy metals in vital organs has been linked to various carcinogenic and toxicological effects. A study was conducted to observe how different fluorescent probes including riboflavin, fluorescein, and sulforhodamine 101 react in the presence of heavy metals such as lead, cadmium, tin, and nickel. Employing a Cary-Eclipse fluorometer, changes in fluorescence for each metal-dye interaction were observed. The Stern-Volmer equation was then applied to calculate the quantum yield of each dye and assessed how it changed in the presence of the metal quenchers. This provided insights into each fluorescent molecules' responsiveness to each heavy metal. These fluorescent probes have the potential to play a crucial role in evaluating the presence of heavy metals in vaping devices and a wide range of other consumer products. This could enable informed decisions and regulatory actions to safeguard public health in the future.

Rachel Ledford

FL - University of West Florida

Discipline: Education

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Abstract Name: Implementing a Lesson Plan to Analyze Sand Dunes

Sand dunes provide essential ecosystem services to coastal areas such as protection during storm surges and increased biodiversity. As such, for students living in coastal areas, education on sand dunes should not start only in college but as early as middle or high school. In 2021, an Environmental Science Teaching major and a Math Teaching major developed a lesson plan on analyzing sand dunes using Pythagorean theorem and estimating vegetation percentages under the guidance of Dr. Phillip Schmutz and in partnership with a high school science teacher Ms Hailee Hawkins. This lesson plan however had not been implemented with students to test its practicality or its efficacy.In the summer of 2023, Environmental Science Teaching major Mikala DuBose and Math Teaching major Rachel Ledford, revised and implemented the lesson plan with a partnered high school math department. They were able to take students into the field at Pensacola Beach and collect data on sand dunes. Students conducted a land survey of the sand dune allowing them the opportunity to use equipment in the field and observe the sand dunes height and vegetation percentages. Through this process, the STEM teaching majors were able to identify the strengths and weaknesses of the lesson and learn how to translate scientific research into classroom instruction. Using the overview from the previous Noyce Scholars and the field experience, they were able to construct three detailed lesson plans with malleable standards and instructions for teachers to use for their own classroom lessons, particularly for science or math.

Heekyung Lee

CA - California State University - San Bernardino

Discipline:

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#1 Heekyung Lee

Abstract Name: Jack of All Trades Becomes a Master of One in Higher Education - Personal Reflection

As of 2021, 15.44 million individuals are enrolled in some types of postsecondary education setting in the U.S. Among them, 56% of them are first generation college students and they tend to have various issues which prevent them from having smooth academic success compared to their counterparts. Specifically, first generation college students commonly present including, but not limited to, larger amounts of educational debt, lower graduation rates, limited campus engagement, and little use of formal campus resources. As an educator in higher education, engaging in diversity, equity, and inclusion should be the first concern to practice true stewardship. To better serve students, especially for first generation college students, stimulating their academic curiosity and bringing the outcomes of their efforts can strengthen their commitment in education. These can be handily achieved by engaging them in faculty's research projects. As a junior faculty, I have closely worked with first generation college students for one of my research projects, emotion regulation for ethnic minority young adults. Students took an initiative role in this particular research project considering their personal experience and expertise. Individual interviews were conducted via Zoom to reconnect and understand the impact of research collaboration with them. To that end, the majority of students who engaged in the research project pursued additional education such as double majoring and graduate studies. Detailed research project progress and specific student outcomes will be further discussed.

Taleaha Lee

OK - University of Central Oklahoma

Discipline: Social Sciences

Authors:
#1 Taleaha Lee

Abstract Name: Stories for the Road: Trauma & Internal Dialogue

My creative research project explores how telling trauma stories through poetry can heal an individual and a group/community. I have worked extensively to create a submission based publication titled Stories for the Road centered on trauma and narrative. Previous research has shown that "Poetry writing is a process of using the whole self in the writing process as a way to understand our lived social worlds and articulate them (Bolton, 1999)." Writing can also "produce short-term increases in physiological arousal and long-term decreases in health problems." Trauma stories are distressing experiences from an individual's past or present that have an emotional or psychological effect on their lives. Individuals who have experienced trauma often have recurring memories that appear daily, unconsciously, or consciously. My project aims to identify ways a person's trauma impacts their intrapersonal communication, and its influence on their attachment and communication styles. My proposed presentation will discuss the ways that writing can be beneficial to healing and how it can help individuals integrate the trauma they've experienced into their stories. For my research, I have explored the psychology of narrative and storytelling with the intersections of trauma. This topic is important because it stems from the notion that generational trauma and childhood trauma curate changes in the way the response system works. The goal is to offer insight into the private and personal expression of trauma through this presentation and give insight to how creative writing can help in the healing journey. I would also like to showcase the first edition of Stories for the Road and briefly explain the impact it has made on individuals within my community.

Kara Lee

GBR - Cambridge Centre for International Research

Discipline: Natural and Physical Sciences

Authors:
#1 Kara Lee

Abstract Name: In Silico Multi-Objective Optimization of Palladium-Catalyzed Reactions

Palladium-catalyzed reactions are widely used for both industrial and academic purposes. Their wide range of tolerated functional groups and often exceptional chemo- and regioselectivity allow for the safe, quick, and efficient synthesis of many organic molecules. Notably, the Suzuki and Buchwald-Hartwig reactions are among the most important and useful of these reactions, especially from a pharmaceutical synthesis perspective. These reactions are at the forefront of medicinal chemistry and drug development: Suzuki reactions are involved in the synthesis of drugs like clonazepam, lapatinib, and losartan, making it a valuable reaction in the pharmaceutical industry. Likewise, the Buchwald-Hartwig reaction is a helpful tool for the coupling of heteroaryl chlorides and bromides to NH2 groups in C-amino-1,2,4-triazoles, used in the anticancer drug Bemcentinib and antidepressant JNJ-39393406.Despite their utility, Palladium-catalyzed reactions are costly to run, making reaction optimization through simulation valuable for conserving resources. One way that simulation can be achieved is with kinetic models. Kinetic models use chemical relationships to build a physical model that can extrapolate data, allowing scientists to predict the outputs of chemical reactions.In my research, I propose a method of reaction simulation and optimization using kinetic modeling and the coding language MATLAB. First, I simulate two Suzuki-Miyaura coupling reactions for proof of concept of my simulation method. Then, I use my method of simulation to multi-objective optimize the Palladium-catalyzed Buchwald-Hartwig amination of 4-methylaniline and 4-iodoanisole by predicting the

outputs of reactions run in varying bases, solution, catalyst loadings, reaction times, and initial 4-methylaniline concentrations. To overcome the difficulties of having multiple “optimal points,” I quantify the trade-offs between price and productivity using a Pareto front. Thus, I propose a simulation and optimization technique that allows for the efficient optimization of pharmaceutically important reactions, which would be otherwise difficult in a real laboratory environment.

Jungmin Lee

MA - Tufts University

Discipline: Social Sciences

Authors:
#1 Jungmin Lee
#2 Jada Copeland
#3 Jessica Remedios

Abstract Name: The Impact of Pro-Diversity Social Media Messages on Women of Color

Many organizations employ recruitment strategies (e.g., promotional materials showcasing racial and gender demographics, diversity statements on brochures, recruitment events targeting underrepresented groups) to attract prospective applicants from diverse backgrounds. Particularly, social media has emerged as a significant tool in the hiring process to exhibit such recruitment materials. In this present work, we examine an often-overlooked downside of this recruitment strategy, diversity dishonesty – belief that an organization inaccurately portrays its actual diversity – during social media recruitment. We seek to examine how conflicting signals in social media messages about an organization’s diversity impact the perception of women of color.Our survey experiment involves a participant pool ranging from 77 to 127 undergraduate students who identify as women and racial minorities. The experiment aims to examine the effects of DEI-focused or neutral social media messages coupled with exposure to layoff statistics targeting racial minority women. Our investigation centers on participants’ sense of belonging, comprehension of diversity dishonesty, and attraction to the organization. We hypothesize that participants exposed to pro-diversity social media content with layoff exposure will report a lower sense of belonging, identify the dishonest information, and perceive the organization as less attractive, compared to those who only saw the social media post. This study attempts to address the discrepant findings in the literature regarding diversity dishonesty within the context of social media recruitment strategies. Moreover, the findings may help to guide diversity recruitment efforts to accurately represent workplace cultures for women of color working in male-dominated industries and further promote genuinely inclusive environments for marginalized groups. As such, the study will have broader implications for the use of social media messaging which focuses on diversity that may inaccurately portray racial and gender inequalities in the workplace.

Cameron Lee

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

Authors:
#1 Cameron Lee
#2 Inga Wang

Abstract Name: Grip Strength Decline and Its Determinants Across the Lifespan: Insights from the National Health and Nutrition Examination Survey (NHANES) 2011-2014 Data

Grip strength has become a potential indicator of overall health and biomarker for aging. By evaluating the variations in grip strength with focus on the entire lifespan, this could lead to valuable insights into population health. The purpose of this research is to investigate the dynamic variations in grip strength throughout the lifespan, expressed in rates of change measured in kilograms per year and percentage per year, while also identifying the determinants influencing these trends. Additionally, data from the grip strength portion of the National Health and Nutrition Examination Survey (NHANES) from 2011-2014 was used. The cleaned data sample included approximately 13,700 people aged 6-80 years old. The grip strength of the dominant hand was assessed using a Takei Digital handgrip dynamometer, with the best values determined from three trials. The 'Y2-Y1 rate of change' (in kg/year) represented the difference in grip strength between consecutive observations. Preliminary results show that male grip strength increased from 2.00 to 3.58 kg/year in ages 6-19, showed a slight increase in early adulthood (0.25 to 0.71 kg/year at ages 20 to 34), and gradually declined post 35 (-0.08 to –1.11 kg/year in ages 35 to 75+). Similarly, in females, grip strength increased from 2.00 to 2.32 kg/year in ages 6 to 15, slightly rose in early adulthood (0.09 to 0.68 kg/year at ages 16 to 34), and gradually declined after age 35 (-0.06 to -1.15 kg/year in ages 35 to 80+). This study illuminates the evolving patterns of grip strength across the lifespan, contributing valuable insights into grip strength as a potential biomarker of aging.

Tina Lee

WI - University of Wisconsin-Stout

Discipline:

Authors:
#1 Tina Lee
#2 Arthur Kneeland
Arthur Kneeland

Abstract Name: Creating and Directing Successful Interdisciplinary Research Experiences for Undergraduate Students: Lessons from the NSF-funded LAKES REU

Many of the most significant problems we face in our society and around the world are "wicked" problems that require complex, interdisciplinary thinking. Preparing students to research and tackle these problems is often challenging, especially for faculty who might not be accustomed to working across disciplines. In this presentation, we discuss our experiences from the NSF-funded Linking Applied Knowledge in Environmental Sustainability Research Experience for Undergraduates (LAKES REU), a summer research experience that has been in existence since 2014 at the University of Wisconsin-Stout (a regional polytechnic) which trains students to research watershed pollution and its mitigation in rural Western Wisconsin. This program has trained 8 cohorts so far (almost 100 students) and has included an interdisciplinary team of mentors including faculty from anthropology, biology, economics, engineering, geography, geology, mathematics, political science, psychology, and sociology. The program provides students with a big picture view of the issue as well as concrete methods training. After providing an overview of the program, we share lessons learned including the need to build relationships, to listen deeply, and to create experiences that allow students to work across projects. Tips for organizing and funding such a program and working with community partners, as well as pitfalls to avoid, will also be shared.

Kristin Lee

OH - Case Western Reserve University

Discipline: Health and Human Services

Authors:
#1 Erin Cohn
#2 Sara Yacoub
#3 Paul Tesar

Abstract Name: Organophosphate Flame Retardant Compounds Arrest Oligodendrocyte Maturation

In contemporary societies, humans are routinely exposed to an immense variety of chemicals through their daily interactions with the environment. Toxicity assessments conducted by the Environmental Protection Agency utilize a standard approach to evaluate the safety of chemicals in terms of their toxicological impacts on the human body. However, most of these studies are typically conducted at a macro-level, failing to adequately account for the intricate effects that chemicals can have on individual cell types. Oligodendrocytes are a class of glial cells that play a critical role in neural transmission, are responsible for myelination and provide metabolic support for neurons in the central nervous system. The development of oligodendrocyte progenitor cells is impressionable during critical periods of development that occur in childhood. Dysfunction of oligodendrocytes is associated with the development of severe neurodegenerative and neurodevelopmental diseases such as Multiple Sclerosis and pelizaeus-Merzbacher disease.We have undertaken an extensive toxicity screen of oligodendrocytes, consisting of 1823 chemical compounds, aimed at identifying those that are cytotoxic versus non-toxic to oligodendrocytes. Along with data from an EPA database, we found that 49 of the 292 chemicals identified as cytotoxic were specifically cytotoxic to oligodendrocytes. Dose-response experiments on these 49 chemicals led to the identification of a class of organophosphate flame retardants, which were shown to arrest oligodendrocyte maturation, as the number of O1 positive cells were reduced compared to the primary screen. Human exposure is likely, given that these compounds are commonly used in textiles, electronics, and furniture. Daily oral gavage of mice models starting from postnatal day five to postnatal day fourteen revealed the flame retardants are able to cross the blood brain barrier at concentrations as low as 10 mg/kg per day, depleting oligodendrocytes in the hippocampus and cerebellum. Inhibition of maturation was also seen in human cortical organoids.

Joyce Lee

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Joyce Lee

Abstract Name: Characterizing how chronic unpredictable stress promotes habit formation

The brain uses two strategies to control our behavior: goal-directed actions and habits. Goal-directed behavior relies on prospective consideration of potential actions and their consequences. Thus, they are more flexible but require more cognitive energy. Habits are more efficient, but, since they are executed without consideration of their consequences, are also more inflexible. A balance between goal-directed and habitual behavior ensures adaptive and efficient decision making. Our lab and others have found that chronic stress promotes premature habit formation in rodents. However, the strength and persistence of these stress-induced habits is unknown. Given that overreliance on habits can contribute to the types of compulsive behavior that can characterize substance use disorders, obsessive-compulsive disorders, and anxiety, characterizing stress-induced habits and their neurobiological mechanisms is critical to understanding these conditions and improving future treatment approaches.We have developed a mouse model for premature habit formation whereby subjects are exposed to two weeks of chronic unpredictable stress (CUS), followed by instrumental reward-seeking training and sensory-specific outcome devaluation to test sensitivity to changes in outcome value. Habits are marked by their insensitivity to devaluation. CUS mice display habits early in training when control subjects maintain goal-directed behavior. We will now evaluate how long the effects of CUS persist to

begin determining boundaries for CUS's effect on habits. To test this, we will first incorporate a month-long delay period between CUS exposure and training/testing. We expect that stress-induced habits will be robust to this delay, and as such, expect that stressed subjects will also prematurely develop habits even when trained and tested one month post- CUS. The information from this research will lay the foundation for future studies to understand the neural circuit mechanisms that allow stress to promote premature habit formation.

Jason Lee

TX - University of the Incarnate Word

Discipline: Natural and Physical Sciences

Authors:
#1 Cord Carter
#2 Jason Lee
#3 Paulo Carvalho

Abstract Name: A simplified and scalable synthesis of 7β-hydroxyartemisinin

The goal of this study is to prepare stronger antimalarial drugs derived from the natural product artemisinin. Malaria is still a serious threat to a significant percentage of the world's population, especially those living in the most impoverished countries. Despite being considered eradicated in the US for more than 6 decades, recent cases of locally transmitted malaria in Florida and Texas, creating concern that this disease may once again become endemic in our country.In our efforts to enhance the activity of artemisinin, our laboratory investigates the remote C-H activation of its carbon number 7 (C-7), inherently difficult to activate without affecting the endoperoxide bridge, indispensable for biological activity. We currently obtain 7β-hydroxyartemisinin through the metabolic biotransformation of artemisinin by the fungus Cunninghamella elegans. Using this starting material, we developed a series of novel C7 artemisinin analogues, with some of them displaying antimalarial activity ten times stronger than classical artemisinin-based antimalarial drugs, such as artemether and artesunate.Though these results are promising, access to the starting material is limited by scale-up difficulties and slow production of the microbial metabolite by biotransformation. To overcome these challenges, we have developed an efficient and economically viable approach for the large-scale conversion of artemisinin into 7β-hydroxyartemisinin and 7β-hydroxyartemether. This advanced synthesis includes a TBADT-catalyzed photochemical oxidation, followed by the Corey-Bakshi-Shibata reduction. In sharing our results, we report a facile and scalable synthetic route for the preparation of 7β-hydroxyartemisinin and 7β-hydroxyartemether from artemisinin in high yields.

Olivia Lee

MI - University of Michigan - Ann Arbor

Discipline: Social Sciences

Authors:
#1 Olivia Lee
#2 Olivia Callahan
#3 Julio Canino-Rodriguez

Abstract Name: Fostering Belonging: Social Support Networks' Impact on the Sense of Belonging of Racial Minority Students in STEM

Racial minority groups continue to be underrepresented in STEM fields in higher education and report a

lower sense of belonging on campuses. Initiatives like NSF's Michigan Louis Stokes Alliances for Minority Participation (MI-LSAMP) address this underrepresentation, participation, and retention of minority students in STEM fields at various Michigan colleges. Using the Bowman Strengths-Based Model, the MI-LSAMP research program's purpose is to understand multilevel strengths that can help underrepresented students succeed in college. As part of the research program, this study focuses on the impact of students' social support networks (SSNs) on their sense of belonging. A semi-structured interview protocol containing questions related to student challenges, sense of belonging, and connections students have on campus was developed. Seven MI-LSAMP students who began participating prior to fall 2023 were interviewed. The research team took preliminary steps, such as memoing ad verbatim transcripts, before using Dedoose software to test intercoder agreement. Two team members then coded the transcripts for sense of belonging and SSNs. Themes emerged after discussions of how a student's sense of belonging is influenced by their social support networks and the implications for educational practice and policy. We found that students' support networks include faculty, staff, family, friends, peers who share social identities, programs like MI-LSAMP, and social clubs, and that these networks increased students' sense of belonging while attending college. Nonetheless, students also mentioned a lack of sense of belonging due to imposter syndrome, coursework difficulty, discordant relationships with professors, and a desire for more representation of their social identities on campus. These relationships between student sense of belonging and their SSNs can inform programs like MI-LSAMP and aid the development of strategies to increase campus connectedness. Further research will include a larger sample size and additional codes to better understand the experiences of minority students in STEM.

Shannon Legge

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
#1 Shannon Legge
#2 Samuel Knebel
#3 Anchal Singh
#4 Michael Beck

Abstract Name: Optimization of Human Carboxylesterase Activity Assays to Enable Personalized Medicine

Human carboxylesterases (CESs) are serine hydrolases that play a key role in the metabolism of different medications that contain ester, amides, thioester, carbonate, or carbamate functional groups. These moieties can be found in a variety of small molecule pharmaceuticals that are commonly prescribed, such as oseltamivir (Tamiflu), meperidine (Demerol), and temocapril (Acecol). CES activity levels among individuals has been known to be impacted by a variety of biological and environmental factors. In addition to drug-to-drug interactions (DDIs), CES activity is known to be influenced by alternative RNA splicing and single nucleotide polymorphisms (SNPs) which can result in alteration of the protein sequence of CESs. Despite the established influence of these factors on human drug metabolism, the activity of CES sequence variations are poorly studied. We hypothesize that this is due to the high cost and time-consuming nature of the current state of the art methods used to study their activity. To address this, we have previously developed a fluorescence microscopy-based approach using a CES1-specific fluorogenic chemical tool, FCP-1, that can be used to monitor the activity of overexpressed CES1 isoforms in live cells. Here, we present our work to optimize these assays to enable rapid annotation of the activity of known CES1 sequence variants. Improvements in the ability to study CES sequence variant activity will result in better treatments with CES substrate drugs by enabling the implementation of personalized medicine approaches to address interindividual drug metabolism variations.

Nathan Lehman

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Nathan Lehman
#2 Ivon De Silva
#3 Jun Zhang

Abstract Name: The Exploration of G-Quadruplex Binding Mechanisms of SRSF1 Expands its RNA Binding Capability Beyond the Norm

Serine-Arginine rich Splicing Factor 1 (SRSF1) is a prototypical SR protein that has been well characterized as a single-standard RNA (ssRNA) binding protein. The RNA Binding Domain (RBD) of SRSF1 consists of a disordered N terminal region followed by two tandem RNA Recognition Motifs (RRMs) known as RRM1 and RRM2 tethered by a flexible linker. The RBD governs the RNA binding specificity of SRSF1. Like other SR proteins, SRSF1 carries an intrinsically disordered C-terminal region called RS tail containing several Serine-Arginine dipeptides repeats which have been predicted to interact with RNA non-specifically. SRSF1's interactions with a tumor-related RNA G-quadruplex (RNA GQ) called ARPC2 have been poorly characterized. We investigate how the structure of SRSF1 facilitates such a non-canonical mode of RNA binding and its effect on the GQ structure. For the first time, by employing fluorescence Polarization (FP) assays, we find that SRSF1 requires both the RBD and RS tail to achieve tight binding to the RNA-GQ which has the consensus sequences of both RRMs. Further, our binding studies on the RBD mutants suggest that the RBD shares similar binding sites between ssRNA and the ARPC2 GQ. Moreover, our Circular Dichroism (CD) data implicates the RBD's potential to partially disrupt the RNA GQ. However, our Fluorescence Resonance Energy Transfer (FRET) data reveal that the RS tail is the main contributor to the ARPC2 RNA-GQ destabilization driven by SRSF1. Our FP and FRET data suggest that the Arginine residues of the RS tail govern the GQ unfolding activity of the RS tail. In the future, we will investigate whether SRSF1 regulates the ARPC2 GQ's inhibitory activity of translation using dual Luciferase assays. This study sheds light on how SRSF1 mediates multiple biological processes by simultaneously distinguishing between different nucleic acid structures and maintaining a broad RNA specificity.

Abigail Leisure

VA - Liberty University

Discipline: Humanities

Authors:
#1 Abigail Leisure

Abstract Name: Charlotte Hawkins Brown Museum: A Case Study in Public History

This paper examines the development of the Charlotte Hawkins Brown Museum in Sedalia, North Carolina, with regard to historic preservation, community engagement, and museum operations from 1985 to 1999. This historic site was the first established in the state to honor an African American woman. From 1902 to 1971, the Palmer Memorial Institute operated as a private boarding school for African American students and established itself as an exceptional provider of liberal-arts education. The school was led for fifty-one years by its founder, Dr. Charlotte Hawkins Brown. She was an accomplished speaker, teacher, writer, and activist, who believed that education was essential to individual success during a time when racial division rampaged the South. To commemorate Dr. Brown's legacy, the state of North Carolina opened the Charlotte Hawkins Brown Museum in November 1987, having purchased the property two years prior. From 1985 to 1994, the North Carolina Department of Historic Sites and Properties took measures toward the preservation of the

forty-acre complex. The state hired a team of historic specialists to complete a nomination form for placement of the site on the National Register of Historic Places. This research, compiled in 1987 and 1988, is the main record of the site's geographical data, property classification, structural inventory, and historic significances. Despite the publication of an ambitious ten-year master site plan in 1988, most decidedly imperative action for the site was delayed. This study examines government documents, letters, educational programming, financial information, and operations reports to evaluate the progress of the museum from 1985 to 1999. From the assembled knowledge, this paper aims to support the continued mission of the Charlotte Hawkins Brown Museum and to enlighten the public on the necessity of this historic place that upholds foundational twentieth-century African American history, women's history, and social history.

Christopher Leiter

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Christopher Leiter
#2 Lynetta Mier

Abstract Name: Quenching Potential of Aqueous Solutions on Lumazine's Interaction with DNA Base Pairs using Fluorescence Anisotropy Spectroscopy

Lumazine is a molecule that exhibits properties of a photodynamic therapy drug (PTD), which works by activating through UV light, killing cancerous cells. Two pathways are possible for lumazine; Type I cell death involves the process of excited state electron transfer from lumazine to DNA and Type II cell death is due to the excited state energy transfer of lumazine to oxygen generating a reactive singlet oxygen. However, this exact pathway is unknown. The Type I process is dependent upon the electronic structure of lumazine and the nucleotide. If the excited state electron transfer occurs from the singlet state, this reaction must occur within the lifetime of lumazine's excited state, typically less than 1 nanosecond (ns). Excited state spectroscopy of lumazine indicates that its excited state has a lifetime longer than 2 ns. This suggests that the lumazine in its excited state can occupy the triplet state. If lumazine occupies the triplet state when excited, then the Type I process of the excited-state electron transfer could occur from the triplet state of lumazine to the triplet state of the nucleotide. To test this Type I pathway, the singlet-singlet excited state electron transfer will be shut down, allowing both singlet-singlet and triplet-triplet electron transfer or only triplet-triplet electron transfer to occur, creating a more efficient process of cell death. This will be achieved by monitoring the intensity of the fluorescence of lumazine as the concentration of heavy ions (KI) are increase within a lumazine and nucleotides solution.

Araya Lemma

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Araya Lemma

Abstract Name: Data Privacy and Security In Autonomous Vehicles

The advent of autonomous vehicles represents an exciting innovation but also raises critical concerns around data privacy and security that must be addressed. As self-driving cars rely on vast amounts of data collection

and transmission to function, from maps to sensor data to V2V and V2I communications, it opens the door to risks like tracking of location and passenger profiling, hacking of vehicles and networks, and unauthorized data access. This study examines technical and policy approaches to safeguard privacy and security in the autonomous vehicle ecosystem. On the technical side, solutions like anonymization and encryption of data, intrusion detection systems, and blockchain/distributed ledger technologies show promise. Equally important are policy and regulatory actions by both public and private sector stakeholders. Companies developing autonomous vehicles must make data ethics a priority, while governments need to provide strong legal protections around data use. Ultimately, a balanced framework is needed - one that allows the benefits of data sharing for autonomous vehicle integration but has safeguards to prevent misuse and abuse. If designed and implemented judiciously, data can drive innovation in the autonomous vehicle space while preserving core values of privacy and security. The paper aims to promote an informed and nuanced dialogue on this critical challenge.

Katelyn Lenahan

TX - Tarrant County College

Discipline: Natural and Physical Sciences

Authors:
#1 Katelyn Lenahan
#2 Francis La
#3 David Jeffery
#4 Paul Luyster
Francis La

Abstract Name: The Effects of Higher CO2 Environments on the Growth of Brassica rapa

Atmospheric CO2 concentrations are currently increasing exponentially and are expected to double by the end of the century. Research has found elevated CO2 levels to change plant growth patterns and physiology, but the effects of elevated atmospheric CO2 concentrations on the model organism Brassica rapa have not been thoroughly studied. To investigate these effects, seventy-two Brassica rapa plants were grown in two nearly identical greenhouses, with the control group in a greenhouse containing ambient atmospheric CO2, 400 to 600 PPM, and the experimental group in another greenhouse containing levels projected for the end of the century, 900 to 1100 PPM. The plants were measured after a 19-day growth period. The results suggested that Brassica rapa plants grown under elevated CO2 concentrations do not experience increased plant heights, root lengths, or number of leaves. Moreover, the experimental Brassica rapa did not gain a higher overall dry mass and instead had a decreased leaf mass and increased root mass compared to the shoots. Essentially, Brassica rapa seemed to allocate less mass to its leaves and more mass toward its roots. This could be attributed to increased photosynthetic rates and stomatal conductance. Finally, the experimental Brassica rapa plants experienced a higher average growth rate than that of the control plants. This could indicate that although higher CO2 doesn't significantly increase final plant height, it could speed up the growth rate of Brassica rapa due to photosynthetic acclimation. In summary, this work developed a system to test Brassica rapa's physical responses to CO2 enrichment and identified areas for improvement for future experiments. Because of Brassica rapa's role as a model organism, an understanding of its responses to elevated CO2 could help researchers better understand the effects of climate change on plants.

Abby Lentz

WI - University of Wisconsin-Parkside

Discipline: Natural and Physical Sciences

Authors:
#1 Abby Lentz
#2 Natalie Meyer
#3 Nicholas Winter
#4 Hannah Palmen
#5 Hailey Fee
#6 Jessica Orlofske

Abstract Name: Monitoring Bumblebee Populations on UW-Parkside's Campus

Purpose Bumblebees (Bombus) are effective pollinators and contribute to healthy ecosystems. In Wisconsin, UW-Parkside falls within the known range of the federally endangered Rusty-Patched Bumblebee (Bombus affinis), along with nineteen other native bumblebee species. Following a pilot season in 2022, surveys continued in 2023 to monitor resident bumblebee populations on UW-Parkside's campus and establish a long-term dataset to understand the dynamics of pollinator activity among managed areas on campus. In response to expanded habitat restoration efforts following the initial field season, another restoration phase (phase 5) was included in the monitoring process, along with an unmanaged control phase (phase 0) to provide comparisons among phases. Thus, individual bumblebees (Bombus) were located and identified in six distinct phases (phase 0: control, phases 1 and 2: completed restoration, phase 3: current restoration, phases 4 and 5: pre-restoration). Methods and Materials Within each restoration phase, weekly, one-hour surveys were conducted under appropriate conditions between 23 May and 1 October 2023. Sites comprised a 15m radius and were sampled for Bombus activity. During surveys, information regarding location, weather, and topography was recorded and specimens were tallied and photographed for later identification. Results Across 70 surveys in 2023, 834 bumblebees were recorded on UW-Parkside's campus including several B. affinis. In comparison to the previous field season, 20 more surveys were completed, and 635 more bumblebees were observed. This greater sampling effort will help to track trends in phase occupancy throughout each season. Annual surveys of Bombus populations on the campus can be used to guide future habitat restoration efforts both on and off campus.

natalia Leszczak

NY - Adelphi University

Discipline: Social Sciences

Authors:
#1 Lawrence Josephs

Abstract Name: Unraveling Love Addiction: A Multivariate Study Investigating the Intersection of Love Addiction and Other Mental Disorders

In contemporary society, dysfunctional relationships are a prominent concern, with a notable subset of individuals exhibiting characteristics suggestive of "Love Addiction." Despite its prevalence, love addiction remains a concept that lacks substantial empirical support and is deficient in a well-defined theoretical framework. This deficiency extends to understanding potential comorbidities that may accompany or exacerbate love addiction. To address this gap, this study proposes to engage 200 participants in a self-administered survey, aiming to explore potential correlations between love addiction and three key psychological dimensions: mania, risky behavior, and magical thinking. By delving into these dimensions, the research aims to unravel the intricate interplay between love addiction and psychological factors, shedding light on whether individuals with love addiction tendencies are more prone to engaging in manic states, risk-taking behaviors, or harboring magical thinking patterns. This study investigates how specific partners may act as catalysts, potentially eliciting and exacerbating these traits, thereby contributing to toxicity within the confines of the relationships. This research endeavors to bridge the existing gaps in the

understanding of love addiction by providing empirical insights into its associations with psychological dimensions and exploring the role of specific relational dynamics in perpetuating dysfunctional patterns. The findings may contribute to a more nuanced comprehension of love addiction and inform therapeutic interventions tailored to address the multifaceted nature of dysfunctional relationships.

Gabriel Lewis

WI - University of Wisconsin-Madison

Discipline: Engineering and Architecture

Authors:
#1 Gabriel Lewis
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Abstract Name: Isostatic Pressure Testing of Fused Deposition Modeling Materials

The relevance and convenience of Additive Manufacturing (AM), sometimes known as 3D printing, for the usage in rapid prototyping has been long known. However, polymeric materials fabricated using fused deposition modeling are structurally weaker than those manufactured using more traditional means like injection molding, because of the poor interlaminar bonding between printed layers. Prior research on novel filaments for polymer additive manufacturing has shown promise in overcoming weak interlaminar bonding through post process annealing mechanisms. Novel filaments previously described utilize two spatially segregated polymers in the filament cross-section which persist during manufacturing to offer structural healing and geometric stability during the post-printing annealing process. Here, we investigated the performance of AM materials made using novel filaments to those made using traditional filaments in high-pressure isobaric applications. To evaluate, thin AM plates were fabricated, sealed, and pressurized to failure where their burst pressure was then recorded. Thin plate material, printing orientation, and annealing conditions of AM plates were varied, and pressure testing results were compared against control samples made of injection molded acrylonitrile butadiene styrene (ABS). Testing shows that samples fabricated with dual-material filaments, then annealed for 72 hours at 135C, have similar burst pressures of control injection molded sheets of ABS, while sample made of ABS alone and not annealed, failed at burst pressures of 10% the nominal injection molded value. Given the high burst pressure of annealed AM plates, we believe these filaments may be used to fabricate pressurized tanks and vessels not normally fabricated using AM methods, such as: canteens, windshield wiper fluid reservoirs, oil reservoir plugs, liquid/gas manifolds, or more.

Tristain Lewis

OK - Southern Nazarene University

Discipline: Social Sciences

Authors:
#1 Tristain Lewis
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Abstract Name: Intersectional Marginalized Identity

It is crucial for students, especially minority students, to have a sense of belonging at their university. Students who do not find belonging at universities have greater rates of both transferring to other universities and ultimately are less likely to complete a degree. This study evaluates the influence that affinity and/or race groups have on belonging and hope for minority college students at a Predominantly White Institution (PWI).

Intersectional theory (Crenshaw, 1991) suggests that we may see an increase in both of these factors among students who are engaged in affinity groups organized around race, ethnicity, and/or gender. We surveyed over 100 students at a small private liberal arts institution as a part of a larger study investigating belonging. Using an adaptation of the Departmental Sense of Belonging and Involvement (DeSBI; Knekta et al., 2020) and the Comprehensive Hope Scale (Scioli et al., 2011) we tested the hypothesis that involvement in race, ethnicity, and/or gender affinity groups resulted in greater levels of belonging. While the results did not attain statistical significance, there is a trend toward difference. The results also indicated that contrary to what was expected, students in affinity groups reported lower levels of belonging. The implications of these findings are discussed as are areas for further study.

Joseph Lewis

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Morgan Ritter
#3 Seth Kullman

Abstract Name: Increased Endocannabinoid Tone at Various Concentrations Modulates Zebrafish Adiposity and Development

In Dr. Seth Kullman's molecular toxicology lab at North Carolina State University, I investigated the connection between endocannabinoid tone and adipose accumulation to deepen the current understanding of zebrafish development under environmental stress. I led a research project where I investigated Dr. Megan Knuth's finding that zebrafish (a widely-celebrated model organism) under vitamin D deficient (VDD) conditions experienced increased endocannabinoid tone, adiposity, and stunted growth. My work focused on inducing increased endocannabinoid tone by mixing anandamide (a ligand of Endocannabinoid Receptor 1) in the diet of larval and adult zebrafish, hypothesizing that the promoted endocannabinoid tone would lead to upregulated adiposity and stunted growth. Anandamide was included in the diet of the zebrafish at two different concentrations (one micromolar and five micromolar) to assess the severity of developmental impacts when compared to experimental controls. I quantified growth at two endpoints (adult at six months post-fertilization and larval at six weeks post-fertilization) via standard length measurements and analyzed adiposity through H&E histology and ImageJ analysis, where all data was separated by sex to account for developmental differences in length and adiposity. While findings are still forthcoming, it seems that all five micromolar anandamide cohorts are similar enough in length, mass, and adipose accumulation to make the inclusion of the diet insignificant. The one micromolar anandamide adult cohort, however, was found to have increased ventral adiposity when compared to the controls, while larval cohorts had severely upregulated adiposity as compared to the controls. Overall, these findings suggest there are unknown interactions occurring at certain thresholds in upregulated endocannabinoid systems, whether to promote or combat adipose accumulation and stunted growth. Future directions for the project include gene expression analysis via RT-qPCR and further histological analysis.

Natalie Lewis

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Natalie Lewis

Abstract Name: Gilded Emojis: Exploring 18th Century Letter Writing

Modern communication among friends and colleagues typically involves utilitarian electronic formats such as texts or email, with little consideration for the message's beauty or form. But at the court of King Louis XIV of France, letter writing was its own art form, as exemplified by the Michel Janet Gilding Kit, circa 1770s, at the University of Kentucky Libraries Special Collections Research Center. A rare example of a letter-embellishing gilding kit that was likely used by members of the court at Versailles, the kit includes a squirrel hair brush for application, the pillow and windshield for shaping and support, and small flecks of leftover gold leaf. Research into this method of decorating letters will uncover the richness and meaning of letter writing techniques such as calligraphy, symbolism, codes, and letter-locking during 18th century France. At a time when reading and writing was reserved for those in the upper class, research will investigate how letters signify status, prosperity, and connections to power. Since this gilding kit was likely owned by a woman, research will focus on these issues within the patriarchal structure at that time. Research will involve learning how to gild letters, comparing examples of letters originating from women within the court of Versailles, and researching letter writing techniques of the time. Comparing 18th century letter writing with modern correspondence will demonstrate how we went from gilded letters to cute emojis to decorate our communication.

Caitlin Lewis

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Chantal Swing
#2 Caitlin Lewis
Chantal Swing

Abstract Name: Pictures at an Exhibition: An Illustrated Symphony Collaboration

This presentation describes a multidisciplinary performance with the collaboration of a team of Illustration Minor students and the Wind Symphony at the University of Central Oklahoma (UCO). The concert centered around Pictures at an Exhibition; a symphony written in 1874 by Russian composer Modest Mussorgsky. Mussorgsky composed the piece after the passing of his friend and painter, Viktor Hartman. Mussorgsky used Hartman's paintings as inspiration for each movement of the suite, capturing the emotion of each painting he felt for his beloved friend. In turn, a team of five UCO illustration students reverse-engineered Mussorgsky's symphony by creating illustrations for each of the ten movements and the promenade based on how the music made them feel. They used Mussorgsky's score in this project as inspiration to create, illustrate, and animate imagery for a live performance conducted by Maestro Alexander Mickelthwate of the Oklahoma City Philharmonic and the UCO Wind Symphony. The imagery was projected above the concert in tandem with the music. A similar performance was held once before in 2016. Crowman Burana was a reimagining of Carmina Burana, a composition by Carl Orff, which included black and white illustrations created by many students across multiple illustration classes. In contrast to Crowman Burana, Pictures at an Exhibition includes far more elaborate full-color illustrations and animation. Influenced by Modest Mussorgsky, UCO's rendition of Pictures at an Exhibition was the product of a unique and innovative partnership that intended to evoke emotion and imagination in observers.

Darius Lewis

IN - Indiana University Purdue University Indianapolis

Discipline: Education

Authors:
#1 Darius Lewis
#2 Dr. Cleveland Hayes

Abstract Name: Carter G Woodson, A Visionary Creating a Legacy for Black Children: A Duo Ethnographic Conversation

In this paper, this research highlights and foregrounds the accomplishments and contributions of Carter G. Woodson to the field of education. Beyond pedagogy and content dissemination, the unique lived experience of Carter G. Woodson comprises an expansive site of exploration, promise, and possibility – particularly for the students they serve. Dr. Cleveland and I perform a soulful dialogue as a mechanism for better articulating the nuances, overlap, subjectivity and overall messiness inherent in rigorous research. In order to present our performative duo ethnography (Juarez & Hayes, 2010), we use the device of a narrated collegial conversation between Darius and Cleveland meeting for Soul Food. Woodson dedicated his life to rectifying the historical neglect of African American contributions and achievements. In 1926, he initiated "Negro History Week," which later evolved into Black History Month, celebrated annually in February. His efforts aimed to highlight the importance of acknowledging African American history throughout the year, rather than relegating it to a designated month. Woodson's scholarship challenged prevailing racial prejudices and underscored the significance of African American history in shaping the broader American narrative. His seminal work, "The Mis-Education of the Negro," critiqued the educational system's failure to provide a comprehensive understanding of African American history and culture. Carter G. Woodson's enduring legacy lies in his commitment to promoting historical awareness, equality, and cultural pride. His contributions have had a profound impact on the study and recognition of African American history, influencing subsequent generations of scholars, educators, and activists.

Michael Lewis

GA - Morehouse College

Discipline: Natural and Physical Sciences

Authors:
#1 Michael Lewis

Abstract Name: Novel Therapeutics Targeting the Abberant Nuclear Export Machinery in Colorectal Cancer

Introduction: XPO1 is a nuclear export receptor responsible for exporting >200 proteins out of the nucleus, including many cancer-related proteins. To determine the prevalence of XPO1 mutations across cancer types, we performed a large-scale genomic analysis of 217,570 cancer patients to identify and characterize XPO1 variants from real-world patient tumors. Methods: Solid tumor samples representing 14 cancer types were submitted for Next-generation sequencing of DNA (592 genes). TMB-High was defined as >10 mt/MB. We engineered CRISPR knock-in HCT116 and LS-174T colon cancer isogenic cell lines bearing heterozygous XPO1 R749Q mutations and STORM analysis was performed. Results: 96 patients with XPO1 R749Q mutations were identified. TMB-H was observed in 92% of XPO1 R749Q mt tumors, while 86% of XPO1 R749Q mt tumors were POLE-mutated. STORM imaging revealed that XPO1 R749Q mutant cells had significant localization of XPO1 in the cytoplasm compared to XPO1 WT cells. Mass spectrometry analysis confirmed that XPO1 R749Q mutant cells had increased protein export compared to XPO1 WT cells. A library screen of >200 FDA-approved drugs revealed a strong therapeutic resistance of XPO1 R749Q cells. XPO1 inhibition with selinexor synergized with chemotherapy in XPO1 R749Q mutant cells in vitro and overcame resistance to irinotecan in vivo in xenograft mice models. Conclusion: This study sheds novel insights into the role of nuclear export in cancers. Specifically, XPO1 R749Q mutations are

enriched in colon cancers and increase nuclear export of key proteins that confer resistance to therapies using DNA damaging agents in vitro. XPO1 R749Q mutations occur in endometrial and colon cancer with high TMB and co-occur with POLE mutation. Cell models of XPO1 R749Q reveal decreased proliferation but resistance to DNA damage and topoisomerase I inhibition. The novel combination of Selinexor and irinotecan showed synergy in vitro and in cell line xenografts.

Tina Li

WI - University of Wisconsin-Madison

Discipline: Humanities

Authors:
#1 Tina Li

Abstract Name: Behind the Model Minority: Impact on First Generation Asian American Students

In the world of college and education, an idea called “model minority myth” is greatly affecting Asian Americans, especially those who are the first in their family to go to college with the lack of a support system. Beyond the achievements often associated with the model minority myth, this research delves into challenges faced by first-generation Asian American college students, diving into the relationships between childhood experiences, family pressures and societal expectations. Utilizing the cases of lived experiences of being part of first-generation category, the first gen American and first gen College student, the presentation will share that the model minority myth, although seems positive on the surface, has done more harm than good. This myth has always praised Asian Americans for their success and achievements, but it doesn’t capture the real challenges that many has had to face along with the mental health struggles coming from it. This leads us to the exploration of childhood experiences with society and family, how cultural differences and microaggression can come to play. This study aims to discover the effects of how just the model minority can lead to various factors that all collectively play into the mental health problems in the Asian American community. It is crucial to have open conversations about mental health to break the silence and get rid of the idea that seeking help is something to be ashamed of due to the community trying to play into the model minority stereotypes.

Kanghong Li

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Kanghong Li
#2 Maximilian Cozzi
#3 Steven Umbarger
#4 Sarah Loebman

Abstract Name: Using FIRE-2 Simulations to Visualize How Open Star Clusters Form and Evolve Within Giant Molecular Clouds

Giant molecular clouds (GMCs) are massive, hydrogen rich clouds that serve as ideal sites for the emergence of open star clusters and are the birthplaces of the majority of new stars. We used the Friends-Of-Friends (FOF) code, as well as our own developed code, to visualize the GMCs and the star clusters. In this work, we present an analysis on a galaxy simulation drawn from the FIRE-2 (Feedback in Realistic Environment)

simulations website, specifically from the Latte suite, which contains Milky Way-like mass galaxies. An important part of our analysis includes visualizing the same GMC at different moments in time to track how it evolves. In the future, we plan to perform this process on all of the near present day Latte galaxies. We will publicly release our code so it will be accessible to other simulators in the astrophysicist community. Studying the evolution and stages of GMCs will help contribute to the knowledge of the relationship between GMCs and open star clusters, helping us expand our understanding of galactic structures and star formation.

George Li

PA - Drexel University

Discipline: Health and Human Services

Authors:
#1 George Li
#2 Brody Carpenter
#3 Annie Hawks
#4 Genevieve Curtis
#5 Breanne Pirino
#6 Jessica Barson

Abstract Name: Manipulation of PACAP+ Cell Activity in the Paraventricular Thalamus of Binge-eating Mice

Binge eating disorder is characterized by the overconsumption of palatable food in a short time period. Our laboratory is investigating the contribution to binge eating by pituitary adenylate-cyclase activating polypeptide (PACAP)-containing neurons in the paraventricular thalamus (PVT). We trained PACAP-Cre transgenic mice to engage in binge eating through limited access (2 hours/day, 4 days/week) to Milk Chocolate Ensure Plus®. Using Cre-dependent excitatory (n = 4 males; 3 females) or control (n = 3 males; 2 females) designer receptors exclusively activated by designer drugs (DREADDs) to activate PACAP+ PVT cells with systemic delivery of the designer drug, clozapine N-oxide (CNO, i.p.) compared to saline, we found that PVT PACAP activity inhibited binge eating in male mice. We then gave mice a final injection with CNO or saline, perfused them, and extracted and sectioned their brains. To ensure that the excitatory DREADDs did activate PVT PACAP+ cells, we performed immunohistochemistry for c-Fos (a marker of neuronal activation), PACAP, and Cre. Ongoing analysis will quantify labeling in images taken of the PVT on an epifluorescent microscope. We anticipate that mice injected with the excitatory Cre-dependent DREADDs and CNO prior to sacrifice will show greater c-Fos labeling in Cre+ PACAP cells than those injected with saline or the control virus. Our results will provide insight into the role of PVT PACAP activity in binge-eating behavior.

Annabella Li

WA - University of Washington - Seattle

Discipline: Natural and Physical Sciences

Authors:
#1 Annabella Li
#2 Ryan Gharios
#3 Irina Kopyeva
#4 Ryan Francis
#5 Cole DeForest

Abstract Name: A Generalizable Platform for One-Step Purification and Near-Scarless N-Terminal Bioconjugation of Proteins

Bioconjugation, or the covalent linkage between a biomolecule and another chemical group or material, allows for the creation of hybrid molecules that exhibit the properties of both biomolecules and exogenous moieties. Such conjugates are crucial for a wide range of applications in biotechnology, chemical biology, and biomaterials science. The N-termini of proteins often fall outside of their final folds, making the N-terminus an optimal site for conjugation while preserving a protein's native folding and bioactivity. Consequently, N-terminal modification of proteins and peptides has been a long-standing goal in fields like drug delivery, biotherapeutics, and cellular imaging. However, the current techniques for N-terminal protein conjugation are limited by either the introduction of bulky protein assemblies at the conjugation site, the need for multiple costly and complicated steps, or low site-selectivity. In this project, we aimed to develop a generalizable platform for single-step purification and near-scarless N-terminal bioconjugation of proteins by leveraging the chemistry of split inteins. These are pairs of protein elements that can selectively recognize each other in solution, self-catalytically splice out, and ligate the polypeptides originally fused to each element. Specifically, we used the atypically split intein VidaL. To evaluate the effectiveness of our platform, we first examined the kinetics and reaction conditions of VidaL bioconjugation and confirmed its ability to modify the N-termini of proteins successfully and selectively. Then, we used our platform to conjugate an alkyne, biotin, or FAM biotin moiety to the N-terminus of fluorescent proteins (EGFP and mCherry), a model enzyme (beta-lactamase), and a model growth factor (EGF). We found that, regardless of the moiety added, this conjugation did not impact the native function or activity of any of these proteins. As a result, we concluded that our platform provides an improved route for N-terminal protein and peptide bioconjugation.

Yue Li

WI - University of Wisconsin-Eau Claire

Discipline: Business and Entrepreneurship

Authors:
#1 Yue Li
Yize Sun

Abstract Name: The impact of political instability on exchange rates in developing countries

This study explores the complex relationship between political instability and the volatility of exchange rates in developing countries. We have utilized an extensive dataset from the World Bank and the International Country Risk Guide (ICRG) for our analysis. The focus of this research is on a select group of developing nations, specifically Brazil, Palestine, and Egypt, to illustrate the typical patterns of exchange rate fluctuations that occur in response to political turmoil. Such fluctuations are typically characterized by a significant devaluation of national currencies, which has profound effects on both the domestic business environment and the broader economy.We applied the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model to analyze over 3,000 daily data points of exchange rates, examining their relationship with indicators of political instability. Our study reveals that political instability often leads to market uncertainty, driving investors to seek safer investment options. This behavior typically results in the depreciation of the currency in countries experiencing political unrest. Furthermore, our analysis shows that political disturbances can also indirectly affect exchange rates. This happens through changes in crucial economic factors, including foreign direct investment, the dynamics of international trade, and the stability of financial markets.Our research provides a detailed understanding of both the direct and indirect impacts of political instability on exchange rates. It highlights the underlying mechanisms of this relationship, offering valuable insights for policymakers and economic strategists in developing countries. These insights are crucial for devising effective strategies to address and mitigate the challenges posed by political instability on economic stability and growth.

Kexuan Li

CA - Irvine Valley College

Discipline: Humanities

Authors:
#1 Kexuan Li

Abstract Name: The Virgin Queen and The Grandmother of Europe: A Comparative Analysis of Women’s Status in Elizabethan and Victorian England

The portraits of Queen Elizabeth I and Queen Victoria show images of women in power in the sixteenth and nineteenth centuries of England. Previous scholars have contrasted and discussed their iconography, in particular their masculine or feminine appearance. While Elizabeth is portrayed as androgynous, chaste, and divine to show her power, Victoria is featured as a good mother and wife with a feminine and secular image. Yet scholars haven't looked at how their portraits might reflect women's status, because as female monarchs, Elizabeth and Victoria's images epitomize women's positions in their respective times. This research uses royal portraits as a window to interpret the positions of women before and after the Protestant Reformation and industrialization. By comparing and examining the iconography including clothing, atmosphere, and setting in paintings, I analyze how these elements reflect Elizabethan and Victorian women's status in marriage, economy, and public sphere, as informed by contemporary historical documents such as pamphlets and poems. Elizabeth's portraits reveal women's silence and invisibility, while Victoria's portraits embody women's dependence and submission to men. Although women's status can not be generalized by queens, royal portraits may have adapted to the prevailing cultural values and even consciously reinforced them to win the hearts of subjects and maintain rule as political propaganda. This comparison of royal portraits not only offers a deeper understanding of women's roles in the societies represented by the two queens but also provides insights into how female rulers intruded into the patriarchal society and utilized portraits to their advantage.

Jason Li

IL - University of Illinois Urbana-Champaign

Discipline: Engineering and Architecture

Authors:
#1 Jason Li

Abstract Name: Extracting the Internal Quantum Efficiency of InGaN LEDs

Light emitting diodes (LEDs) have become ubiquitous as an efficient, highly luminous lighting source in the modern world. However, there are still strides to make in improving LED efficiency to its maximal potential, specifically in the green wavelength regime.A roadblock to creating more efficient LEDs is that measuring the internal quantum efficiency (IQE) of the LED - the ratio of the electrons injected to photons emitted from the LED - is physically and experimentally difficult to do accurately. This is due to the inability to analyze the IQE directly, and thus many assumptions need to be made to fit the relevant data. The IQE of an LED is an indicator of the quality of epitaxial growth, so accurately extracting IQE is vital to assessing the progress of LED technology.The goal of this research project is to compare two different experimental methodologies for extracting the IQE on a single device. I will specifically be using electroluminescence and photoluminescence methods to extract the IQE from commercial InGaN CREE green & blue LEDs. The

electroluminescence methods are based on the ABC model described in the literature and involve fitting the optical power of the device at different current biases. The photoluminescence methods involve measuring the non-resonant photoluminescent response to different excitation powers at different temperatures. I will also conduct device preparation techniques such as lens removal and wet etching to prepare the sample for the experiment. By the end of this project, we expect to assess the current efficiency and epitaxial quality of commercial LEDs. We also want to compare the accuracy and values of the two different IQE extraction models, as well as the theoretical implications behind the comparison.

Allison Li

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Allison Li
#2 Maya Gosztyla
#3 Gene Yeo

Abstract Name: CIRTS Constructs are Effective in Targeting Microsatellite Repeat Expansion Disorders

Microsatellite repeat expansion (MRE) disorders are caused by sequence repetitions within the human genome. These repetitions cause aberrant repeat-expanded RNA, leading to disorders such as Huntington's disease (CAG repeat), frontotemporal dementia (GGGGCC repeat), and myotonic dystrophy (CUG repeat). One viable way to treat these diseases is to knock down the repeat expanded RNAs. A tool previously utilized for this purpose is CRISPR-Cas13d, which can target and degrade RNA transcripts. However, Cas13d is a bacterial protein and thus can cause an immune response, limiting its therapeutic utility. In contrast, CRISPR-Cas-inspired RNA targeting system (CIRTS) overcomes this limitation by engineering programmable RNA effectors from human proteins. By eliminating bacterial proteins, this strategy avoids triggering an immune response. CIRTS has previously been validated only for non-repetitive target transcripts. Thus the objective of this project is to determine the effectiveness of CIRTS in eliminating RNAs that cause MREs. To test this, we transfected HEK293T cells with three plasmids: 1) a repeat plasmid encoding 105 CAG or CUG RNA repeats, 2), corresponding guide RNAs (gRNAs) targeting these repeats, and 3) the CIRTS construct. Then we extracted RNA and performed RNA dot blots to quantify the repeat-containing transcripts. We observed a strong knockdown of CAG and CUG repeats using their appropriate gRNAs when compared to non-targeting gRNAs. In contrast, there was no significant knockdown of CAG repeats by the CUG-targeting gRNA, or vice versa, suggesting strong sequence specificity. These results demonstrate that CIRTS could be an effective RNA targeting technology in MRE disorders.

Lucas LiaBraaten

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Lucas LiaBraaten
Diego Luna Gutierrez

Abstract Name: Investigating Accessible and Green Methods for Lead Detection in Drinking Water

Lead detection in drinking water is a pressing issue even in the present day. In Minnesota and across the

United States, many water service lines are still made from lead components. This can cause major problems, particularly to households with young children who suffer the worst from lead exposure, which can lead to lowered IQ scores, damage to the brain, kidneys, and issues with the production of red blood cells. This makes the accessibility of sensitive lead detection in drinking water a high priority in preventing exposure. Because of this, we aim to develop two economic methods to detect lead ions in drinking water. One is to synthesize bismuth nanoparticles to replace gold and silver nanoparticles used in surface-enhanced Raman spectroscopy. The other is the applicability of using 4-aminothiophenol (4-ATP) to directly react with lead ions. For bismuth nanoparticle synthesis, we successfully used lemon juice as both a reduction and capping agent, which helps to serve as a green alternative to traditional nanoparticle synthesis. The diameter of the bismuth nanoparticles were found to be around 50 nm through scanning electron microscopy characterization. As for the 4-ATP method, we found that lead ions and 4-ATP react to form a visible shard-like precipitate as well as a much smaller branch-like precipitate that sticks to microscope substrates. Light microscope images showed differences in the amount and morphology of the precipitates as the concentration of lead was changed from 25 μM to 2.5 μM. These findings will help us to further utilize bismuth nanoparticles for Raman spectroscopy and to understand the reactions between 4-ATP and lead ions for assessing lead ions in water.

Megan Liebig

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Megan Liebig

Abstract Name: Exploring the Moieties of VER-155008: Targeting Hsp70 Inhibition for Breast Cancer Therapy

Breast cancer remains a significant global health challenge, necessitating novel therapeutic strategies for improved patient outcomes. One target for these new strategies is heat shock protein 70 (Hsp70), which is overexpressed in breast cancer and is associated with disease progression. VER-155008 is a known inhibitor of Hsp70. This research analyzed the structural features of VER-155008 in order to determine the essential structural components for inhibition of Hsp70. Inhibition was tested using a commercially available chemiluminescent assay kit that analyzed the ATPase activity of Hsp70. Initial results indicate the adenosine moiety of VER-155008 interacts with the active site of the ATPase region of Hsp70 in order to inhibit the protein, whereas both the benzonitrile and 1,2-dichlorobenzene moieties do not cause the inhibition.

Elizabeth Liew

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Elizabeth Liew
#2 Ryan LeCount

Abstract Name: BEING & NOT BEING: DOUBLE CONSCIOUSNESS AND THE MULTIRACIAL SELF

Being & Not Being: Double Consciousness and the Multiracial Self Despite the significant growth of the multiracial population, there is a lack of sociological literature about the process of multiracial identity

development. This research uses theories of intersectionality and racial authenticity to understand how W.E.B. Du Bois's theory of "double consciousness" affects multiracial identity formation. Double consciousness refers to the internal conflict experienced by marginalized or minoritized groups in an oppressive society. Although this theory has been applied to the lived experience of many monoracial racial and ethnic minority groups, it has yet to be applied to multiracial people. I created an interview guide and conducted a series of semi-structured interviews with various individuals who self-identify as multiracial. Analysis is currently ongoing, but findings are expected by Spring 2024. I expect to find that double consciousness would be extremely relevant to multiracial identity formation, but its influence would vary based on individual characteristics in a particular multiracial person's racial identity and lived experiences. As the multiracial population grows, this work is increasingly important. Multiraciality will continue to challenge social understandings of race and identity. As this population grows so too must the work representing their experiences and voices in order to understand them and create a world where multiracial people can have an identity on their own terms, as well as push for policy targeting multiracial specific stigma.

Natalie Liliensiek

MI - Michigan State University

Discipline: Interdisciplinary Studies

Authors:
#1 Natalie Liliensiek
#2 Carina Abbasov
#3 Evelyn Inman
Carina Abbasov
Evelyn Inman

Abstract Name: Western Cultural Influences on Eastern Music Listening Experiences

This presentation discusses a new experiment in a multidisciplinary study conducted at the Digital Humanities and Literary Cognition Lab and the Timing, Attention, and Perception Lab at MSU called "The Role of Narrative Listening in Music Perception." Our research explores whether participants imagine or "hear" stories while listening to musical stimuli. In a previous iteration of the study, Western participants responding to Chinese music excerpts frequently tied their narrative interpretations of the pieces to individual instruments and centered them on familiar tropes and themes, such as rural America, Native Americans, and cowboys. We utilized these patterns to design a new single-instrument experiment, in which Western participants were prompted to provide narrative responses to a variety of music excerpts, including one that featured the pipa, a Chinese string instrument. This presentation explores the cultural training and biases that the music-inspired stories reveal. When exposed to unfamiliar music, Western audiences leaned on adjacent Westernized media to explain foreign cultural narratives. These narratives are constructed from a simplified idea of what, in this study, constitutes broadly East Asian cultural motifs. Specifically, the proximity to East Asian cultural influence branches over to what Western audiences have traditionally been exposed to. Most prominent was the association of the pipa, a Chinese string instrument, with the traditional Western notion of the cowboy. Through a comparison of the pipa responses to narratives based on Western instruments, we intend to explore the Orientalist flattening of East Asian cultures and the cultural exchanges taking place in post-war Japan that may have led to these associations.

Hyoeun Lim

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Hyoeun Lim
#2 Ryan Dannemiller
#3 Anna Thalacker-Mercer

Abstract Name: The Effect of Dietary Amino Acids Glycine and Serine on Body Composition

Globally, the population >65 years is growing, and most of this population experiences a loss of mobility due to skeletal muscle (SkM) deterioration. Although SkM deterioration is multifactorial, it has been linked to tissue remodeling, the loss of SkM mass and gain of adipose tissue. While adipose is a source of lipid during exercise, an excessive amount can lead to the disruption of organ function. Glycine/Serine (Gly/Ser) are nutritionally non-essential amino acids involved in nutrient metabolism. My research mentor demonstrated that SkM regeneration is suppressed and adipocyte number is enhanced with reduced Gly/Ser availability in advanced age. The therapeutic potential of Gly/Ser for age-related SkM deterioration and SkM regeneration post-injury will be explored by measuring the effect of dietary Gly/Ser on body composition, as well as protein markers of lipid droplets in adipocytes. In this experiment, both old (20-22 months) and young mice (4-6 months) were randomized to a control, supplemented, or depleted diet (isonitrogenous, isoenergetic). After 28 days of the diet, the body weight and lean mass of the mice were measured, and tibialis anterior (TA) muscle and liver samples were taken; RNA was isolated, quantified, and quality-checked. Perilipin, thought to be involved in lipid metabolism, is being measured. After 28 days of the diet, mice on the supplemented diet had a greater body mass, while mice on the depleted diet had the least body weight. However, differences in body mass was not due to changes in lean and/or fat masses. Immunohistochemistry will be performed on TA and liver samples to see if changes in body weight were due to increased adipocyte number, which MRI may not detect. Gly and Ser are likely therapies for improving age-related SkM deterioration. Experiments are ongoing to elucidate the effects of Gly/Ser for SkM health.

Spark Lim

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Spark Lim
#2 Katherine Kortenkamp

Abstract Name: Internalized Racism and Racial Color Blindness Ideology Among Asian American College Student

Historically, Asian Americans have experienced legal and societal discrimination such as the anti-Asian sentiments that denied their rights of obtaining citizenship. The rise of racial hate crimes towards Asian individuals that include physical violence and harassment has escalated significantly ever since COVID-19 (Gover et al., 2020). Unfortunately, this results in negative consequences such as Asian Americans being pinpointed to be the model minority. Park et al. (2022) suggested that Asian American college students who hold color-blind racial attitudes that deny blatant racism and racial issues have a stronger relationship between internalization of the model minority myth and race-related stress. Internalizing the model minority myth is only one component of internalized racism. Therefore, this research aimed to investigate the relationship between racial color blindness and multiple components of internalized racism among Asian American College Students such as endorsement of negative stereotypes, denial or minimization of racism, sense of inferiority, emasculation of Asian American men and within-group discrimination (Liao, 2016). This research hypothesizes that high racial color blind attitudes will predict high internalized racism among Asian American college students. The study will also test if years spent in the U.S will moderate this relationship. Using a Qualtrics online survey, participants who identify as Asian (Asian American or Asian international

student) will respond to a series of measures designed to assess their belief that race should not matter (Racial Color Blindness Scale, Neville et al., 2000), their internalized racism beliefs (Liao, 2016), and demographic questions such as age, gender, race/ethnicity, and international student status. Data collection in process and will end in December 2024. Correlational and multiple regression analyses will be conducted to test the hypotheses. Finding of this study could be beneficial in generating ideas for interventions to improve Asian American college students' relationships with their racial identity.

Mercedes Limon

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
#1 Mercedes Limon
#2 Daniela Moreno
#3 Vanessa Rodriguez
#4 Abigail Andrews
#5 Ana Lopez-Ricoy

Abstract Name: The Forgotten Women: An Examination of Migration Policy and Technology in the Covid-19 Era and its Detrimental Impacts of Resource Scarcity on Displaced Women in Tijuana

The reinstatement of Title 42, alongside technological advancements, has revived past migration policies, enabling the immediate expulsion of asylum seekers under the guise of COVID-19 preventive measures. This disproportionately affects women at the U.S. border seeking asylum, with their unique needs accentuated in migrant facilities within border cities. Forced into diverse roles due to the consequences of illegal migration, these women face amplified challenges, exacerbated by Title 42. While some argue that COVID-19-driven migration policies were essential for disease control, I contend that the enforcement of Title 42 has intensified the concept of Marianismo. This societal norm expects women to embody self-sacrificial characteristics, adversely impacting their visibility and acknowledgment of physical and mental health needs. Understanding women's gender roles and the grand role that religion, culture, and society play in shaping these roles is crucial when discussing Marianismo through a historical context. Our study delves into the Examination of Historical Migration Policy, Technology, and Sociocultural Roles and their Evolution in the Covid-19 Era, specifically focusing on women in Latin America. Employing a comprehensive blend of quantitative and qualitative research analyses, we explore the positive correlation between gender sociocultural roles and migration crises. This heightened state during the COVID-19 era results in diminished attention to the well-being of these women, emphasizing the urgent need for a nuanced understanding of their evolving needs.

Gildardo Limon

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Gildardo Limon
#2 Danielle Zacherl
#3 Shriyas Timbadia

Abstract Name: Extent of oyster shell burial in Newport Bay, CA

Oysters deliver important ecological functions to intertidal estuarine communities, including provision of microhabitat for various marine species and filtration of the water column. In southern California, two oyster species, the native Ostrea lurida and non-native Magallana gigas, co-occur. Increased sedimentation by human activity threatens to bury oysters and lead to a loss of the ecological services they provide. Ostrea lurida is especially vulnerable as they are found at lower intertidal elevations and are smaller than Magallana gigas. To assess the extent of burial on oysters, we conducted a series of surveys at three sites in Newport Bay, CA, including the Pacific Coast Highway, 15th Street and Coney Island. Our main objectives were to characterize the percentage of oysters that were buried and the extent to which individual oyster were buried. Following the surveys and several statistical tests, about 85% of oysters found at 15th street were buried and only about 20% of oysters were buried at the other two sites. There were no significant differences between the two oyster species in percentage buried. Understanding the impact of sedimentation on oysters is integral to successful conservation and restoration efforts. Further knowledge will allow for more comprehensive approaches in aiding the native Ostrea lurida from various threats it is facing in human impacted bays.

Joanne (Hsiang-Ling) Lin

IL - DePaul University

Discipline: Mathematics and Computer Science

Authors:
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#3 Thiru Ramaraj

Abstract Name: Developing Predictive Models of Foot Fracture and Edema using Machine Learning on MRI

Bone fracture and edema are commonly found in individuals experiencing foot pain, yet they can be easily overlooked during diagnosis, potentially resulting in substantial long-term consequences if left untreated. This project aims to investigate methods to assist physicians in making precise diagnoses and recognizing patterns in MRI images, represented as automatic diagnoses and bounding rectangles, streamlining the diagnostic process. One of the advantages of working with MRI is that the fluid associated with the fracture can assist in identifying the fracture and its severity. In this study, it involves the development of a machine learning model, utilizing MRI images to precisely identify fractures and edema based on physician labeling. Through this project, an experimental methodology to identify parts of the fracture will be proposed; and from the identified fracture, clinical diagnoses can be provided more quickly by the physicians. These findings from the project will carry significant implications for clinical practices, as the developed model could serve as a reliable tool for early and accurate diagnosis and treatment, potentially leading to more timely and effective treatments. The model is trained and tested on an image dataset comprising 115 patients, all of whom are boot camp trainees in Great Lakes, Illinois. The labeling process in this study involves both the physician's pathology assessment of healthy or unhealthy feet and a bounding rectangle outlining the pathology. Initial predictions of fractures directly from MRI slices are acceptable at 70% accuracy but warrant further testing and refinement. We will continue to explore new architectures and clipping strategies to enhance performance.

Karen Lin

TX - Southern Methodist University

Discipline: Natural and Physical Sciences

Authors:
#1 Karen Lin
#2 Amy Brewster
#3 Nicole Pinzón-Hoyos
#4 Yibo Li
#5 Nicole Schartz

Abstract Name: C3 knockout mice are protected against memory deficits, astrogliosis, and inflammation induced by prolonged seizures

Status epilepticus (SE) can increase the risk of temporal lobe epilepsy and cognitive comorbidities. A potential candidate mechanism underlying memory defects in epilepsy may be the immune complement system. The complement cascade, part of the innate immune system, modulates inflammatory signaling, and has been shown to contribute to learning and memory dysfunctions in neurodegenerative disorders. We previously reported that complement C3 is elevated in brain biopsies from human drug-resistant epilepsy and in experimental models. We also found that SE-induced increases in hippocampal C3 levels paralleled the development of hippocampal-dependent spatial learning and memory deficits in rats. Thus, we hypothesized that SE-induced C3 activation contributes to this pathophysiology in a mouse model of SE and acquired epilepsy. In this study C3 knockout (KO) and wild type (WT) mice were subjected to one hour of pilocarpine-induced SE or sham conditions (control; C). Following a latent period of two weeks, recognition memory was assessed utilizing the novel object recognition (NOR) test. In the NOR test, control WT+C or C3 KO+C mice spent significantly more time exploring the novel object compared to the familiar object. In contrast, WT+SE mice did not show preference for either object, indicating a memory defect. This deficit was prevented in C3 KO+SE mice, which performed similarly to controls. In addition, we found that SE triggered significant increases in the protein levels of GFAP along with the inflammatory cytokine interleukin 6 (IL6) in hippocampi of WT mice but not in C3 KO mice. These findings suggest that ablation of C3 prevents SE-induced recognition memory deficits and that an interplay between C3, astrocytes and IL6 may play a role. Therefore, it is possible that enhanced C3 signaling contributes to SE-associated memory decline suggesting that C3 may serve as a potential therapeutic target for cognitive deficits in epilepsy.

Han Lin

CA - Biola University

Discipline: Natural and Physical Sciences

Authors:
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Turner Yuen

Abstract Name: Molecular Nanomachines Can Drill through Buccal and Aorta Tissues and Open Up MCF-7 Cancer Cells

Light-activated molecular nanomachines (MNMs) are synthetic organic molecules that, when exposed to certain wavelengths of light, act as drills to penetrate and damage cells. In previous studies, MNMs were shown to kill cancer cells, bacteria, and viruses by opening up cell membranes via mechanical damage. Here, we wanted to test whether MNMs can penetrate tissues and potentially destroy disease tissues if applied topically. Therefore, we tested two different MNMs, a slow and a fast rotor activated by 405 nm light, to investigate their effects on tissues. We hypothesized the light-activated fast rotor (spins unidirectionally at 2-3 million revolutions per second) can drill into tissues. We used the slow-rotor MNM (undergoes cis-trans isomerization) as a negative control. 500 nM MNM was applied to porcine buccal tissue, murine arterial tissue, and human breast cancer cell lines and activated by 405 nm light for 15 minutes. 10% Sodium Dodecyl Sulfate was used as a positive control. Samples were then stained with Acridine Orange/Ethidium Bromide solution to visualize the action of the MNMs in these tissues through an EVOS M5000 fluorescent microscope. The resulting images show clearly the activated fast-rotor MNMs cause significant damage to the tissues based on the staining visualized by the microscope. However, the unactivated MNMs do not show tissue and cell damage whatsoever, showing the activated MNMs were able to destroy tissue by their drilling action, not by toxicity or generating reactive oxygen species. The slow motor seemed to cause some damage but not of any significance comparatively.

Moira Lindner

IN - Valparaiso University

Discipline: Social Sciences

Authors:
#1 Moira Lindner

Abstract Name: Online Oncological Obfuscation: How Social Media Circulates Medical Misinformation and Betrays its Core Demographic

This article analyzes the origins of naturopathic medicine and how it has influenced the online discourse surrounding oncology dietetics, which has negatively impacted the health and wellbeing of innocent cancer patients. The problems of this discourse are two-fold; on the one hand, online misinformation about oncology dietetics grievously harms cancer patients, a particularly vulnerable group. This creates a barrier for patients who might otherwise welcome nutritional intervention as part of a treatment plan. On the other hand, social platforms fail to punish creators who peddle medical misinformation. Rather, the algorithms reward content deemed inspiring, controversial or shocking, with money and attention. This incentivizes people to spread medical misinformation and share false testimony while ignoring the effects of their actions. This article utilizes both academic literature and empirical research to dissect the problems outlined above. By analyzing the research of nutritional oncologists and medical psychologists, this article concludes that the disregard for these fields is a major factor which permits the perpetuation of deceptive health information on social platforms. In addition, a lack of clarity and patient-centered care from providers pushes cancer patients away from proven practices into the realm of pseudoscience. Social media echo chambers then capture their attention and direct them toward circles which perpetuate a skepticism of legitimate medical intervention and allow oncological misinformation to thrive. To illustrate, this article analyzes the Belle Gibson case to both highlight the actual harm that peddlers of phony oncology dietetics cause and argue that social platforms need to more rigorously enforce anti-misinformation policies. Additionally, oncologists need to better address patient questions and concerns, increase public knowledge of chemopreventive and chemotherapeutic measures, and strengthen the field of oncology dietetics if the prior harms are to be combatted.

Matthew Lindwall

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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Abstract Name: Titan Green - Hydrogen-Powered Boats: Pioneering Eco-Adventures of Tomorrow

This research project introduces "Titan Green," a groundbreaking initiative focused on the development and implementation of hydrogen-powered boats, heralding a new era of eco-friendly maritime adventures. The project leverages cutting-edge hydrogen fuel cell technology to propel watercraft, thereby mitigating the ecological footprint associated with traditional marine propulsion methods. The research encompasses a comprehensive investigation into the design, fabrication, and optimization of hydrogen-powered propulsion systems tailored specifically for marine applications. This involves the integration of fuel cells, energy storage solutions, and innovative engineering practices to ensure optimal efficiency, safety, and reliability in the maritime environment. Through rigorous testing and simulation, the project aims to establish the viability of hydrogen-powered boats as a sustainable alternative to conventional fossil fuel-powered vessels. Furthermore, the study addresses the broader implications of adopting hydrogen-powered boats within the realm of eco-adventures. It explores the potential for fostering a new wave of sustainable tourism and recreational activities that prioritize environmental conservation. The project considers economic feasibility, regulatory frameworks, and public perception to provide a holistic understanding of the socio-economic and environmental impact of Titan Green.

Victoria Ling

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Victoria Ling

Abstract Name: The Triad: How They Proved to be More than Just Sports

The crossover between graphic design and sports is a prominent topic and holds endless information. Through the years, sports design has evolved and lent itself massive success to the teams it represents. This paper aims to discuss Major League Baseball, the National Football League, and the National Basketball Association, and how design has played a large role in marketing strategies, individual team influence, and the organizations' successes. With sports gaining viewership during the rise of technology, organizations had to find strategies to utilize this new era to their advantage. Other topics such as how MLB, NFL, and NBA logos were created, as well as the evolution of team logos, will be discussed. For many teams, a change led to a downfall, but it also may have changed how many see them today. Team logo variations, multiple jersey types, and the influence on their audiences will be investigated to find what level of success emerged due to these factors. Rebranding has also played a large role in the history of sports design, and many times has proven to be unsuccessful, or a big hit. A simple adjustment may mean the loss of income to the team for years to come as a result. Throughout this paper, the design world and sports world will be connected to find how each sphere of influence impacted each other, as well as what it will leave behind in the years to come.

Sriya Lingamaneni

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Mary Boyes

Abstract Name: Using Anti-oxidative and Anti-inflammatory Properties of Ginger to Temporarily Relieve Respiratory Symptoms from Flavored Vaping Pods

Despite the extensive research conducted on the respiratory implications of e-cigarette usage, a significant research gap persists regarding treatments for respiratory dysfunction specifically induced by flavoring pods within e-cigarettes, aiming to minimize adverse effects. Among the range of vapes available, vanillin emerges as a prevalent flavor choice and has been associated with a reduction in antioxidant efficacy, potentially escalating lung inflammation and oxidative stress. Vapes, regarded as a solution for heavy smokers, are promoted as a safer substitute for tobacco, yet evidence suggests the contrary. Commonly prescribed for e-cigarette-induced respiratory issues, corticosteroids exhibit detrimental effects upon prolonged usage, including osteoporosis, myopathy, and temporary side effects. The introduction of an alternative treatment devoid of symptomatic implications could substantially benefit individuals grappling with respiratory dysfunction stemming from e-cigarette flavoring chemicals. Ginger, renowned for its potent anti-inflammatory and antioxidative properties, offers a multifaceted spectrum of health benefits. It aids in digestion, alleviates inflammation-linked conditions like arthritis and nausea, fortifies the immune system, and contributes to cardiovascular wellness. Widely used in Eastern and alternative medicinal practices, ginger serves as a remedy for various health concerns, encompassing digestive problems, respiratory issues, and headaches. This research initiative endeavors to explore the potential of ginger extract as an alternative remedy for vanillin-triggered respiratory dysfunction. Ginger's antioxidative and anti-inflammatory attributes position it as a promising candidate to mitigate vanillin-induced oxidative stress while potentially minimizing associated side effects. By investigating ginger's therapeutic potential, this study aims to shed light on alternative treatments for managing respiratory complications arising from e-cigarette usage, striving to bridge the current treatment gap and enhance patient care.

Zach Linkous

MN - Hamline University

Discipline: Social Sciences

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#1 Zach Linkous

Abstract Name: The Story of Pests: Non-humans on the Boundaries of Human Spaces and How They Define the Culture of the Anthropocene

In the era of the Anthropocene, humans have significantly altered the environment of the planet. Through shaping and changing the natural world we live in, we have developed several cultural habits. One of those habits is our need to condition our spaces for our own comfort, furthering a divide between what is considered “human” and “natural”. Between that divide live pests, the creatures that invade and infest our spaces despite our efforts to keep them out. By studying pests, their relationship with us, and our methods of pest control, we can learn more about the culture of the Anthropocene and how we can change our habits and perspectives in the face of climate change. This project employed a variety of methods to investigate pests. Firstly, textual research was conducted on different types of pests and their histories paired with historical research on 20th century chemistry and pest control methods, while also exploring the parallels between

animal pests and those groups of humans considered pest-like. The second part involved collecting oral histories by interviewing people in the surrounding neighborhoods on their encounters with pests. Through this, the project revealed several cultural habits of the Anthropocene. Pest control is another of the many ways we condition our space for comfort, regardless of the consequences on the so-called “natural” world. Our identification and actions towards pests show how we expect total ownership and dominance over our spaces. When they break through into our homes, we see them as leaving their proper place in the “natural” world. This is the divide we create between the human and natural world through conditioning our spaces. Pests transgress that divide, so they are detested.The culture of the Anthropocene, as shown by pests, is one of human-centrism, where human needs and wants are placed above all others.

Kennard Liong

CA - Aspiring Scholars Directed Research Program

Discipline: Natural and Physical Sciences

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Abstract Name: Investigating the interaction between clozapine and norclozapine with HLA proteins in the pathogenesis of clozapine-induced agranulocytosis

Clozapine-induced agranulocytosis (CLIA) is a rare but serious reaction associated with the usage of clozapine, a highly effective yet often reserved medication for patients with treatment-resistant schizophrenia. Previous literature has suggested that specific human leukocyte antigen (HLA) alleles may be linked to a higher risk of CLIA. The HLA gene expresses a protein complex that helps the immune system detect foreign pathogens. Polymorphisms in HLA classes B, DQ, and DR contribute to the risk of CLIA. Despite these associations, the underlying mechanism remains unclear. We postulated that clozapine, or its metabolite norclozapine, may interact with HLA proteins to produce the intracellular aberrations that ultimately lead to CLIA. Using crystal structures from the RCSB Protein Data Bank and homology modeling, molecular docking simulations using UCSF Chimera and Autodock Vina were employed to explore the interactions between clozapine and its primary metabolite norclozapine with HLA-B. Docking preparations included solvent ion removal and the addition of protons and charges. Findings reveal that the HLA-B protein complexes encoded by alleles associated with CLIA exhibit stronger binding affinities for both clozapine and norclozapine. This conjecture was reinforced by testing controls, which were protein complexes from HLA-B alleles that were not associated with CLIA. The average free energy of binding was more negative for CLIA-associated HLA-B protein complexes compared to the controls for both clozapine (-8.9kJ/mol against -7.8kJ/mol) and norclozapine (-8.3kJ/mol against -6.9kJ/mol). Patterns in free energies of binding between these compounds suggest a common factor facilitating their interactions with HLA-B alleles. Moreover, with CLIA-associated HLA-B protein complexes, three hydrogen bonds tended to form with aspartate and threonine residues, while common contact residues for Van der Waals forces also tended to form with phenylalanine, threonine and aspartate. This research advances our comprehension of the molecular dynamics governing the CLIA pathway.

Conrad Liszka

CA - California State University - Channel Islands

Discipline: Mathematics and Computer Science

Authors:
#1 Conrad Liszka
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Abstract Name: Investigation into Connections between Openness and Perceptions of Artificial Intelligence

The field of generative deep-learning models, colloquially referred to as “artificial intelligence” or “A.I.”, has rapidly grown in recent years, both in terms of available services and societal impact (Li, 2023). However, comparatively little psychology-based research has been performed with regard to generative A.I., especially in regards to the most current services available. It is therefore the purpose of this study to expand the available research on how one’s psychology interacts with their perception of A.I., specifically version 3.5 of ChatGPT. Previous research suggests that there is a link between individual differences in personality and the perception of A.I. risk (Wissing & Reinhard, 2018). On the other hand, individual traits such as openness and attitudes toward A.I. do not seem to affect one’s immersion in creations known to be made by A.I. (Messingschlager & Appel, 2022). Thus, the current research seeks to examine the personality trait of openness in greater detail in conjunction with participants’ perceptions of A.I. and its level of threat. To measure the personality traits of participants, the current study uses the extra-short form of the Big Five Inventory-2 with 15 items (Soto & John, 2017). Broad opinions on A.I. are collected using the General Attitudes Towards Robots Scale with 20 items (Koverola et al., 2022). For perceptions of A.I. threat, the 12-item Threats of Artificial Intelligence Scale (Kieslich et al., 2021) is used with some modifications. Correlational analyses will be utilized to determine whether there are any significant connections between participants’ openness scores and their general attitudes of A.I. or perceptions of A.I. threat. Findings can be useful in terms of future development of A.I. models as well as individual users’ decision to interact with these services. Such practical implications will be explored in greater detail in the presentation.

Ivy Litton

KY - Morehead State University

Discipline: Education

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Kaitlyn Nelson

Abstract Name: Meteorology Misconceptions Held by Students in General Education and Preservice Earth Science College Courses.

One of the goals of K-12 science education is to help future citizens become scientifically literate, that is, they should be able to understand science concepts and how science creates evidence, assess its significance, and make informed decisions based on this information. Since weather is one of the natural events people are constantly exposed to, meteorology literacy is of critical importance. To enhance weather literacy, one crucial step is to assess the meteorology knowledge of college students. One group of interest was students enrolled in ESS 102, Dangerous Planet, a general education earth science class. In addition, pre-service students

enrolled in ESS 112, Earth and Space Science for Teachers, participated in the study. These students were selected because the ESS courses may be their last opportunity to challenge their weather misconceptions through direct instruction. The purpose of this study was to use the Survey of Meteorology Concepts (SMC) to identify weather misconceptions among 50 and 19 students enrolled in ESS 102 and ESS 112, respectively. The research questions were (a) What questions in the SMC are, statistically, the best suited to measure weather-related misconceptions among college students in Kentucky? (b) What were the topics in which students showed limited content knowledge? and (c) What were the topics where students showed significant misconceptions? Participants completed the SMC as a pre-survey in August 2023 and a post-survey in December 2023. A second group will complete the SMC in the Spring 2024 semester. Preliminary data suggests that, on average, 30% of the questions were answered correctly, but guesses exceeded high-confidence responses. 70% of the questions were answered incorrectly; about 3/4 were guesses as well, with relatively few misconceptions. The students, particularly the pre-service teachers, showed a very limited knowledge of meteorology, which is of concern.

Jacob Liu

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Investigation of Voltage-Gated Proton Channel Interaction with Cytoskeletal Motor Protein in Model of Male Infertility

The voltage-gated proton channel Hv1 plays an essential role in capacitated sperm motility with radially asymmetrical localization on flagellar membranes. However, the anchoring mechanism of this arrangement is not well understood.. Understanding the mechanism of Hv1 localization in sperm would allow for targeted therapies for male infertility and development of male pharmacological contraceptives. Preliminary two-hybrid screening indicates potential interactions between Hv1 and other proteins expressed in human testes, including the cytoplasmic protein motor complex cargo adaptor, dynein light chain Tctex-type 1 (DYNLT1). Human Embryonic Kidney 293 cells were stably transfected with third-generation lentiviral vectors to produce epitope-tagged Hv1 and DYNLT1 proteins separately in singly-transfected cell lines, and together in a doubly-transfected cell line. Cell lysates were co-immunoprecipitated in two iterations by separate pull-downs with both antibodies, and western blot analysis was performed. Initial results tentatively demonstrated native state protein-protein interactions of DYNLT1 and Hv1 in vitro, in confirmatory agreement with previous two-hybrid study results. Further studies entail protocol optimization to clarify results, and evaluation of mutant Hv1 and DYNLT1 isoforms derived from diseased sperm to elucidate mechanisms of male infertility.

Veronica Liu

CA - University of California - San Diego

Discipline: Education

Authors:
#1 Veronica Liu

Abstract Name: How is "Readiness" Met?: The Case of Oakland Unified School District in Oakland, CA

Readiness, often defined as the level at which students meet the qualifications to succeed in college and career, has long been a metric of the success of K-12 education in preparing students for post-secondary lives. In Oakland, California, the Oakland Unified School District (OUSD) has highlighted their top priority as "All students graduate college, career, and community ready.", implementing different goals and actions throughout the years to achieve this priority. However, what does it mean to be ready for college, career, and community? How does the district measure readiness and support initiatives targeted at increasing student readiness? The aim of this study is to understand how school districts, focusing on OUSD, back up their goals of preparing students for the real world. Through a critical approach, this in-depth case study seeks to shed light on how metrics of readiness are understood and used by districts in supporting students. The implications of this study aims to problematize contemporary definitions of readiness, highlighting the ways school districts can improve standards and practices as it relates to college and career readiness to better serve its students. The findings indicate that there must be more transparency on the data behind how and why goals lead to readiness, and how specific actions align with the success of such goals. Better data practices can ensure that proposed actions to meet stated goals are met, as school districts place emphasis on readiness through meeting state standards, rather than preparing students for their post-secondary lives and beyond.

Oliver Liu

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Oliver Liu
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Abstract Name: Investigating the Molecular Mechanism of 14-3-3γ-mediated Inhibition of the Kappa Opioid Receptor

Between 2001 and 2007, 48% of New York elderly chronic pain patients voluntarily discontinued opioid treatment, mainly due to adverse side effects. Opioid medications reduce pain by binding to G protein-coupled receptors (GPCRs), specifically, mu, delta, and kappa opioid receptors. In practice, typical clinical opioids target mu opioid receptors (MORs) in the central nervous system, which mediate both analgesia and adverse effects such as abuse liability and respiratory depression. Recently, peripheral kappa opioid receptors (KORs) have become a promising alternative target to MORs as they avoid such effects. However, unknown signaling pathways in these peripheral neurons limit opioid-mediated analgesia. Our previous work demonstrated that expression of the scaffolding protein 14-3-3γ was sufficient to eliminate KOR-mediated signaling. While ubiquitously expressed and highly conserved, little is known about how the 14-3-3 family of proteins may interact with GPCRs. We hypothesized that 14-3-3γ binds to KOR's C-terminal tail and interrupts the formation of signaling complexes required for KOR-mediated antinociception. To determine if KOR and 14-3-3γ form a complex within cells, we performed co-immunoprecipitation in transfected HEK 293T cells using western blot detection. Pulldown via 14-3-3γ antibodies within cells expressing both KOR and 14-3-3γ resulted in co-immunoprecipitation of KOR, indicating that these proteins can form a stable complex. To assess the functional effects of 14-3-3γ expression, we measured KOR-mediated reduction in cAMP in living cells with a genetically encoded biosensor (GloSensor) after 14-3-3γ transfection. Presence of 14-3-3γ in such cells dampened cellular changes in cAMP when KOR agonist U50488 was added, suggesting that 14-3-3γ inhibits KOR activity. These results support that a 14-3-3γ-KOR complex can occur in cells and result in inhibition of KOR-mediated analgesic signaling. Ongoing studies are investigating the molecular underpinnings of this interaction, which may be widely applicable to the GPCR family as ~90% of GPCRs have predicted 14-3-3 binding motifs.

Scarlett Liu

WI - University of Wisconsin-Madison

Discipline: Engineering and Architecture

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Abstract Name: Machine Learning in Material Science through Cloud Platform

New materials are discovered now not only by physical lab experiments, but computational design can also contribute to discoveries. Machine learning has been one significant tool helping scientists and researchers to conduct experiments with new materials. By using various computing methods, material data can be recorded and computed. With new technologies, many models can be provided for scientists to efficiently screen materials with specific properties, reducing experimental time and cost. One challenge in increasing the impact of publishing machine learning models is in maintaining and using others codes. In this article, we will demonstrate how the cloud platform can be used to increase the useability of Machine Learning models and the ability of researchers to efficiently use other's trained models. To do this we will focus on one material's property and dataset. We will retrain and assess this previous model/dataset using errobar analysis to better understand performance. By utilizing the cloud framework we will demonstrate successful applications in material science through machine learning. Finally, we will evaluate the opportunities and challenges in material science brought by machine learning and big data.

Shuchen Liu

CA - University of California - Santa Cruz

Discipline:

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Abstract Name: Online Modules for Teaching Blockchain

Blockchain technology offers the capability to create a distributed and tamper-proof ledger, even in the presence of untrusted agents. Despite substantial financial resources and attention devoted to blockchain tools, the underlying technology remains less comprehensible to the general population. This paper introduces a newly developed online tool designed to bridge this knowledge gap, enabling users to learn and create their own blockchain. Featuring a user-friendly graphical interface and code, the module is freely accessible on nanoHUB.org. It comprehensively covers all components of the blockchain, including SHA256, Proof of Work, and other features crucial for its tamper-proof ledger functionality. The tool has proven effective in instructing students unfamiliar with blockchain technology. Survey responses from students demonstrate the tool's efficacy as a means of educating the general population about blockchain technology.

Dylan Liu-Walter

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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#2 Shu-Wei Huang

Abstract Name: Widefield Time of Flight Diffuse Optical Tomography with an Unrolled Neural Network Reconstruction

Time of Flight Diffuse Optical Tomography (Tof-DOT) is a bioimaging technique that utilizes light from a pulsed laser in the near-infrared region. Previous efforts to implement Tof-DOT have focused on confocal approaches in which a pulsed laser is raster scanned over an array of detectors. While potentially improving image quality, this approach increases the image acquisition time. Widefield Tof-DOT uses a single light source to illuminate all detectors simultaneously. We plan to implement a Widefield Tof-DOT system with a 500×1000 Single Photon Avalanche Diode (SPAD) camera detector system. We hope to demonstrate that Widefield Tof-DOT, combined with a noise-robust machine learning-based reconstruction algorithm, will demonstrate both fast image acquisition times and accurate reconstructed images. Our specific approach will implement an unrolled neural network architecture in which each layer of the neural network corresponds to one iteration of a linear inverse solver. Because the number of layers in the neural network is smaller than the number of iterations needed to reach sufficient convergence in a linear inverse solver, a speed-up in reconstruction time is possible. A unique training method will be implemented in which Poisson noise at variable SNR ratios will be used to increase noise robustness. In addition, a refinement U-Net and VGG perceptual loss will be incorporated into the network architecture to further enhance the accuracy of the reconstructed images. In addition, whilst previous efforts have demonstrated real-world systems with 24×24 and 32×32 SPAD detectors, we hope to demonstrate that the 500×1000 SPAD camera detector system will show superior spatial resolution, perhaps opening the way for novel applications at the sub-millimeter level. We also hope to show that the noise-robust machine learning-based reconstruction algorithm will generate accurate results with minimal depreciation in photon-starved conditions, allowing for greater accuracy beyond 3-5 cm of tissue.

Patricia Lobos Valle

TX - Texas Woman's University

Discipline: Health and Human Services

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Abstract Name: A Quantitative Comparison of Post Intensive Care Syndrome Knowledge Between Critical Care Nurses and Physicians

Background: As technology advances, intensive care unit (ICU) survival rates also increase, contributing to an increase in post-intensive care syndrome (PICS) cases. No official diagnostic criteria for PICS currently exists, but clinicians agree that PICS describes new or clusters of worsening physical, cognitive, or psychological impairments that originate from critical illness and persist beyond hospitalization. Previous studies explore PICS from the outpatient perspective. There is a gap in in the literature regarding how well PICS is recognized by ICU clinicians. Purpose: Compare the baseline PICS knowledge among ICU nurses and physicians as a foundation for educational interventions.Methods: This cross-sectional, observational,

non-randomized study used a REDCap® survey with 17 fill-in-the-blank and multiple-choice questions about PICS. Possible scores ranged from -24 to 31; higher scores indicated more accurate knowledge of PICS. The survey was developed using the Post-Intensive Care Syndrome: Concept Analysis framework. Consented clinicians were given a description of the study aims before completing the survey. There was time limit for the survey and protected health information was not collected. Results: Participants (37 nurses, 10 physicians, 2 NP's, 1PA) completed the survey between 07/11/2023 and 08/05/2023. The mean score was 16.1 (3.7) with a range of 9 to 23. There was no difference in mean scores by clinician role using an omnibus test (P = .163). The mean score for nurses [15.6 (3.5)] was similar to MDs and APPs [17.4 (3.9); P = .111]. Conclusions: This study addressed an important gap in the literature in this emerging topic. The general lack of knowledge about PICS, regardless of role, was widespread. Educational interventions are needed to increase early detection and prevention of PICS prior to discharge. These interventions will ultimately improve patient outcomes. Findings from the study will guide the development of interprofessional educational programs.

Ranita Lochan

CA - University of the Pacific

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Electrospinning for Corneal Tissue Engineering

A lack of transplanted tissues used to treat patients with corneal damage-related vision impairment negatively impacts millions of people worldwide[1]. Enhancements in the tissue engineering of human corneas may alleviate the donor shortage. One approach to solving this issue is using the method of electrospinning to create transplants that closely resemble the extracellular matrix of a native cornea. Previous studies in our lab have shown that growing corneal cells on aligned collagen fibers significantly downregulates -smooth muscle actin protein, promoting a more transparent phenotype. In this study, we are producing collagen and laminin-PLLA fibers, both aligned and unaligned, to understand the relative importance of fiber alignment and fiber material on corneal cell phenotype. Fibers are electrospun, sputter coated with gold, imaged using scanning electron microscopy, and analyzed for fiber diameter to ensure consistency in diameter. Fibrous mats are then crosslinked using glutaraldehyde and cultured for 7 days on 6-well plates with corneal fibroblast cells isolated from New Zealand white rabbit eyes. Protein expression is evaluated using western blot assay. Results from this study will inform the material used for our tissue engineered cornea replacement. As well as help accomplish the overall goal of electrospinning a cornea, which is common to the niche field of tissue engineering.

Ryan Lofland

MI - University of Michigan - Ann Arbor

Discipline: Visual and Performing Arts

Authors:
#1 Ryan Lofland

Abstract Name: Accommodations for Instrumental Music Students Who are Deaf/Hard of Hearing

Within the Deaf/Hard of Hearing (D/HH) community, many individuals often have far fewer opportunties to

participate in music in the classroom (Darrow & Gfeller, 1991; Churchill & Bernard, 2020). While there has been a fair amount of research within the D/HH community and their experiences within general music (Darrow, 1993), there have been fewer studies specifically with d/hh studnets learning instrumental music (Churchill & Laes, 2021; Hash, 2003). The purpose of this project is to provide suggestions for instrumental educators based on past literature and findings in interviews from instrumental musicians who are d/hh and music educators who have taught this population. Categories in past literature being presented include; (a) scientific research on what works for different types of hearing loss (Drennan & Rubenstein, 2008), (b) audiological technology that can be helpful within the classroom (Looi et al., 2008), (c) studies d/hh musicians' sucesses within music (Churchill, 2016), (d) research from music educators working with d/hh students (Sheldon, 1997). Suggestions based on the literature include; (a) open-ended communication between the parents, student, and educator about the individual medical diagnosis, (b) willingness to discuss and create proper accomodations, (c) sharing with student and parents instrumental specific information to make informed decisions of what will work best. Research questions framing the interview part of the study will include; (a) how do d/hh musicians describe their experiences within instrumental music, (b) what suggestions do d/hh musicians have for music educators, (c) what experiences do music educators that have worked with d/hh musicians and their suggestions on what educators should know. Interview data will be coded using traditional qualitative research methods and emergent themes will be connected back to the past research. Intending to interview 3-5 participants, information from the interviews will be constructed into the results of this study.

Cy Logan

IN - Purdue University Main Campus

Discipline: Interdisciplinary Studies

Authors:
#1 Cy Logan
#2 Vanamali Vemparala
#3 Vijay Vittal
#4 Jason Ware
Vanamali Vemparala
Vijay Vittal

Abstract Name: Data-Driven Solutions for Community Development: Bridging the Eviction Data Gap in Lafayette, IN through Data Automation and Analysis

The city of Lafayette, IN faces significant challenges related to transience, homelessness, and evictions, particularly in the Lincoln, Hanna, Vinton, Monon, St. Lawrence McAllister, and Historic Jefferson neighborhoods. Despite having sufficient funds for community development projects, there exists a crucial gap in modern eviction data that hinders the Lafayette city officials' neighborhood revitalization efforts. This project aims to address this data deficiency through an automated data collection and analysis process. We implemented Selenium to web scrape Indiana public court records, focusing on the Tippecanoe Country 6th Superior Courts to properly collect modern Lafayette eviction cases on a quarterly basis, beginning in January of 2021. The collected eviction data is further processed and refined using Python's "pandas" library to isolate critical statistics, such as the number of eviction cases in each of the identified at-risk neighborhoods, and allow a comprehensive review of eviction trends. The trends found from the refined eviction data are then transformed into actionable insights such as dashboards and visualizations using Tableau. The user-friendly dashboards, including a choropleth map, serve as visual tools for Lafayette city officials, providing a comprehensive overview of eviction trends across the targeted neighborhoods. This automated collection and analysis process not only bridges the gap in updated, usable evictions data, but also provides Lafayette city officials with the necessary tools to make informed decisions in community rebuilding initiatives. Initial results suggest that the Lafayette city officials' access to useable visualizations, contemporary statistical data, such as the targeted neighborhoods with the highest evictions rates and

fluctuations in evictions post-2021, and an automated process to update this data has helped combat Lafayette's data deficiency problem on multiple fronts allowing for more promising development projects.

Charles Logan

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Charles Logan

Abstract Name: Frontier Legalism in Early Kentucky: The Settler and the State

The idealism of Manifest Destiny shrouds perceptions of early American frontier settlement. This process is often seen through a romantic, almost mythological lens, placing frontiersmen in the role of heroes creating civilization from the ground up in an untamed and dangerous land. However, the reality of settlement west of the Appalachians was much more pragmatic and tightly intertwined with both existing and emerging legal and financial systems. State governments strongly encouraged settlement, while individuals and companies sought financial gain through land speculation. Using the archival collection of Squire Boone Family Legal Documents, 1779-1894, at the University of Kentucky Special Collections Research Center, this research will explore the processes and risks associated with early Anglo-American frontier land ownership and settlement and the legacies this process left behind. Squire Boone and his more famous brother, Daniel Boone, were pioneers who helped open Kentucky to Anglo-American migration through the Cumberland Gap. Settlers poured through the Wilderness Road into Kentucky, displacing its traditional inhabitants and radically altering the landscape and history of the region. Records in the collection portray the often unseen legal and financial risks resulting from their endeavors. This research will utilize records of Virginia land grants, archaeological surveys, and accounts of settler life with Squire's documents and other related sources to explore the legal structure and organization of early frontier settlement and the complex relationship between the settler and the state. In addition, this project aims to create a more accurate picture of the systems utilized to organize westward migration and how the legacies of land claiming, ownership, and settlement from over 200 years ago influence Kentucky's landscape, culture and people today.

Sydney Logsdon

MI - Michigan State University

Discipline: Interdisciplinary Studies

Authors:
#1 Sydney Logsdon
#2 Marine Avequin
#3 Gracie Rudolfi
Marine Avequin
Gracie Rudolfi

Abstract Name: How Do We Process Music? The Role of Instrument Identification in Determining Thematic Responses to Music Pieces

This presentation discusses a new experiment in a multidisciplinary study conducted at the Digital Humanities and Literary Cognition Lab and Timing, Attention, and Perception Lab at MSU called "The Role of Narrative Listening in Music Perception." The original experiment explores whether participants imagine

or “hear” stories while listening to musical stimuli. Participants from the U.S. and Dimen, China listened to instrumental music and were asked to describe any narratives they may have perceived. A surprising number of people “heard” stories and many patterns in how these participants responded emerged. Based on the largely single-instrument Chinese music chosen for listeners, we were inspired to design a “single instrument” study. Each music excerpt in this new study featured only one instrument—ten Western instruments and one traditional Chinese instrument. Our presentation will discuss this study with a focus on participant identification of instruments both in their narratives and at the end of the survey. We will explore the relationship between prominent themes within instrument groups and how these relate to correct—and incorrect—instrument identification. Each narrative and memory response has been analyzed for a range of metadata categories, such as setting, themes, characters, and pop culture references. This helps us distinguish whether certain themes are inherent to the music itself or if they are more directly linked to the participant’s perception of the physical instrument. We conclude by exploring the significance of listener perception when listening to music, arguing that the audience’s pre-existing instrument associations are a key factor in determining the type of narrative they imagine in response to an excerpt.

Austin Long

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
#1 Austin Long
#2 Joan Philip
#3 Saul Garcia
#4 Michael Beck
#5 Gopal Periyannan

Abstract Name: Understanding the Role of Lipid-Protein Interactions in Modulating the Function of Glutamate Carboxypeptidase II (GCPII)

Glutamate carboxypeptidase II (GCPII) is transmembrane zinc metallopeptidase that is found in a variety of organisms, including humans. Human GCPII (hGCPII) plays key roles in human physiology and disease development. hGCPII is produced as five paralogs in various tissues including the central nervous system, intestine, kidneys, angiogenesis of most solid tumors, as well as in cancerous prostate. Activated hGCPII in the brain leads to excess glutamate production, which has been proven to contribute to many neurological disorders including brain tissue damage and stroke. While GCPII’s role in glutamate production in the brain is known, many functions and behaviors in other tissues are not known. GCPII transmembrane domain (TMD) contains a unique amino acid sequence known as GXXXG, where G stands for the amino acid glycine and X is a set of hydrophobic amino acids. The GXXXG protein motif is known to induce protein dimerization with the help of the surrounding lipids. It is not known whether GXXXG induced dimerization in GCPII is influenced by surrounding lipids, thus impacting the functions of GCPII in a tissue-dependent manner. If the lipid compositions that surround the GCPII-TMD in the plasma membrane can be controlled, then the influence of membrane lipids on GCPII function in conjunction with GXXXG motif can be investigated. In this study, a synthetic membrane system known as lipid nanodiscs with unique cellular lipid compositions, such as neuronal and intestinal cell membrane lipids, were synthesized and used to incorporate GCPII-TMD to study lipid-protein interactions. We produced GCPII-TMD with fluorescent protein labels to characterize the lipid mediated protein dimerization via fluorescence energy transfer (FRET) spectroscopy technique. This artificial membrane system study will lead to greater understandings of how lipids influence protein functions in general as well as the function and behaviors of GCPII in different tissues.

Jiayi Long

MN - University of Minnesota - Twin Cities

Discipline: Social Sciences

Authors:
#1 Jiayi Long
#2 Xiaoran Sun

Abstract Name: How Adolescents Use Smartphone and Social Media Overnight: Objective Observations from Passive Sensing and Gender Difference

Adolescents' smartphone and social media use overnight has been associated with negative health outcomes(Mireku et al., 2019; Elhai et al., 2017). Research has also revealed gender differences, including girls using social media more frequently than boys (Twenge & Martin, 2020). However, previous studies often relied on self-reports with subjective biases and inaccuracies. This study leveraged continuous smartphone passive sensing data to objectively describe adolescents' smartphone and social media use overnight and investigate gender differences in their use.Over 38 million screenshots and associated metadata were collected from 139 adolescents (47.48%female, 44.60%male, 7.19%other; Mage=15.40, SD=1.34; 53%Caucasian, 16%multiracial, 14%African American, 7.3%Latinx/Hispanic, 7.8%Asian) by a passive sensing app installed on their smartphones. The screenshots were automatically captured and collected every 5 seconds whenever the screen was on for up to 6 months. Apps being used were also collected. With this data, we could tell at any time during participation, how long adolescents use their smartphones and what apps they were using.On average, between 10pm and 7am, adolescents used smartphones for 79.65minutes (SD=86.60), with apps being switched for every 2.61minutes (SD=2.96) and social media use for 15.88minutes (SD=20.90). Independent two-sample t-tests comparing boys and girls revealed no significant differences in overall smartphone use ($t(126)=-0.87$, $p=0.39$) or app switches ($t(126)=-0.16$, $p=0.87$). However, girls spent significantly more nightly time on social media apps (19.64±24.75 minutes) than boys (11.19±15.55 minutes), $t(126)=-2.30$, $p=0.02$. Findings with our objective observation data validate previous findings about gender differences and highlight adolescent girls being the vulnerable group for social media impacts. Next step is to study how gender moderates the association between nighttime smartphone and social media use and sleep and mental health outcomes.

Neka Long

TN - University of Tennessee at Chattanooga

Discipline: Engineering and Architecture

Authors:
#1 Neka Long
#2 Reetesh Ranjan

Abstract Name: Hybrid 3D-1D Strategy for Computational Study of Airflow Dynamics within Human Airways

Aerosolized drug delivery is an effective strategy for the treatment of various respiratory ailments such as asthma, cystic fibrosis, and chronic obstructive pulmonary disease. By targeting drug deposition towards the diseased pulmonary regions, effective treatment can be provided with minimal side effects. Recent advancements in radiological techniques have resulted in more detailed anatomical information, but this information still tends to be limited, which leads to ineffective treatment. Therefore, computational tools can provide insight that can further guide and increase the efficiency of treatment procedures. The aerosol dynamics within airways are dictated by the airflow dynamics, which exhibit features such as laminar-to-turbulent transition, flow separation, and reattachment, shear layers, etc., which makes investigation of airflow dynamics a challenging task. For the reasons of computational affordability and accuracy large-eddy

simulation (LES) tends to be a promising tool to investigate the airflow dynamics within realistic human airways. However even with LES, the simulation of transient and three-dimensional flow in all lung generations tends to be expensive, thus requiring alternate strategies for parametric studies. Therefore, in this study, we assess the performance of a hybrid 3D-1D strategy to simulate airflow within the well-established SimInhale benchmark case by comparing it with full 3D LES. In the hybrid strategy, the upper part of the airways is simulated in 3D, and a trumpet-shaped simplified 1D model is used for the lower part of the lungs comprising up to seven generations. The airflow features within the airways will be discussed in terms of the instantaneous and time-averaged behavior of the flow field.

Ceane Long

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Ceane Long

Abstract Name: The Design Destiny of Astrid Stavro

.The visual language of graphic design fills in communication gaps in a world where images are used more and more. It is a dynamic discipline that uses visual components like typography, color, and imagery to communicate ideas while combining creativity and functionality. Its importance derives from its ability to captivate, educate, and advertise. Effective graphic design improves user experiences and influences opinions. Captivating design is essential for keeping viewers' attention in the face of the constant flow of information in today's digital world. By balancing aesthetics with intentional communication, it fosters connections and increases engagement. The visual language of graphic design is the embodiment of creativity, problem-solving, and strategic thinking. That is what Italian graphic designer Astrid Stavro did with her work throughout her career and still does to this day. From an early age Astrid was raised surrounded by her family's printing business. Her early years were filled with traveling for her family's business, which started giving her inspiration. Astrid's journey from a driven journalist to a design professional had changed when she came across graphic design as a young adult. Her education at the London-based Royal College of Art solidified her career path. Astrid Stavro, and her multicultural upbringing shaped her design approach, her path, from playing as a kid in front of printing presses to setting standards for editorial design, is an inspiration to aspiring designers, demonstrating the transformational power of diverse cultural influences. Prominent graphic designer Astrid Stavro has designed magazine covers and logos for businesses, among many other projects. Because of the wide range of cultural influences in her upbringing, Astrid has developed a distinctive viewpoint on design. Astrid's enduring passion for visual communication, as well as her remarkable work, have left an inevitable mark on the design industry.

Mayra Lopez

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Mayra Lopez
#2 Sellers Swann
#3 Isabel Scarinci
#4 Kathryn Maxwell
Sellers Swann

Abstract Name: Multi-Channel Communication Campaign to Promote HPV Vaccination in Chambers County, Alabama: Preliminary Results

Cervical cancer is a public health problem in the state of Alabama. Based on the 2016-2020 data, Alabama was ranked sixth in cervical cancer incidence and fourth in mortality in the U.S. Across the state of Alabama leaders gather to address this issue and launched Operation Wipe Out, which is a collaborative strategic plan to eliminate cervical cancer as a public health problem in Alabama. Chambers County was identified as the county with highest cervical cancer incidence in the state and more focused efforts have taken place in this particular county. With support from the Chambers County School District and funding from the National Cancer Institute, high school students have been engaged in the development, implementation, and evaluation of a multi-channel campaign to promote HPV vaccination. Twenty-nine high school students are currently being trained and provided with the knowledge, skills, and support toward the development of the campaign. Pre-test assessments showed that in this group of 16 and 17 years olds most were female (90%) and none have attended a training like this previously. When asked where students heard of HPV, many said through a teacher (65%), parents (30%), or social media (35%), where TikTok was the most chosen platform. To date, students have identified their target audience (parents of children/adolescents between the ages of 9 -18 and 13–18-year-old adolescents) and developed the campaign branding/slogan and health messages. They are currently working on the multi-channel dissemination strategies with the goal of launching the campaign in January 2024 which will culminate with school-based vaccinations in the Spring. Impact will be evaluated by comparing the number of children/adolescents receiving the HPV vaccine at the schools and county (state registry) to 2022 uptake. If successful, this program can be disseminated to other counties and states.

Isaac Lopez

AZ - Northern Arizona University

Discipline: Natural and Physical Sciences

Authors:
#1 Isaac Lopez
#2 Francisco Villa, PhD

Abstract Name: Staphylococcus epidermidis Biofilm Formation and Quorum Sensing AgrA Transcription Levels in Various In Vitro Environments

Staphylococcus epidermidis is a common human commensal and opportunistic pathogen that is one of the leading causes of nosocomial infections related to indwelling medical devices. This pathogenesis most often occurs through the formation of biofilms on membranes or device surfaces. Although some bacterial quorum sensing has been shown to control virulence factors, current studies on the quorum sensing system of S. epidermidis, accessory gene regulator (Agr), and its relationship with biofilm formation are contradictory. Here, we aim to better elucidate the role of Agr on biofilm formation of S. epidermidis through analysis of AgrA transcript level changes in various in vitro environments. Through semi-quantitative reverse transcription polymerase chain reaction (SQ RT PCR) of bacterial colonies and simultaneous staining of their biofilms, we estimated how this Staphylococcus quorum sensing system influenced changes in biofilm formation in response to varying temperatures, cell densities, and growth media. Identical methodology was conducted for the sdrG biofilm gene for comparison and analysis. Data is currently being collected and we anticipate reporting the results at the time of the 2024 National Conference on Undergraduate Research. We believe the results of this study will elaborate on the function of quorum sensing in biofilm formation in S. epidermidis.

Daniel Lopez

CA - University of California - Merced

Discipline: Social Sciences

Authors:
#1 Daniel Lopez
#2 Whitney Pirtle

Abstract Name: Black Sociologists Underrepresented in PhD Programs, an Examination of Racism and Roadblocks

Black scholars in higher education make up for the most sociology degrees among non-white students but not many of these black students make the transition to a P.h.D. because of what could be a leaky pipeline. I will be approaching this project with both qualitative and quantitative methods; the qualitative being in the form of a literature review and the quantitative in the form of a survey. The online survey was taken by Black Sociologists with a Ph.D. in the United States and asked participants questions about their experience in upper education and how it may have been affected because of their race. I will be researching how racism/roadblocks interfere with the advancement of Black sociologists in higher education. The purpose of my research is to research the relationship of higher education with race for black sociologists. the problem is that there seems to be a blockage in the pipeline for black scholars.

Ilse Lopez

CA - San Diego State University

Discipline: Education

Authors:
#1 Emily Le
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Emily Le
Viridiana Holguin Solorio

Abstract Name: Breaking the Mold: Disrupting the Dominant Narrative as First-Generation College Students

This research aims to bring forth the experiences of three undergraduate first-generation students navigating higher education. Our narratives aim to help contest the dominant narrative within higher education. We expose the predetermined expectation behind the romanticized American college dream, which we define as the freedom and ability to pursue higher education as a form of upward mobility toward a successful career. We reclaim our narrative by engaging in writing workshops that allow us to write, revise, and critically critique others through open discussion with the help of the Health Careers Opportunity Program (HCOP), a federally funded eight-week summer research seminar. The research employs autoethnography as a qualitative methodological tool, allowing us to reflect on lived experiences and draw connections between personal stories and scholarly insights. By engaging in self-reflexivity and introspection, we question and critique systems of power that aim to oppress us. We utilized the narrative research approach to explore college culture, systemic barriers in higher education, first-generation challenges, and the unique perspectives stemming from our underrepresented ethnic backgrounds. Through this process, we navigate and articulate the complexities of our identities, examining how our cultural backgrounds impact our academic pursuits, social interactions, and overall sense of belonging in an institution not designed for us. This collection of autoethnographies serves as a means for personal expression and liberation and invites others to explore their positionality. We expect our preliminary findings to be contextualized within cultural studies and educational frameworks, offering significant insights into the challenges and accomplishments of navigating higher education as first-generation college students. Ultimately, these autoethnographies offer a counter-story narrative framework for empowerment, liberation, and social justice. Our collaboration exemplifies the

potential for shared narratives to foster understanding, challenge stereotypes, and inspire others within and beyond the academic community. Keywords: First-generation, Narrative, Autoethnography, Liberation, Higher Education

Edson Lopez

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Edson Lopez
#2 Juhe Liu
#3 Joe Charbonnet

Abstract Name: Use of Total Oxidizable Precursor Assay to Determine the Fate and Transport of PFAS Throughout Wastewater Treatment Facilities

Per- and poly-fluoroalkyl substances (PFAS) are highly persistent contaminants of emerging concern given their broad distribution and link to harmful health environmental effects. They are used in everyday items such as cookware coatings, food packaging, and firefighting foams. Due to their aggregation and abundance in wastewater, the fate and transport of PFAS in wastewater treatment processes needs to be better understood. While highly oxidized perfluorocarboxylic acids (PFCAs) are routinely measured through conventional methods, thousands of PFCA precursors with fluorinated tails and larger headgroups are less frequently quantified. The total oxidizable precursor (TOP) assay provides a means to quantify PFCA precursors through the •OH-mediated oxidation of unquantified precursor PFAS. We used the TOP assay to quantify the transformation of precursor PFAS throughout the treatment process in six wastewater treatment facilities. The results indicate that precursor PFAS transform into PFCAs in each unit in the wastewater treatment process. These results also inform our understanding of the total PFAS concentration of wastewater effluent and potential burdens on downstream aquatic ecosystems. These results will help to guide future research related to how PFAS in wastewater effluent impacts aquatic and human life.

Alexis Lopez

TX - Lone Star College

Discipline: Natural and Physical Sciences

Authors:
#1 Alexis Lopez

Abstract Name: Blast Off An Investigation on the Development of Fusion Energy for Deep Space

This research assesses the development and implementation of nuclear fusion for space propulsion systems in deep space to determine which fusion reaction operates best under deep space conditions. While scientists have long searched for an energy source that could transport humans through deep space to explore the universe, setbacks in finding an energy capable of reaching a high specific impulse and exhaust velocity to propel rockets through deep space have made this development difficult. Fusion energy presents itself as a potential solution to these obstacles. To explore such a possibility, a literature review of fusion reactors and fusion propulsion was conducted to understand the fuel cycles of fusion energy, compare the types of fusion reactors, and assess the potential fusion energy could have on propulsion. Foundational research conducted by experts in nuclear energy, such as the Lawrence Livermore National Laboratory, indicate energy fuel

needed for deep space must have a high payload fraction for cargo transportation and short mission duration for human transportation. Based on the criteria needed for deep space missions, fusion energy demonstrates the capability of meeting these expectations. Additionally, a detailed comparison of the energy produced and the percentage of charged particles was conducted between the main contenders for fusion energy fuel, which are deuterium-deuterium, deuterium-helium-3, and deuterium-tritium. The research displayed a clear advantage to using deuterium-helium-3, an energy source that is abundantly available on the Moon, because of its high number of charge particles compared with other energy candidates, such as tritium. From this critical literature review, this project concludes that fusion energy, specifically deuterium-helium-3, provides a possible solution to a decades-long limitation on developing fusion propulsion.

Jose Lopez Ceja

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Jose Lopez-Ceja
#2 Nabila Tanjeem

Abstract Name: Light-responsive Active Motion and Assembly Using Gold Nanoparticles

Active particles absorb energy from the environment and transform it into motion, allowing for the realization of autonomous movement at the micro- and nanoscale. We demonstrate a simple experimental system where gold nanoparticles and high intensity LED light are used to design active motion and assembly in colloidal particle suspensions. Because of the surface plasmon resonance, gold nanoparticles absorb light and generate a temperature gradient around the center of the illumination that causes a convective flow. We captured the active motion of larger particles (with a size of about 1 micrometers) in this flow for different conditions of light intensity, gold nanoparticle concentration, and sample height. We calculated the MSD (mean square displacement) over time plot to characterize active motion, and found that particle activity increases with light intensity, gold nanoparticle concentration, and the height of the sample. We observe accumulation of large particle clusters towards the center of the light after 5-10 minutes. Additionally, we developed a patterned light illumination system using a DMD (Digital Micromirror Device) that allows us to define bright and dark regions, hence the local temperature. In our preliminary experiments, we used a bright rectangular-shaped region surrounded by a dark background. We find that the size of the accumulated particle crowd near the center increases with the area of the bright region. Our work provides an opportunity to connect the fundamental understanding of photothermal convection to applications where particle motion and assembly can be engineered precisely at the microscale.

Jimena Lopez Flores

GA - Kennesaw State University

Discipline: Business and Entrepreneurship

Authors:
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#2 Robert Cooke
#3 Dianhan Zheng
#4 Tianxi Dong
Robert Cooke

Abstract Name: Applying Computer-aided Textual Analysis to Understand Employee Recruitment in Start-up Companies

New ventures may be at a disadvantaged position regarding talent attraction due to reasons such as a less established reputation and job seekers' perceived uncertainty regarding their career trajectory. Employment webpages and job postings are common places where start-up organizations can convey an attractive organizational image in a textual format to job seekers. However, little is known about whether such textual information reflects the actual experience of employees or the effectiveness of such textual information in attracting talent. In this study, we collected texts related to organizational culture, employee benefits, and diversity statements from the websites of approximately 250 new ventures featured in the Forbes 2022 and 2023 lists of AI50, Fintech 50, and Next Billion-Dollar Startups. We will first use computer-aided text analysis (CATA) in R to score the startups regarding several organizational attributes, such as emphasis on teamwork and work-life balance. We will download employee ratings of each company from Glassdoor.com, where employees rate their employer regarding overall favorableness and specific aspects such as work-life balance and management. The start-ups' financial performance will be obtained from the Crunchbase database. We will use multiple regression to examine whether organizational attributes communicated in the job postings and career webpages are significantly related to the Glassdoor ratings by employees and firm financial performance. To test the effectiveness of using texts to increase organizational attraction, we will conduct an online experiment with real job seekers recruited from Prolific. Specifically, we will manipulate textual elements in a job posting (e.g., presence vs. absence of employee benefits, short vs. elaborated diversity statement, etc.) and test whether the inclusion of certain texts can enhance job seekers' attraction to the organization and intention to apply for the job. Our findings will have important practical implications for job seekers and talent recruitment strategies in the start-up scene.

Marianna Lopez Luritta

UT - Weber State University

Discipline: Social Sciences

Authors:
#1 Marianna Lopez Luritta
#2 McKinna Baird
#3 Jean Norman

Abstract Name: The State of Student Media at HBCUs and HSIs

This research explores the state of student media at Historically Black Colleges and Universities (HBCUs) and Hispanic Serving Institutions (HSIs) given the decline of student media outlets in the past decade due both to the challenges of newspapers in general and the pandemic. It is an attempt to document the presence of student media at these non-White institutions, an effort that does not appear to have been completed before now.Despite ample research on student media, there is a void of data specific to HBCUs and HSIs. Research also has been conducted on journalism programs at HBCUs (Crawford, 2012; Jeter, 2002; Sturgis & Johnson-Ross, 2019), but not addressing student media at these unique institutions. At least journalism at HBCUs has been researched. Hispanic Serving Institutions, a much newer federal designation, have been the subject of some work in the academy, but little if any research has been done on journalism, let alone student media, in these bilingual institutions.The most current lists available show a total of 666 HBCUs and HSIs in the United States, including Puerto Rico (The Hundred Seven, 2018; Hispanic Association of Colleges and Universities, 2021). This study started by gathering information from the institutions' websites and social media, and by making phone calls to the newsrooms when no information was available on websites or social media. Through this initial step, we identified 220 HBCUs and HSIs with student media, including newspapers, radio stations, broadcasts, and podcasts. This team deployed a questionnaire to learn more about these outlets to help us shed light on their production operations, publishing styles, diversity inside of the newsrooms, and work methodology. We also have created a unique dataset for future research on student media. We expect to have results from that survey in time for the conferences.

Alec Lopez Mora

CA - Azusa Pacific University

Discipline: Natural and Physical Sciences

Authors:
#1 Alec Lopez

Abstract Name: Determination of H+ of NIS Synthetase Mechanism Via pH Kinetics

Our bodies contain metal chelators which absorb iron and process it, the same goes for bacteria within our body.Iron is crucial for aerobic organisms, and pathogenic bacteria secrete siderophores to compete for host metals. Primarily these siderophores are synthesized via two pathways: one much more well-known nonribosomal peptide synthetase (NPRS)-dependent pathway, and NPRS-independent siderophore (NIS) pathway, the less studied pathway. In spite of the two pathways having the similarity of synthesizing siderophores, the host is able to intercept NRPS siderophores and keep them from retrieving iron. NIS siderophores evade the human immune system and therefore are virulence factors for pathogenic bacteria. Streptomyces coelicolor, a bacterium, can synthesize two NIS siderophores, Desferrioxamine B and Desferrioxamine E (dfob and dfoE), which are both produced in their final steps by the enzyme Desferroxiamine D (DesD). DesD, is a model enzyme for the NIS synthetases and their pathways. The Hoffmann Lab is pursuing structure based drug design targeting these understudied NIS synthetases, including establishing the basic biochemical mechanism and function. The focus of my current research is to finish a kinetic profile at different pHs to explore the proton-dependence of DesD and its substrate Desferroxiamine G (dfoG). Utilizing a single injection kinetics assay created previously in lab, I will use an Isothermal Titration Calorimeter (ITC) and GraphPad Prism Software, to analyze the changes in kinetics at systematically varied pH.The kinetic curves and constants discovered will be used to hypothesize the mechanism of catalysis, and in the future, to design catalytic inhibitors.

Luis Lopez-Games

TN - University of Memphis

Discipline: Humanities

Authors:
#1 Luis Lopez-Games

Abstract Name: Usage Frequency and Prestige Levels of Spanglish amongst Memphis' Second-Generation Hispanic Latino Community

Extensive research on the usage, characteristics and impact of 'Spanglish' on bilingual communities in majority Latino/Hispanic areas such as the streets of Miami, San Antonio, and other high-density bilingual populations across the United States have seldom been replicated in primarily monolingual communities such as Memphis, TN. To explore the linguistic practices of our local Spanish-speaking communities, this study investigated the connection between different aspects of 'Spanglish', a phenomenon of language contact between English and Spanish, such as code switching, lexical borrowings, and calques, and the frequency of their usage by second-generation bilingual Latinos/Hispanics, that is, children of Latino/Hispanic immigrants, living in Memphis, TN and the surrounding areas. Methodology included both written questionnaires on the participants' attitudes regarding 'Spanglish' and oral interviews conducted in Spanish to simulate conditions in which bilinguals incorporate 'Spanglish'. Following transcription of oral interviews, the data were

analyzed and coded for the aforementioned characteristics of ‘Spanglish'. Initial results indicate that users of ‘Spanglish’ employ codeswitching with a higher degree of frequency than their usage of calques and borrowings. In addition, users tend to associate ‘Spanglish’ with a higher level of prestige than originally hypothesized, deepening our awareness of the level of prestige ‘Spanglish’ holds within this particular community of users. These conclusions contribute to the field of language variation and contact by opening the door towards the creation of a warm and welcoming space for 'Spanglish' in academia and society as a whole. Being on the cusp of an exploding influx of Latino/Hispanic presence in this country, this work, studying and analyzing the communicative practices of this community, contributes to a stronger understanding of how language practices form in this bilingual and bicultural space.

Sebastian Lopez-Padilla

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
#1 Sebastian Lopez-Padilla
#2 Ella Ben Hagai

Abstract Name: Understanding the American Dream Through the Eyes of First Generation Latinx Students

First-generation Latinx college students with immigrant parents experience divided beliefs about the American dream. Despite existing literature highlighting Latinx immigrant parents' support for the American dream, there is less research on the transference of this belief to second-generation Latinx citizens. In this study, a clashing narrative approach is used to examine two opposing narratives. The first narrative stresses that the American Dream is attainable through educational success and in turn leads to upward mobility. Contrary, the systemic racism narrative exemplifies ways in which minoritized communities are held back by institutional and systemic issues. Research indicates that Latinx students are more likely to start but not complete their degree. This study uses an experimental approach that presents Latinx college students with two prompts that represent the personal barriers Latinx students encounter, such as the adaptation to an individualistic culture that is college life from a collectivist culture the Latinx community tends to embody. The second prompt will focus on statistical findings that demonstrate degree gaps Latinx students have in comparison to White students. Prior, a manipulation check will be used to evaluate whether participants view education as the path to achieving the American dream. Participants will then complete a survey that includes scales measuring whether they support the American Dream or the systemic racism narrative. With anticipated findings including heightened support for the systemic narrative, this study aims to examine the credibility of the American Dream among first-generation Latinx college students at a Hispanic-serving institution. To better understand the generational shifts in support of the American dream it is crucial that the largest growing minority within the U.S. is allowed to express their educational concerns as a way of constructing an educational system that supports and nurtures Latinx excellence in academia.

Gerard Loras

NJ - New Jersey City University

Discipline: Natural and Physical Sciences

Authors:
#1 Gerard Loras

Abstract Name: Computational Investigation of Sulfonamide-Aldehyde Derivatives

The increasing microbial resistance to antibiotics underscores the pursuit of novel antibacterial compounds. Sulfonamides, known for affordability and low toxicity, have been vital in combating infections. However, persistent bacterial resistance necessitates a deeper understanding of their molecular intricacies. In this investigation, a repertoire of theoretical techniques, encompassing semi-empirical and ab-initio methodologies, is harnessed to scrutinize the stability, reactivity, and antioxidant attributes of the following sulfonamide-aldehyde derivatives: 4-(2-(1,3-dioxo-1-(p-tolyl)propan-2-ylidene)hydrazinyl)benzenesulfonamide (M1), 4-(2-(1,3-dioxo-1-(p-tolyl)propan-2-ylidene)hydrazinyl)-N-(pyrimidin-2-yl)benzenesulfonamide(M2), 4-(2-(1,3-dioxo-1-(p-tolyl)propan-2-ylidene)hydrazinyl)-N-(4-methylpyrimidin-2-yl)benzenesulfonamide (M3). The semi-empirical method PM3 is employed to attain geometrical optimization of the compounds, while the theoretical methods Hartree-Fock (HF) and Density Functional Theory (DFT) are harnessed to unravel chemical properties. Computational simulations are meticulously executed using Gaussian 16 and GaussView software packages, lauded for their precision in electronic structure calculations grounded in quantum mechanics. Our findings elucidate the preferential electrophilic attack at ketone sites, highlighted by their prominent Highest Occupied Molecular Orbital (HOMO) lobes. In vacuum, M3 exhibits the highest electrophilicity index, whereas, in a polar solvent, HF results favor M2, while DFT consistently suggests M3. Intriguingly, in cyclohexane, HF predicts that M1 has the highest electrophilicity index, while DFT predicts that M3 has the highest value. Also, Molecular Electrostatic Potential (MEP) analysis unequivocally maps the highest electron density regions to the aldehyde groups, juxtaposed with the lowest electron density regions attributed to amine and amino groups. In addition, based on the energy gap between HOMO and LUMO using both theoretical methods HF and DFT results, M2 was the most reactive on a polar solvent, while M1 was the most reactive on a non-polar solvent. These revelatory insights pave the way for the strategic design, reactivity and development of novel antimicrobial agents, addressing the critical need for efficacious alternatives amidst the relentless tide of bacterial resistance.

Julie Loritsch

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
#1 Julie Loritsch
#2 Nazek Queder
#3 Michael Yassa

Abstract Name: Investigating Hippocampal Subfield Volumes in Older Adults with Down Syndrome

Individuals with Down syndrome (DS) are at a higher risk of developing Alzheimer's Disease (AD), which is thought be due to the overexpression of the amyloid precursor protein, an initiator in the cascade of AD pathology development. AD development is associated with an increase in hippocampal atrophy, and subsequently a decline in memory. Previous late onset AD studies have observed a relationship between decreases in hippocampal subfield volumes, particularly the CA1 and subiculum, and predictions of future cognitive decline. Here, the relationship between hippocampal subfield volume measures in the cornu ammonis 1 (CA1), subiculum, and antero-lateral entorhinal cortex (aLEC) and future changes in cognitive state were assessed longitudinally. Decreases in volume measures in the CA1 and subiculum were hypothesized to be associated with conversion of cognitive state. Volume measures of these subfields were also measured against current memory performance in the modified cued recall test (mCRT). Lower volumes in the CA1 and subiculum were expected to be associated with worsened memory performance measured by the mCRT. Results showed no association between volume measures for the CA1 and subiculum regions and conversion of cognitive state, with no significant difference between these two subfields. Additionally, the mCRT scores were positively associated with volume measures in the subiculum. Future directions will focus on further investigating structural changes in the subfields in younger DS cohorts as well as integrating other pathological hallmarks of AD and their impact on the hippocampal subfields and memory performance.

Skye Loures

PA - Lafayette College

Discipline: Social Sciences

Authors:
#1 Skye Loures

Abstract Name: The Regression of Hungarian Democracy Through a Case Study of LGBTQ+ Populations

In the late 1980s, Hungary arose as one of the most rapidly democratizing states after the fall of communism. It established a democratic Constitution, complete with checks and balances, protections for minority groups, and the promise of free elections. But unlike many of its former Communist neighbors, it has defected from the progress of the latter part of the twentieth century. Hungarian Prime Minister Viktor Orbán and the Fidesz party have consolidated illiberal democracy in Hungary, characterized by the backsliding of democratic institutions, promotion of nationalist ideologies, and marginalization of minority groups. A democracy in which a majority elects to separate, expel, or otherwise injure its minorities is not a functioning democracy. The rights of Hungary's minorities, such as the LGBTQ+ community, have been undermined by an electoral autocracy; leadership of the past decade has consolidated the legislative, executive, and judicial branches, eroding a fundamental building block of democracy. The government has also mounted a campaign that dismisses the social and legal autonomy of LGBTQ+ people through propaganda and regressive legislation. This is done to strengthen support for Orbán, positioning him at the metaphorical helm of defense of Hungarian children, "traditional family values", and the longevity of the nation. The clash of traditional beliefs and progressivism has allowed Orbán to further his agenda of nationalism and fuel anti-Western and anti-European Union rhetoric. Methods of research to substantiate these claims include the analysis of relevant academic literature, review of Orbán's public statements, synthesis of qualitative reports by Hungarian LGBTQ+ organizations (e.g., Háttér Society and the Hungarian LGBT Alliance), and interviews with various LGBTQ+ organizations in Budapest in January 2024. Findings add to a limited body of existing research on the impacts of illiberal regression specifically on the Hungarian LGBTQ+ community, as this group has been understudied.

Claire Love

CA - University of Redlands

Discipline: Natural and Physical Sciences

Authors:
#1 Claire Love
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Abstract Name: Monitoring Wildlife Activity Using Game Cameras

Game cameras are a common tool for monitoring communities of larger wildlife and the impact human recreation has on them. Motion activated cameras were used to survey the wildlife communities and human visitation rates of Herngt 'Aki' Preserve (HAP) and San Timoteo Nature Sanctuary (STNS), open space reserves in Redlands, California. The goal of this research was to provide the Redlands Conservancy with data to help better manage their reserves not only as wildlife habitat but for recreational use as well. Weekly human visitation was compared to weekly wildlife occurrence per camera site, which demonstrated only a weakly positive correlation. More people visited STNS per week than HAP. The most common wildlife

species observed in both reserves was Canis latrans (coyote), followed by Corvus corax (common raven). Preliminary analysis found no significant correlation between weekly human recreation and weekly wildlife presence. Further statistical testing is planned to look at potential long term (over multiple seasons/years) and short term (daily temporal patterns) effects.

Alexander Lowery

MN - University of Minnesota - Duluth

Discipline: Natural and Physical Sciences

Authors:
#1 Alexander Lowery

Abstract Name: Determining PFAS Soil-Biota Accumulation Factors in Earthworms

During the latter half of the 20th century, the Duluth Air National Guard Base (DANGB) tested Aqueous Film Forming Foam (AFFF) as a firefighting agent against petroleum fires. AFFF, while effective as a fire suppressant, contains the PFAS chemicals PFOA, PFOS, and PFBS in high concentrations. These environmental contaminants are still found at ecologically relevant concentrations in and around historic release sites. Research into the ecological toxicity of PFAS is ongoing in and around DANGB through the Great Lakes Toxicology and Ecology division of the US EPA. To quantify PFAS contamination in earthworms, PFAS soil-biota accumulation factors (SBAF) were established across DANGB and nearby sites. The SBAF is a simple and effective method for ecological risk assessment; however, it does not give you any information about how a contaminant bioaccumulates. Earthworms consume organic matter and microorganisms in soil and are therefore considered to be both primary and secondary consumers. Bulk stable isotope analysis was performed to determine the trophic level of earthworms at these sites through quantification of δ15N and δ13C. Determining the trophic level of earthworms allows us to understand how biomagnification of PFAS may affect them. Over 100 grams of earthworm samples were collected across 22 sampling locations among four sites of varying levels of PFAS exposure. Approximately 1-2 g (wet weight) of tissue from each sample were analyzed for total PFAS concentration (across 40 analytes) by Battelle Analytical Chemistry Services Laboratory under US EPA method 1633. Initial results show PFOS earthworm concentrations averaging 145 ng/g-wet weight (n=5) near DANGB, while soil samples at the same site had PFOS concentrations averaging 11.2 ng/g (n=3). We expect to see biomagnification of PFAS in earthworms as PFAS moves from the soil to earthworms and through subsequent trophic levels.

Alex Lu

PA - University of Pennsylvania School of Engineering and Applied Science

Discipline: Natural and Physical Sciences

Authors:
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#2 Suraiya Haroon

Abstract Name: DEVELOPING THERAPIES FOR OPA1 DISEASE USING A HUMANIZED C. ELEGANS MODEL

Background: OPA1 (Optic Atrophy 1) encodes a mitochondrial dynamin-like GTPase that regulates mitochondrial fusion. Therefore, mutations in OPA1 can lead to fragmented mitochondria, resulting in the accumulation of dysfunctional mitochondria and triggering mitophagy, a highly regulated mechanism of

mitochondrial degradation. Triggering mitophagy can upregulate mitochondrial biogenesis, activating an energetically costly feedback loop, which we hypothesize to cause disease symptoms. OPA1 disease primarily results in childhood onset vision loss and 20% of patients experience additional sensory and neuromuscular defects. To address the dearth of medical interventions, preliminary studies have been done in two C. elegans strains carrying mutations in eat-3, the worm homolog of OPA1. One carries a R289Q missense mutation homologous to the human pathogenic R290Q mutation and the other carries a V328I missense mutation. Both show increased mitochondrial stress and neuromuscular dysfunction. Screens in the eat-3(R289Q) strain identified Thiamine as a reliable control and potential therapy, in addition to Hemin and Tripterin. Here, we are testing (a) whether mitophagy modulation can rescue disease symptoms and (b) the efficacy of the therapeutic compounds to rescue neuromuscular defects.Results: We found that reducing mitophagy via RNAi in the eat-3(V328I) animals results in reduced mitochondrial stress and this result repeated twice. We found that therapy treatment from day 2 to 4 of adulthood consistently rescued the neuromuscular defects in both eat-3(R289Q) and eat-3(V328I) strains over three biological replicates. Conclusions: Our data supports that upregulation of mitophagy may cause OPA1 disease pathology, suggesting that mitophagy modulation could be exploited to develop therapies for OPA1 disease. Additionally, the candidate hits identified in mitochondrial stress screens can rescue neuromuscular function as indicated by thrashing studies. Overall, we have identified a pathway that can be exploited to develop therapies and identified compounds that can be utilized in preclinical studies for OPA1 disease therapy development.

Elise Luallen

IA - University of Iowa

Discipline: Engineering and Architecture

Authors:
#1 Elise Luallen

Abstract Name: Development of a Natural Silk Fibroin Approach for Biocompatible Ink

Silk fibroin (SF) from silkworms has been identified as a promising material for creating sustainable biomaterials for many polymer fabrication applications. Currently, the method for creating SF uses a regenerative approach and post-spun silk from Bombyx mori silkworm cocoons. However, it has been seen that this method for producing regenerative silk fibroin (RSF) reduces the admirable mechanical properties of native silk such as strength, toughness, and elasticity. Current methods to increase these properties in RSF have included injecting growing silkworms with metal ions to induce particular conformational changes. This project proposes an alternate, under-researched solution for optimizing the process of extracting native silk fibroin (NSF) to use as a biocompatible ink for 3D printing. By extracting the silk pre-spinning, the NSF properties may remain more similar to that of native silk. This method eliminates the RSF process of degumming the cocoons which leads to the denaturation of the protein structure. To achieve this, 5th instar, fully mature silkworms were harvested and their two silk glands were extracted. Next, the epithelium layer was gently removed and the gland was washed to remove the outer layer of sericin from the silk. With the middle section removed from the rest of the gland, many methods were tested to achieve the desired NSF results and properties. These include using the sections of the silk gland like lincoln logs to create a simple 3D structure, diluting the concentrated gland with milli-q water to use as a bio-ink in an INKREDIBLE+ bioprinter, and transferring the original gland into the bioprinter to use the pressure and alignment to spin silks as a silkworm would. The results from this experiment were compared regarding ease of SF preparation, mechanical properties, and potential for further development.

John Lubianetsky

KS - University of Kansas

Discipline: Social Sciences

Authors:
#1 John Lubianetsky

Abstract Name: Changing Control: China and the Development of Dual-Use Technology Export Controls

Chinese controls and regulations on dual-use technology exports used in the production of weapons of mass destruction, their delivery systems, and advanced conventional weapons have changed significantly since the beginning of the Reform and Opening period. The current paper will explore how the Chinese government's approaches toward dual-use technology export controls have changed since the 1980s. Despite China's growing economic, military, and technological importance, contemporary literature has not focused on examining the trends and factors that influenced the development of contemporary Chinese approaches to dual-use technology export controls. Particular gaps in the literature exist related to the development of Chinese dual-use technology export controls in the 2010s. The paper will use methods, such as analyzing China's defense white papers, changes in Chinese dual-use export control laws, and participation with the Multilateral Export Control Regime (MECR) to measure stated interest in participating in international dual-use technology export controls. Through textual and content analysis, I will compare Chinese dual-use export-control laws and statements over time with individual case studies that demonstrate (non-) enforcement of those laws. The results will likely show China's interest in selectively engaging with the MECR in an attempt to maximize sovereignty over exports while simultaneously attempting to position China as a responsible international actor. This research will reveal deeper trends toward China's view of the MECR and showcase China's intentions to reshape, support, or undermine that aspect of the international system.

Sayra Lucas

CA - University of California - Merced

Discipline: Education

Authors:
#1 Sayra Lucas
#2 Iliana N. Romero
#3 Todd Sorensen

Abstract Name: Examining the Interplay between the Chicano Movement and Hispanic Americans': Educational Attainment, College Enrollment, and Occupational Segregation

The Chicano Civil Rights Movement emerged from the discriminatory treatment and marginalized experiences Mexican Americans faced in the United States. The movement inspired students in East Los Angeles to initiate a series of protests to change the educational system within schools. Instead of preparing Mexican Americans academically for college, educational institutions would steer students towards domestic training and vocational occupations. The research analyses the possible correlation between the movement and the increase in college enrollment in Los Angeles and tests to see if this alteration further led to changes in the Hispanic-American labor market. Using data collected by the United States Census, we examined the evolution of education levels and occupations over time. Our results indicate an improvement in education levels and college enrollment. Specifically, the number of years of education pursued by Hispanic Americans has increased from 9 years in 1960 to 11 years in 1980. Furthermore, the college enrollment rate in Hispanic-American communities increased from approximately 11% in 1960 to 20% in 1980. As for occupational segregation, our data shows a constant decrease in segregation within the workforce. In light of these observations, the data provides insight into how social movements like the Chicano movement, to a degree, can result in positive outcomes for communities and individuals' rights.

Jose Lucas

CA - Palomar College

Discipline: Natural and Physical Sciences

Authors:
#1 Valerie Schmidt
#2 Anthony Alfaro

Abstract Name: Towards the Synthesis of Bismuth Compounds at Multiple Oxidation States Using Redox-Active Ligands

Bismuth is an abundant element that is uniquely a non-toxic heavy metal. Despite its potential for applications in synthetic chemistry and photochemical processes, our general knowledge of the structure and reactivity of Bi-containing compounds is very limited. Due to these limits, it's important to design new Bi-containing compounds that would both expand the fundamental knowledge of this class of compound but also do this in a way that explores the impact of the Bi-oxidation state. We're interested in preparing and studying Bi-containing compounds that feature multi-dentate ligands that can participate in redox processes. This presentation will describe efforts towards the synthesis of neutral tridentate pyridine diimine, neutral bidentate alpha-diimine, and monoanionic bidentate acetylacetonate ligands and their subsequent metallation reactivity with various Bi(III)-salt precursors.

Gabriel Lucchesi

FL - Florida International University

Discipline: Mathematics and Computer Science

Authors:
#1 Gabriel Lucchesi

Abstract Name: Opening The Black Box: Explainability and Introspection in Deep Reinforcement Learning for Robustness in Control Systems

As the research field of Artificial Intelligence expands, the level of abstraction held by Machine Learning models becomes increasingly complex and harder to navigate. Like human consciousness, an ensemble of thinking neurons usually don't convey their reasoning in interpretable formats without the tools and the instructions to do so. As humanity developed, language arose as the number one bridge between thought and interpretation, allowing humans to suddenly develop the ability to socially communicate reasoning and logic. With machines and agents, this doesn't have to be any different. Present-day models of artificial intelligence rely solely on the concern of outputting optimal values from a multitude of inherently different scenarios given a set of experiences or expected outcomes (and loss functions thereof) that it was trained on. This makes the task of interpreting and fine-tuning models rather troublesome given the abstractions derived from hidden layers of information in Deep Learning. In the context of optimizing for model transparency, this research utilizes algorithms of Integrated Gradients on top of scenarios inherited from Deep Reinforcement Learning from OpenAI Gymnasiums to expand on how learning attributes could be grasped from training pipelines in Reinforcement Learning, communicating to trainers what parts of the state-space input the agent pays attention to the most when performing its Markov-guided decision-making. Diving into the reasons behind action inference should provide information that was initially hidden at first look, but that may be

pivotal in improving the robustness and transparency of control systems in fields of robotics, avionics, aeronautics, and more.

Jessica Lucero

CO - University of Northern Colorado

Discipline: Health and Human Services

Authors:
#1 Jessica Lucero

Abstract Name: PARENT PERCEIVED SELF EFFICACY FOLLOWING COMMUNICATION PARENT COACHING PROGRAMS

Before children enter school, their parents/caretakers act as their first teachers. In order for parents to gain advice and techniques regarding how to teach communication skills to their children, they may enroll in a parent coaching program. Parent coaching programs are designed to improve parent confidence/parental self-efficacy. Parental self-efficacy refers to a parent's perceived capability to successfully parent. When parents feel confident in their ability to support the development of their children, research shows that children benefit. The University of Northern Colorado has implemented the parent coaching program, Treasure Chest, since 2018. In this program, graduate clinicians from the Speech-Language Pathology Master's program are assigned to a family and are responsible for coaching the parents on how to involve age-appropriate communication opportunities for their children. In this qualitative phenomenological research study, four to six parents who have already participated in a semester of the Treasure Chest Program will be interviewed and asked a series of nine questions. This research will explore parents' perceived self-efficacy as a communication facilitator during play, early literacy experiences, and daily routines. A thematic coding approach will be used to look for significant statements (this process is also known as Horizontalization). After recognizing common themes, clusters of meaning will be developed and reported as results. Completing this study and involving the Greeley community acts as a starting point to discovering how parents and families can feel more confident following these parent coaching programs. Learning parent perspectives may also benefit clinicians and professionals in the speech-language pathology (SLP) world by educating SLPs and other professionals on how parents view their ability to support their child's communication.

Jewelie Lujan

TX - Texas A&M University - Kingsville

Discipline: Visual and Performing Arts

Authors:
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#2 Jewelie Lujan

Abstract Name: Correlating Music Preference and Anxiety Levels in College Music Students

In a previous study conducted by Rentfrow and Gosling in 2003, a correlation between music preference and depression was found. However, there is a lack of research on the relationship between music preference and anxiety levels, particularly among college students. The purpose of this study was to explore any potential links between music preference and anxiety levels in college students. By incorporating contemporary music genres, this quantitative study has the potential to enhance our understanding of music preference and depression levels. The study involved 32 participants who completed two surveys. The two established measures were the Short Test of Music Preference (STOMP) and the State-Trait Anxiety Inventory (STAI). These instruments were selected to assess participants' musical preferences and anxiety levels, respectively. The STOMP is a reliable tool that has been widely employed in previous research to measure individuals' music genre preferences. On the other hand, the STAI is a well-established self-report questionnaire that provides a comprehensive assessment of anxiety as a stable trait and a temporary state. This project aimed to examine the relationship between music preference and anxiety levels. Data was analyzed using the Pearson-product moment correlation procedure. Descriptive statistics and figures were generated using Microsoft Excel (2018) and IBM Statistical Package for the Social Sciences (SPSS, Version 27). The results indicate that there are similar trends of music preference across different age groups. Furthermore, the current state and trait anxiety levels are in the highest percentile rank across normal groups of the same age. The findings also revealed that two similar genres, Rock and Alternative, were negatively and significantly correlated with state anxiety. Pop and Soundtrack had positive and significant correlations with trait anxiety. Rock and Alternative may soothe anxiety levels with higher preference, and Pop and Soundtrack may stimulate anxiety levels with increased preference of genres.

Heriberto Luna

WI - University of Wisconsin-Whitewater

Discipline: Interdisciplinary Studies

Authors:
#1 Heriberto Luna
#2 Corban Larson
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Blake Stephens

Abstract Name: Simulating Conditions of Slope Failure in the Lab with Sand and Water Using a Multimodal Monitoring Device for Data Collection

Slope failure is becoming increasingly common along the Great Lakes due to high wave action, and increased rainfall caused by climate change. Our main goal is to understand the precursors to slope failure so we can

better monitor and predict them. Raising public awareness of the dangers of slope failure and protecting communities near shorelines are a few of the benefits of our research. We conducted our lab experiments on slopes with different layers, each defined by varying grain sizes, utilizing a multimodal monitoring device consisting of a strain gauge sensor, and 4 moisture and temperature sensors. Our setup consists of a plastic container to hold sand with a 45-55-degree sloped surface. A buried sandbag attached to the strain gauge sensor communicates strain information to the Raspberry Pi. The moisture and temperature sensors are placed on top of the slope. To simulate failure, we pour 60 cc of deionized water at the top of the slope for 10 seconds over 30-second intervals and repeat until failure occurs. The strain data pattern appears to correlate with the depth of the buried sandbag and the size of the sand grains that make up the slope. The correlation between soil moisture data and strain gauge data is not yet conclusive. Our future work will involve further analyzing the changes in strain data and its relation to the soil moisture data. Moreover, we want to incorporate liquid nitrogen to simulate freeze-thaw conditions. Our project ultimately will lead to designing a system for collecting reliable field measurements for monitoring different triggers of slope failure and remotely transmitting the data in near-real time. This will allow continuous slope monitoring to help protect the public from the aftermaths of slope failure.

Logan Luna

FL - Embry - Riddle Aeronautical University

Discipline: Mathematics and Computer Science

Authors:
#1 Logan Luna

Abstract Name: Advanced Aerial Mapping with Computer Vision: Enhancing Aircraft Recognition and Localization through Object Detection and Feature Point Tracking with Kalman Filtering

In the realm of aviation, accurate aircraft recognition and localization are paramount. This study delves into the application of computer vision in conjunction with aerial maps to enhance aircraft recognition, location estimation, and real-time tracking. In particular, the use of Oriented FAST and Rotated BRIEF (ORB) for keypoint (distinctive points in an image identified as having unique properties) detection and You Only Look Once (YOLO) for object detection, coupled with Kalman filtering to enhance aircraft tracking capabilities. The methodology centers on developing an autonomous system for identifying and localizing aircraft while assessing the performance of integrated computer vision systems against standalone methods. A significant part of the investigation concentrates on the synergy between ORB's efficient keypoint tracking and YOLO's Convolutional Neural Networks which augments the understanding of a scene's 3D structure. The fusion of these technologies with Kalman filtering promotes an understanding of the aircraft's movement and position with improved accuracy and reliability. This research offers practical tools for air traffic control to track and identify aircraft, enhancing airspace safety and regulatory compliance. Additionally, it offers a potential alternative to aviation cybersecurity, providing an independent substitute to verify aircraft identity if a cyberattack were to happen.

Koleman Lund

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Koleman Lund
#2 Tinsay Gebremariam
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Tinsay Gebremariam

Abstract Name: Machine Learning for Human Activity Recognition using Wearable Devices

Human Activity Recognition (HAR) is a growing field in machine learning. With the growing popularity of wearable devices that enable data collection and quick analysis of that data, HAR will become increasingly useful. Recognition of different activities has several beneficial applications in healthcare, security, and beyond. As the range of human activities is large and the activities complex, accurately categorizing the activity being performed is a difficult task. Machine learning is often applied to this problem to classify the data obtained. This research project aims to collect data from many participants using common wearable devices, such as an Apple Watch, and classify it properly into the activity being performed. This dataset will be obtained with participants performing a set range of abilities under observation, with time periods being measured. Different types of smart watches will be used, to provide further comparison between the effectiveness of popular devices. As this is a relatively new field, there is no standard dataset, and the addition of another publicly available dataset will help aid future research. Once this data is obtained, we will perform machine learning methods on them to properly classify the activity performed during this time period. Several different machine learning algorithms will be used to provide comparisons between the effectiveness of the individual algorithms. We expect at least one of the algorithms to have an acceptable level of activity recognition, however, depending on the activities performed, different algorithms will have different effectiveness. These differences will provide valuable insight on the machine learning algorithms, as well as the devices used to collect and analyze this data. Conclusions will be drawn about an effective algorithm and device combination regarding the different activities performed.

Kaeli Luong

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Kaeli Luong

Abstract Name: Green Tea Mouthwash and the Prevention of Porphyromonas Gingivalis: Decreasing the Risk of Developing Alzheimer's Disease

Alzheimer’s disease affects 10% of all deaths in the United States and severe periodontitis also affects 10% of the population worldwide. The connection between the two has been explored, therefore oral hygiene is suggested to decrease periodontitis that could possibly lead to Alzheimer’s disease. A notable oral pathogen, Porphyromonas gingivalis (P. gingivalis), has been identified in the connection between Alzheimer’s and periodontitis. In this study, green tea mouthwash is being analyzed to find out if the mouthwash can reduce the mechanisms of P. gingivalis to decrease the risk of developing Alzheimer’s. Green tea mouthwash contains catechins, EGCg and ECg, that have been found to decrease Gram-negative and Gram-positive oral bacteria, plaque, and proinflammatory cytokines such as IL-1β, IL-6, and TNF-α that P. gingivalis can induce orally and in the brain. In comparison to the traditional chlorhexidine mouthwash, green tea mouthwash can be used as drinking tea on top of its ability to plaque reduction that is comparable to chlorhexidine. However, since Alzheimer’s primarily affects the elderly, a proposal of green tea mouthwash being implemented in young adults aged 20 to 30 to proactively prevent Alzheimer’s may be proposed since the risk of severe periodontitis and plaque, as well as amyloid beta (Aβ) concentration, increases with age and elevates at age 60. In addition, early-onset Alzheimer’s has been found to occur at an average age of 56, however, the disease could affect those between the age of 30 and 40. Therefore, implementing green tea mouthwash into the dental care of young adults may prevent the risk of these individuals developing Alzheimer’s prior to the age where the treatment may no longer be effective.

Numana Luqman

FL - Florida Atlantic University

Discipline: Natural and Physical Sciences

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#4 Ning Quan
Joshua St Juste-Ellis

Abstract Name: Diurnal Fluctuations in IL-1B expressing choroid plexus cells

Sleep represents a complex biological state, an active state of unconsciousness where the brain responds primarily to internal cues. Its regulation, governed by the circadian rhythm, intertwines deeply with the immune system. Cytokines, immune signaling molecules, appear to wield influence over sleep, orchestrated by the circadian rhythm. Studies administering IL-1β, a cytokine, into rodent brains, underscore its somnogenic potential, hinting at circadian control over brain IL-1β levels. Yet, the precise brain regions and cellular sources influencing these IL-1 activities remain unknown.Our research centers on the proinflammatory cytokine IL-1β within the central nervous system, using an innovative IL-1BTRAP mouse model. We seek to unveil if IL-1β expression across multiple brain regions differs during key transitions from wakefulness to sleep. Previous work in our lab unveiled high IL-1R1 and IL-1β expression in the choroid plexus (CP) and others suggest a correlation between IL-1 expression and light cycles, prompting our hypothesis of diurnal IL-1 fluctuations within the CP, potentially linked to sleep patterns.Our aim is to explore IL-1β expression in various brain regions during wakefulness-to-sleep transitions, elucidating possible connections between IL-1β levels and daily sleep patterns. This investigation, delving into the CP's role in sleep—a relatively unexplored domain—aims to contribute fresh insights. Our anticipated findings could pave the way for comprehending how immune signaling from ventricular sources influences broader brain function.

Abigail Lustyik

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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Alexandria Snyder

Abstract Name: Higher neighborhood deprivation is associated with higher symptom severity and distress among survivors of multiple primary cancers

Introduction: Three-fourths of cancer survivors develop a subsequent, or multiple, primary cancer diagnoses (MPC). While long-term effects of cancer and cancer treatment are increasingly recognized, gaps remain about social determinants of health (SDoH) and symptom experience among MPC survivors. We aimed to explore relationships between neighborhood deprivation and symptoms in a sample of MPC survivors. Methods: Secondary analysis of a cross-sectional study of adults who were diagnosed in the prior 10 years with 2+ primary cancer diagnoses, the first being a commonly survived cancer diagnosis and stages I-III at first and second cancer diagnoses. Area Deprivation Index (ADI), a composite measure of income, education,

employment, and housing quality domains, determined neighborhood deprivation (0-100, higher=worse). The MD Anderson Symptom Inventory (MDASI; 0-10, higher=worse) assessed symptom severity (13 symptoms), burden (top five rated symptoms), and distress/interference. Self-report, medical record, and cancer registry data characterized sociodemographic and clinical variables. Spearman's rank-order correlations summarized associations between neighborhood deprivation and symptoms. Results: The median (IQR) participant age was 72 (65-77) years. Most were female (62.4%), white (90.4%), and retired (64.2%), with high school or less education (45.5%). 78% were overweight (n=48) or obese (n=48). 37.4% endorsed some or extreme difficulty paying for basic needs. Median neighborhood deprivation was 67.2 (20.2, 22-100). Median symptom scores were: severity=1.1 (0.4-2.5); burden=1.6 (0.4-3.4); and distress/interference=0.5 (0-2.4). The top-rated symptom was fatigue (median=2 (0-5), range: 0-10). Weak positive associations existed between neighborhood deprivation and symptom severity and burden (r=.210 and .219, p=.02). Discussion: Neighborhood deprivation was above national norms. Symptom scores were low but variable. Higher neighborhood deprivation correlated with higher symptom severity and burden. Clinicians should assess symptoms and SDoH among MPC survivors. Larger, longitudinal symptom studies should determine symptom patterns and related neighborhood factors among MPC survivors.

Evan Lutchmidat

NY - Cooper Union for the Advancement of Science and Art

Discipline: Natural and Physical Sciences

Authors:
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#2 Brittany Corn-Agostini

Abstract Name: The Preservation of Entanglement due to Correlated Environments using Quantum Trajectories

Many proposed applications in the field of Quantum Information Science, such as quantum computing, quantum communication, and quantum cryptography, depend largely on our ability to harness and control entangled quantum particles, known as quantum bits or "qubits". One major drawback, however, is the decay, and in some cases sudden death, of entanglement due to the qubits' interaction with their local noisy environments and our inability to counteract this persistent trend. In prior work, it has been shown analytically via solution to the master equation that for Markov environments (modeled as white Gaussian noise), introducing a statistical correlation between the noise environments can diminish the decay of entanglement through time and for certain initial states, it can be fully preserved. We now aim to expand the model into the Non-Markovian noise regime to understand how different types of correlated noise can preserve the evolution of entanglement.By deriving the exact non-Markovian quantum state diffusion equation for two qubits in the presence of correlated noise, we will employ the quantum trajectory technique to allow us to numerically solve for a large set of quantum state unravelings. This will allow us to gain a deeper insight into the inner workings that lead to the preservation of entanglement in the Markov case and allow us to seamlessly evolve the ideology into the non-Markovian case. By comparing various initial states and various levels of correlation between the noise environments we will present our findings on what conditions are most beneficial for preserving two-qubit entanglement.

Vijay Luthra

FL - University of Central Florida

Discipline: Health and Human Services

Authors:

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#2 Hale Toklu

Abstract Name: Nutrivigilance and Regulatory Challenges in Monitoring Nutraceutical Safety: A Comparative Evaluation of the United States and Europe

Nutrivigilance, a burgeoning field dedicated to the detection, assessment, understanding, and prevention of adverse effects associated with the consumption of food, dietary supplements, and medical foods, is gaining prominence amid the proliferation of nutraceutical products. This presentation conducts a comparative analysis of the nutrivigilance landscape in the United States (US) and Europe, navigating through the regulatory challenges and opportunities.The interchangeable use of "nutrivigilance" and "nutravigilance" highlights regional spelling variations, with both terms converging on the same concept. The escalating market of nutraceuticals, claiming diverse health benefits, underscores the imperative for a robust nutrivigilance system. In the US, the Food and Drug Administration (FDA) assumes a post-market oversight role for dietary supplements, lacking pre-market approval authority. Europe also grapples with regulatory complexities, as individual countries operate distinct surveillance systems. The absence of a unified nutrivigilance framework within the European Union facilitates the free movement of dietary supplements, potentially compromising consumer safety. This paper delves into the exigency, impediments, and prospects for fortifying nutrivigilance in both regions. The presentation posits that despite recent regulatory initiatives to enhance nutrivigilance, dependence on voluntary reporting by manufacturers introduces inherent conflicts of interest. Establishing an effective nutrivigilance system mandates dedicated national surveillance, heightened consumer awareness, and proactive reporting from healthcare providers and patients.In conclusion, the presentation underscores the pivotal role of integrating pharmacovigilance principles into health programs, advocating collaboration among academic institutions, policymakers, and companies to elevate public awareness and ensure the judicious and secure use of nutraceuticals. Addressing regulatory gaps in both the US and Europe is imperative for advancing nutrivigilance and upholding public health amid the evolving landscape of dietary supplements and functional foods.

Jenna Lutz

NC - Western Carolina University

Discipline: Engineering and Architecture

Authors:
#1 Jenna Lutz

Abstract Name: Transforming Learning Environments: The Synergy of Reggio Emilia Philosophy and Interior Design for Multilingual Youth

The fusion of education and interior design holds great promise in shaping transformative learning experiences for multilingual youth. This study delves into the seamless integration of the Reggio Emilia philosophy within the architectural and interior design aspects of educational spaces tailored for K-5 students, with a specific focus on those learning English as a second language. Reggio Emilia's child-centric approach synergizes harmoniously with design principles, fostering increased engagement, language proficiency, and cross-cultural exchange. This research endeavor aims to uncover the myriad benefits that Reggio Emilia-inspired spaces offer, including enhanced communication skills, heightened motivation, and a more profound cross-cultural awareness. This will be achieved through a comparative analysis of these innovative spaces against traditional learning environments. The insights gleaned from this investigation will contribute to the establishment of best practices for the development of culturally inclusive learning environments, effectively bridging the realms of the Reggio Emilia philosophy and interior design innovation. Ultimately, the conclusions drawn from this research will serve as a vital foundation for informed design solutions tailored to educational spaces, particularly those catering to young learners of English. The findings of this study will

advocate for adaptable, engaging, and holistic Reggio Emilia-inspired spaces that foster language acquisition and creativity among the diverse and dynamic population of multilingual youth.

Nur Lyba

NY - Memorial Sloan Kettering Cancer Center

Discipline: Natural and Physical Sciences

Authors:
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#2 Dean Matthews
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#4 Mihir Pendse
#5 Gretchen Diehl

Abstract Name: Developmental changes in neonatal Fc receptor (FcRn) expression in thymic antigen presenting cells.

Immature T lymphocytes develop in the thymus, where they are screened for functionality and self-reactivity. The resulting T cells emigrate to peripheral tissues in the gastrointestinal tract, where they aid in discerning between harmful or commensal antigens. Dysregulation of this mechanism can lead to sustained inflammation against commensals, as in Crohn's Disease. The Diehl Lab recently showed that colonization of mice at weaning with epithelial-adherent E.coli leads to its trafficking to the thymus, specifically by dendritic cells (DCs) expressing CX3CR1. This mechanism does not appear to function in adult mice, suggesting that it may have a role in the development of the mucosal immune system. The environmental factors in the early life gut that promote this thymus trafficking remain to be defined. The neonatal Fc receptor (FcRn) is an IgG receptor that can bind to IgG-bound commensal bacteria and promotes antigen sampling by DCs in the early-life intestine. This project focuses on how changes in FcRn expression in antigen presenting cells over developmental periods can affect the trafficking of microbes in early life. First, immunofluorescent staining of the thymus from young and adult mice was optimized to visualize and quantify FcRn expression. We show a slight, non-significant decrease in the average number of FcRn+ cells in the adult mice. Additionally, flow cytometry is used to analyze intracellular FcRn expression in CX3CR1+ DCs in the thymus and intestine of young and adult mice. In the thymus, FcRn was shown to have a higher expression in young mice, with a statistically significant drastic change from two weeks to three weeks. However, this intensity was similar in all age groups in the large intestine. Altogether, our data suggests that thymic migratory DCs have a higher expression of FcRn in early life. How this impacts thymocyte development to commensal microbes remains to be seen.

Connor Lynch

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

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Abstract Name: Parental Anxiety and Perceptions of Pain Medication Administration

All children will at some point experience acute pain, making deciding whether to administer pain medication to children a common responsibility of parents. The opioid crisis brought attention to the dangers of the misuse of narcotic pain medication and created misconceptions endorsed by parents regarding the analgesic treatment of children's pain. Previous research that analyzed a dataset collected between 2007 to 2009 investigated how parents perceived analgesic administration to treat their children's pain found that parents were uncertain of the safety of analgesics. There is a lack of guidelines from the CDC instructing parents on when to administer opioids to treat children's chronic pain. Past studies have reported that parents lack knowledge of analgesics and their side effects. Certain personal characteristics of the parent may play a role in their analgesic administration decision-making. Parental anxiety and the potential impact it could have on their perception of the administration of analgesics to treat their children's pain has not been extensively studied. Our current research will determine the relationship between parental anxiety and their comfortability administering analgesics as well as any misconceptions and beliefs they may endorse regarding analgesics. Participants were recruited by students enrolled in an advanced psychology laboratory class. Those parents included in the study completed a survey that was distributed in the summer and fall of 2021. It is hypothesized that parents with higher anxiety scores on a PROMIS anxiety questionnaire will be less comfortable administering analgesics for the treatment of their child's pain and will endorse more misconceptions about analgesics. The results of this study will provide insight to the medical community on how to educate parents on analgesic administration to their children and bring awareness to the impact parental anxiety may have on children's healthcare, allowing for improvements to be made in the management of pediatric pain.

Eric Lynch

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Eric Lynch

Abstract Name: "Chip Kidd" The Enthusiastic Book Designer!

Chip Kidd is very passionate about his career and wants to teach and share his knowledge with other people, especially those who are interested in graphic design. Chip Kidd, who is the world's most renowned for designing book covers, grew up in Reading, Pennsylvania, and went to school at Pennsylvania State University. He graduated with a Graphic Design degree and moved to New York to pursue his dreams. He has been designing book covers for over 26 years and he has loved every second of it, designing for the biggest names and companies, he has shown no sign of slowing down, he always keeps going, always thinking and planning his next big thing. Talking about his life's work, personal life, and his books is a pleasure but only scratches the surface of how wonderful this person is. Throughout his career, he initially focused on graphic design and book cover design, but soon expanded to author and editor and he has written graphic novels, as well. Arguably his most recognizable work is the Jurassic Park (1990) logo, originally the cover for the book by Michael Crichton. But he has done more amazing work designing for DC Comics. His portfolio is diverse with lots of different cover designs. Talking and referring to his work from his portfolio and mentioning his childhood, and his novels are a great way to get to know him. He has a passion for the field of Graphic Design and he's also a nerd. I would call him an enthusiastic person!

Kenedi Lynch

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

Authors:
#1 Kenedi Lynch

Abstract Name: Operation brainstorm: developing molecular biomarkers to detect the pathology of cerebral malaria in wild birds

Cerebral malaria, the most severe and fatal form of malaria, is grossly understudied in avian models. Due to a lack of effective non-lethal methods, diagnosing cerebral malaria currently requires finding malaria parasites in brain tissue post-mortem. The ever-present threat of malaria to avian biodiversity and the risk of spillover from wild to captive birds makes it essential to diagnose cerebral malaria in living birds as a first step before treatment. We conducted the first investigation of avian cerebral malaria pathology using qPCR to identify a potentially non-lethal biomarker of the disease in wild birds. Using cerebral tissue from wild-caught house sparrows (Passer domesticus) experimentally inoculated with Plasmodium relictum, we correlated cerebral inflammatory cytokine expression (a hallmark of cerebral malaria) with cerebral parasite load. We predicted that the ratio of pro-inflammatory cytokine expression to anti-inflammatory cytokine expression would be higher in birds with cerebral malaria than in birds with simple malaria, and that this would positively correlate with cerebral parasite load in brain tissue. Future work will correlate cerebral cytokine expression with cytokine expression in whole blood to assess whether qPCR could potentially be used as a non-lethal diagnostic tool to detect cerebral malaria infections in wild birds.

Parker Lynch

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Parker Lynch

Abstract Name: Avast Ye! Exploring Women’s Roles During the Golden Age of Piracy and Their Legacy Today.

The Golden Age of Piracy (~1650s-1730s) is often recollected and depicted as a time of seafaring buccaneering escapades. Men navigating the sea with their fleets in search of treasure and adventure. Despite this, a severe lack of female representation exists within the recounting and general history of piracy. Their impact on the swashbuckling lifestyle as a whole, specifically during the Golden Age, is incessantly disregarded. This research seeks to uncover the reasons why the stories of female pirates go untold and how sexism influences the lens through which we view women’s roles in Piracy then and now. By highlighting the lives of Women pirates and analyzing historical data such as Captain Charles Johnson’s firsthand account A General History of Pyrates written in 1724, this research hopes to answer the following question: How did women contribute during the Golden Age of Piracy and how does their legacy continue today? The analysis will discover the complex lives that women had during the era by studying secondary roles, such as smugglers and prostitutes, to primary roles, such as Captains and crewmembers, as well as reviewing the depictions of female pirates starting from the 1800s with the rise of Pirate literature to the modern era with film and TV. By uncovering the reasons in which female piracy is erased from history and the sexist depictions of them, the researcher endeavors in emphasizing the importance of women's roles in history across all fields of study. In doing so, this research will educate those unaware of the lives of women pirates and affirm the relevance of discussing female representation within the context of academia.

Hannah Lyncha

MD - Salisbury University

Discipline: Health and Human Services

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Abstract Name: The Acute Effects of Blood Flow Restrictive Bicep Curl Exercise on Arterial Stiffness- Pilot Study

The purpose of this study was to investigate the effects of autoregulated (AR) and non-autoregulated (NAR) BFR biceps curl exercise on arterial stiffness. AR BFR cuffs adjust pressure as the muscle undergoes concentric and eccentric contractions, maintaining a constant pressure in the limb throughout the entire range of motion, however, NAR BFR training cuffs do not. How this exercise acutely impacts arterial stiffness is not well understood. METHODS: 22 adults (21±2 years; 9 female) participated in 3 randomized sessions with AR-BFR, NAR-BFR, and no-BFR (no cuffs) separated by 1-week washout periods. Using 20% of the 1 repetition maximum (1-RM) with 2-second concentric/eccentric cadence, participants performed 4 sets of biceps curls to failure. Training limb occlusion pressure (LOP) was set at 60% of supine LOP for both BFR sessions using the Delfi Personalized Tourniquet Device. Measurements before and immediately following the training session included blood pressure acquisition, arterial tonometry, and ultrasonography of the carotid artery. Between and within effects of treatment on central systolic blood pressure (cSBP), central diastolic BP (cDBP), central pulse pressure (cPP), central mean arterial pressure (cMAP), pulse wave velocity (PWV), beta-stiffness index (β-stiff), and arterial compliance (AC) were analyzed with two-way ANOVAs. RESULTS: There were no baseline differences in cSBP, cDBP, cPP, cMAP, cf- (carotid-femoral) PWV, cr- (carotid-radial) PWV, β-stiff, and AC (all p > 0.05). cfPWV did not change in the AR-BFR group (p > 0.05), while it increased in the NAR-BFR (mean difference = 0.6±1.3 m/s, p = 0.04). And there was an interaction effect in β-stiff between AR-BFR and no-BFR (mean difference = 0.9±1.5 U, p < 0.05). CONCLUSION: The present findings show acute AR-BFR training did not impact arterial stiffness while acute NAR-BFR and no-BFR training appears to increase central stiffness.

Griffin Lyons

NY - SUNY Geneseo

Discipline: Humanities

Authors:
#1 Griffin Lyons

Abstract Name: Mothering in the Patriarchy: Defining and Constructing Motherhood for African Decedent Women

African descendant women have continuously been subjected to patriarchal definitions and standards placed upon motherhood and womanhood, which serve to perpetuate their subjection and suppression in the societies that they exist in. Centering the lived experiences of African descendant women through literature, such as Doreen Baingana’s Tropical Fish and Toni Morrison’s Sula, allows for the dismantling of these strict and harmful definitions. These novels, as well as others, are written by and for African descendant mothers

and daughters and expose their realities and exemplify how they have continuously fought in innovative ways to overcome the oppression they face for existing in spaces where they are not valued as individuals. These works of literature are examples of women's self-expression and showcase how patriarchal standards affect how they are perceived in society and, conversely, how they view themselves as individual women and mothers. They also approach motherhood and womanhood as an experience, rather than an institution, and bring about themes of coming into one's sexuality and the common inability to communicate with one's mother. Through literary analysis, this paper uses Clenora Hudson-Weems' theory of Africana Womanism to examine how African descendant women's search for agency and self-representation is reflected in select novels by African descendant women, which allows them to develop new definitions of their own experiences as women living in male-dominated and colonized societies.

Josie Lyons

IN - Franklin College

Discipline: Humanities

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Abstract Name: Lasting Legacies: Franklin College 'Spirit of Community'

This project encompasses several aspects of the history of a small liberal arts college in Indiana. Founded in 1834 in Franklin, Indiana, Franklin College houses significant archival collections and continues to preserve its rich history. Our research produced nine online collections on impactful alumni and community partners and was the foundation for an online digital story about FC's significant history of collegiate sports, hosted by the Indiana Historical Society. With the support of a Council of Independent Colleges Humanities Research for the Public Good grant, this research examined the impact Franklin alumni have made in their communities and how Franklin incubated their success. Under the mentorship of a history professor and our library director/archivist, we amassed sources and followed leads to determine whose stories to collect, preserve, and make broadly accessible. In addition to constructing this online digital repository, a Community-Engaged Alliance grant supported the collection of oral histories that expanded and diversified the holdings of the Franklin College library and the Johnson County Museum of History. These oral histories include: Robert "Chip" Harrod '70, Cincinnati lawyer, social rights activist, and founder of the National Underground Railroad Freedom Center; Judi Warren, Indiana's First Miss Basketball and Title IX advocate; and Pastor Douglas Gray, Black engineer and community leader. This "Lasting Legacies" collection includes primary sources such as college photos, newspaper articles, official college documents, and the transcriptions and audio files of the oral histories. The culmination of these efforts to collect, catalog, and disseminate campus and community histories provided unique undergraduate research opportunities that themselves provide a lasting legacy and create avenues for future projects. Preserving more complete campus histories—including stories of individuals who made significant contributions to campus, the community and beyond—serves the institutional mission and provides greater resources to campus partners and the broader public.

Josie Lyons

IN - Franklin College

Discipline: Humanities

Authors:
#1 Josie Lyons

Abstract Name: The American Woman Suffrage Movement on College Campuses in Indiana

The American woman suffrage movement began in New York in 1848 and quickly became one of the most prominent nationwide debates until women were finally given the right to vote with the ratification of the 19th amendment in 1920. Historians such as Anita Morgan, author of "We are Fearless: The American Woman Suffrage Movement in Indiana" and Kelly Marino with her research on the College Equal Suffrage League have studied the suffrage movement in regard to Indiana and universities, but Morgan omits college women, while Marino omits the Midwest in general. This history capstone project focuses on filling the gap in the historiography and finding the impact of the American woman suffrage movement on college campuses in Indiana. Centered on Indiana State University (previously the Indiana State Normal School) and Purdue University, this analysis of 50+ years of primary sources establishes how the movement affected collegiate women and men through campus suffrage organizations, articles, art, and debates. At Indiana State University, a branch of the Equal Suffrage League was established in 1912, detailed in the campus journal, The Normal Advance. It was dedicated to education, expanding the movement beyond the university, and boasted over 200 members. At Purdue University, women's suffrage was discussed as early as 1883 and the Purdue Girls' Franchise League's was established in 1917, outlined in the student newspaper, The Purdue Exponent. This organization also focused on education and preparing women for when they received the ballot. The suffrage movement expanded college women's views and allowed them to explore ideas related to their identity that they never would have been exposed to at home. The real importance of the suffrage movement on college campuses in Indiana was to create an environment that educated women as well as incubated the next generation of women's rights activists.

Patrick M Mowbray

WI - University of Wisconsin-Stout

Discipline: Humanities

Authors:
#1 Patrick Mowbray

Abstract Name: An Analysis of Interwar German Politics

Recent discussions about the rise of the Nazis and how subversive political movements lead to the fall of democracies have largely focused on the Nazis themselves and not their political opposition. Although opposition parties were major actors in the events that led to the rise of the Nazis, we most often view events like these from the perspective of those who are subverting democracy, or the average person who goes along with the subversion. Instead of this perspective, I sought to understand why the other parties seemed helpless to stop the rise of the Nazis and what role they had to play in the fall of the Weimar Republic. I thus analyzed what strategies each political party employed in their pursuits to secure power and what effects these varying strategies had. To do this, I gathered primary documents from the era and coded them for different political strategies and their outcomes, primarily based on election results. My analysis of these documents seems to indicate there was a widespread perception that the mainstream parties were incapable of dealing with the many economic crises of the day. This, combined with their general unwillingness to cooperate with other political parties, led to the erosion of trust in the government and the mainstream political parties. Additionally, it caused a rise in radicalism, particularly during said economic crises. Just as we are not immune to radical politics in the modern day, we are perhaps even less secure against economic crisis, and recognizing the linkages between these two factors and a government's ability to affect them is vital in ensuring the continued survival of any given democracy, even in the modern day.

Andrea Macareno Lopez

FL - University of West Florida

Discipline: Business and Entrepreneurship

Authors:
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Abstract Name: Impact of Average Daily Rate on Hotel Cleanliness in Game Theory

Cleanliness is directly linked to the average daily rate (ADR) of a hotel, since it has a significant influence on guests' choice of accommodation and how much they are willing to pay for it. The core competency of the hospitality industry is often attributed to room cleanliness due to its substantial impact on maintaning a competitive advantage. A hotel manager can use key performance indices to indicate whether to adjust room rates to maximize revenue. However, the manager does not know what to do next after the competitor's response. The present study has used game theory with the purpose to eximine the effect of average daily rate on cleanliness. Game theory strategies were conducted to forecast the outcomes of the relashionship between Average Daily Rate and cleanliness in the hotel business. There are two matrices for two players. Each player's matrix comprises two rows and two columns, representing either an increase or a decrease in average daily rate percent change. In these matrix tables, one player is referred to as "Suburban," while the opposing player is known as "Resort." The results pertaining to the growth of cleanliness are reported in the four quadrants of the matrix. The matrices of two players showed that the levels of cleanliness of the two players significantly changed when there were an increase/decrease of ADR. A win-win game is designed in the Nash equilibrium where both players can profit in a variety of ways. There was a Nash equilibrium in the peak season where both players receive highest payoff. There was a Nash equilibrium in the low season where both players receive the highest payoff. The use of these matrix tables assists hotel managers in gaining a clearer understanding of the strategies.

Calvin MacDonald

FL - University of Central Florida

Discipline: Health and Human Services

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Abstract Name: Enhancing Play with EMG: Investigating Usability and Engagement in a Serious Video Game

Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disease that induces a loss of functionality and independent mobility, requiring reliance on assistive devices such as powered wheelchairs. Most powered

wheelchairs use a joystick, an inoperable interface for many patients. Past studies by this research team have examined the efficacy of surface electromyography (EMG) systems on the temporalis muscle as an alternative control modality, producing movement outputs based on varied flexion strengths. Although independent wheelchair control was demonstrated in the scope of the testing, learning to use the system proved complex. A serious game was developed to prioritize low-stress training, incorporating identical electromyographically-controlled character steering for task-specific training. Eye-tracking UI selections are also integrated to maintain autonomous interaction with the game. To evaluate the game's efficacy, a "talk-aloud" usability study was designed for 15 participants between the ages of 18 and 64 with complete motor control. This study requires vocalized feedback while playing through four unique game levels using EMG leads placed on the preferred temporalis laterality. Participants were split into three cohorts: eye tracking, mouse control by the participant, and mouse control by the researcher. The data has been collected and analysis is being conducted. In addition to the talk-aloud narration, quantitative surveys, including the Game User Experience Satisfaction Scale (GUESS) and the System Usability Scale (SUS), were conducted. Analysis of the fifteen participants' GUESS scores demonstrated overall positive perceptions of every category aside from Social Connectivity. Additionally, the mean SUS score was 62.5, indicating the usability as "OK." Quantitative investigation revealed some usability issues, which will be combined with qualitative evaluations to inform additional changes and improvements that will be refined prior to the completion of a follow-on usability study.

Omar Macias

IL - Governors State University Honors College

Discipline:

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Abstract Name: Break Free from the Past: Mindfulness as a Path to Regret Resolution

Markman and Miller (2006) found that regret leads to anxiety, depression, and cognitive distortions. Regretful decisions and actions from the past can create persistent thoughts of how things could have gone differently in the form of "Counterfactual Thinking." (Olatunji et. Al., 2013). However, if we can find ways to lessen persistent regrets, there is an opportunity to transform them into valuable lessons that can guide better choices moving forward. (Seta & Seta, 2013; Seta et. Al., 2008).Research indicates that mindfulness meditation helps diminish relentless negative thinking patterns (Blanke et. al., 2020). Additionally, if we can cultivate an internal landscape of self-compassion and non-judgment, regret can shift from punitive rumination to become a growth opportunity that reinforces our commitment to increased wisdom (Valshtein & Seta, 2019).Participants completed pre and post self-report ratings using a 7-point Likert type scale indicating the amount of regret, sadness, and responsibility they felt regarding their recollection. Additionally, participants filled out the short version of the 12 item 5-Facet Scale and 12 item Self-Compassion Scale before and after the mindfulness meditation sessions. Upon arrival to the lab, participants were asked to recall a regretful experience. After reflecting on the experience, participants completed self-reported ratings. Participants then practiced a guided meditation and completed the post-emotional measures. Participants were provided with an audio recording of a guided meditation to practice at home a minimum of twice per week. At the end of the week the participants were interviewed via phone, where they were debriefed and thanked for their participation.In this study we investigated techniques of mindful awareness to evaluate their efficacy in helping people achieve closure from lingering regrets. We explored how regretful experiences, when called upon for reflection during meditation, might lead to a shift and reorientation of the regret on cognitive and emotional levels.

Vanessa Maciel

TX - San Jacinto College

Discipline: Humanities

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#1 Vanessa Maciel

Abstract Name: Ann Richards Rise to Governor to Texas

Ann Richards, the first female governor elected whose husband had not also been governor, fought the political establishment in Texas eventually becoming governor. She advanced politically by first volunteering in important campaigns and then running for office herself. Enroute to becoming governor, she was heavily involved in campaigns such as Henry B. Gonzales. Next, she won election for county commissioner in Travis County (Austin area), and then State Treasurer. Throughout these efforts, she showed her witty character and determination to change Texas. Albeit during this time she persevered while facing alcoholism and the breaking of her marriage with David Richards. Her most famous speech lifted the Democratic spirit while delivering good jokes about the opposing party at the 1988 Democratic National Convention. Richards used that event as a springboard to win the 1990 gubernatorial race against two better known and well-funded primary candidates, former governor Mark White and Attorney General Jim Mattox. She then surprised the nation by beating Republican businessman Clayton Williams. This paper is based on primary sources such as newspapers, television recordings, and Richards' autobiography, Straight from the Heart. In addition, the work is grounded in secondary sources of both Womens' history and Texas politics such as Shropshire and Schaefer' The Thorny Rose of Texas and the Handbook of Texas.

Fatima Maciel

CA - University of California - San Diego

Discipline: Social Sciences

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#1 Fatima Maciel
#2 Luis Fraga

Abstract Name: Voting Rights and Federalism: Understanding the California Voting Rights Act

While Latino and minority populations in California continue to grow, their representation in elected government positions fails to reflect this growth. The disconnect between the two signifies the urgency and importance of having conversations regarding apportionment and equal representation among these communities. Since the passing of the California Voting Rights Act in 2002, over 88 cities have been mandated to change their at-large elections to district elections; in hopes of extending minority groups' protection from voter dilution. The CVRA was created to expand voting rights protections provided under the Federal Voting Rights Act by altering existing forms of electoral systems to enhance the voting power of minority voters in local elections. Per CVRA advocates, at-large elections have historically reflected racially polarized voting that has prioritized the preferences of the white majority and left non-white minority voters at a systematic disadvantage. While cities continue to be under intense scrutiny and litigation threats for failure to change their electoral systems, debates as to whether such a change makes a significant difference in increasing minority voter turnout and representation at the local level concur equally. This research project aims to uncover and fill in the gap in knowledge regarding the relationship between the switch from at-large

elections to district elections and their effect on Latinx voters and representation. Using a quasi-experimental design to observe levels of Latinx representation before and after changes from at-large elections to district elections, I determined that district elections have demonstrated that the CVRA has increased Latinx political representation.

Fatima Maciel

CA - University of California - San Diego

Discipline: Social Sciences

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#2 Luis Fraga

Abstract Name: Voting Rights and Federalism: Understanding the California Voting Rights Act

While Latino and minority populations in California continue to grow, their representation in elected government positions fails to reflect this growth. The disconnect between the two signifies the urgency and importance of having conversations regarding apportionment and equal representation among these communities. Since the passing of the California Voting Rights Act in 2002, over 88 cities across the state have been mandated under law to change their at-large elections to single-member district elections; in hopes of extending minority groups' protection from voter dilution while simultaneously increasing their voter turnout. The CVRA was created with the intent to expand voting rights protections provided under the Federal Voting Rights Act by altering existing forms of electoral systems to enhance the voting power of minority voters in local government elections. Per CVRA advocates, at large elections have historically reflected racially polarized voting that has prioritized the preferences of the white majority and left non-white minority voters at a systematic disadvantage. While cities continue to be placed under intense scrutiny and litigation threats for failure to change their electoral systems, debates as to whether such a change makes a significant difference in increasing minority voter turnout and representation at the local level concur equally. This research project aims to uncover and fill in the gap in knowledge regarding the relationship between the switch from at-large elections to district elections and their effect on minority voters and representation.

Connor MacIsaac

CA - California State University - Long Beach

Discipline: Engineering and Architecture

Authors:
#1 Connor MacIsaac
#2 Kevin Kong
#3 Wahaab Ademola
#4 Alexander Uy

Abstract Name: Flexximeter: A Flexible Inclusive Pulse Oximeter using Discrete Devices

The surge in wearable electronics stems from users seeking easy access to features once exclusive to phones and computers. Health monitoring and biometric data, in demand from companies like Apple, Garmin, and Fitbit, drive the market's projected growth to $99.06 billion by 2030. This growth fuels technological innovation, with the Photoplethysmography (PPG) sensor emerging as a pivotal hardware component in wearables. Despite its utility, many challenges exist in extracting accurate information from PPG sensors.

Our research introduces “Flexximeter,” a novel flexible electronic wearable that addresses the common challenges in photoplethysmography (PPG) sensors, such as skin pigmentation variation and environmental factors. The proposed system is implemented using a high-precision (60 μV) low-noise op-amp-based Programmable Gain Transimpedance Amplifier equipped with a dynamic feedback system. This innovative, affordable, and flexible device ensures accurate blood oxygen measurements, overcoming limitations due to skin pigmentation, ambient light, and temperature variations. This research will first discuss measurements and errors from the off-the-shelf measurement system (AFE4490 Integrated Analog Front End for Pulse Oximeters Evaluation Module). The design and Implementation of the Flexximeter will be described using a Voltera V-One PCB Printer on flexible Polyonics XF102 Polyimide Sheets. The device's accuracy and reliability are compared with the off-the-shelf measurement system.

Abigail Mack

PA - Lafayette College

Discipline: Natural and Physical Sciences

Authors:
#1 James Dearworth

Abstract Name: Tolerances of Retinas in Different Turtle Species to Changes in Temperatures

As global temperatures increase, species must learn to adapt or otherwise become extinct.Turtles are no exception. Their vision, and how it adapts to changing temperatures, is especiallyimportant for their survival because vision allows organisms to identify prey, predators, andpotential mates. The purpose of this study is to examine two different species: red-eared sliderturtles (Trachemys scripta), which are invasive and has a higher optimal temperature range, andeastern painted turtles (Chrysemys picta picta), which are non-invasive and have a lower optimal temperature range. This was done by first harvesting retinas from each of the eyes and loading cells with Fluo-4 dye, which fluoresces green in response to levels of calcium. The retinas were imaged by a Zeiss LSM 800 confocal microscope and glutamate was added. This was done under three temperatures: 15°C, 25.5°C, and 32°C. Changes in fluorescence were recorded, graphed, and compared for significant differences with regard to species and temperatures. Applications of glutamate to retinal ganglion cells generated significant changes in both species of turtles for all of the temperatures tested. This was observed for whole data sets and spikes. However, it was observed that maximum changes for eastern painted turtles at 15 °C was significantly higher than their changes at 32 °C. In contrast, red-eared slider turtles had the same activities for all temperatures. The difference between responses for the species suggests that red-eared slider turtles have a wider functional range for warmer temperatures. This tolerance could support the success of red-eared slider turtles as an invasive species.

Sarah Macke

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Sarah Macke
#2 Matthew Lyon

Abstract Name: Young women's perspectives on social services in the slums of Kampala, Uganda: qualitative focus group findings from the TOPOWA study

Slum dwelling youth in Sub-Saharan Africa (SSA) experience significant social vulnerabilities and health disparities, and young women in these contexts are disproportionately impacted. At the same time, communities in SSA do have existing resources which provide some amelioration of the difficult circumstances faced by these young women. This research project, based on an ongoing NIH R01, explores young women's perspectives on the social services they are receiving from a local organization. Using a combination of inductive and deductive thematic methods, we analyzed baseline focus group data from a community-based cohort study (6 groups, 60 participants).We found a variety of themes related to the benefits of these services, as well as some themes related to service-related challenges. Benefits included: increased economic autonomy; increased confidence, motivation, and self-reliance; increased optimism, pride, and satisfaction; increased social connection; improved social standing; and improved stress management. Challenges included: negative community perceptions of the social service organization; other program participants as sources of stress; and challenges being on time to training, traveling to training, or balancing training with other responsibilities.Young women in SSA are an underserved, understudied population, and their perspectives on social services are not frequently reported in the scientific literature. Our work begins, therefore, to fill a research gap by providing insight into the emic perspectives of these key stakeholders. Despite some challenges, overall, the young women reported significant benefits of training, with improvements in confidence, social standing, and economic success in response to their training experiences. These findings should prompt future research on how to build on the successes of existing programs and address the challenges that these young women report.

Athaliah Mackewicz

CA - University of California - Los Angeles

Discipline: Mathematics and Computer Science

Authors:
#1 Kaioke Begay
#2 Kieran Cook
#3 Aaron Montgomery

Abstract Name: Chip-firing Stability within the Unknown Stability Interval

The chip-firing game is a well-studied dynamic system with simple rules leading to complex behavior. It is particularly important in studying networks of self-governed objects with no influence from outside agents: neurons, avalanches, circulation of currency, and other entities able to be represented by a graph having vertices weighted by values. In a network given n chips with e number of edges and v number of vertices, stability is guaranteed if n < e, and unstable behavior is guaranteed when n > 2e − v, leaving an interval with graphs' stability ungoverned by these theorems. In our research, we examined stability for particular graph configurations within the unknown stability interval to find a relationship between stability and number of chips. A relationship is found for cycles and complete graphs, and our exploration of three-regular graphs has led to generalized theorems for graphs in the unknown stability interval. This work was funded by the CC-REU NSF REU grant (DMS-2050692).

Hayden Macklin

CA - California Polytechnic State University

Discipline: Humanities

Authors:
#1 Hayden Macklin
#2 Eleanor Helms

Abstract Name: On the Essence of Thought Experiments: A Neo-Aristotelian and Phenomenological Approach

Thought experiments feature prominently in both scientific and philosophical method. In this paper, I investigate two questions surrounding knowledge in the thought experiment process. The first I call the metaphysical question: Given that thought experiments are often thought to rely on implicit background knowledge within the subject, what is this knowledge of or about? The second I call the justification question: Because thought experiments are ideally intended to yield knowledge, and since knowledge is usually understood as requiring justification, what provides epistemic justification for beliefs acquired through the process? I draw upon neo-Aristotelian metaphysics and Husserlian phenomenology to respond. First, I answer the metaphysical question by proposing that the most important response is the subject's implicit knowledge of essence. Knowledge of essences not only allows the subject to mentally instantiate objects in imagination, but also serves to link the imagined possibilities involved in thought experiments to the actual world since essential truths are true necessarily. Second, I answer the justification question by arguing that if new beliefs acquired through the thought experiment process are in fact justified, they are given their prima facie justificatory force by the phenomenological character of the thought experiment quasi-experience. This phenomenological character includes the givenness of the presented thought experiment scenario with all its related objects, whose essences ground the possibility of frustration, which I argue is necessary for justification.

Breanna Macumber

FL - University of South Florida

Discipline: Health and Human Services

Authors:
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#2 Victor Huayamave
#3 Tamara Chambers

Abstract Name: Exoskeleton Response During Infant Physiological Knee Kinematics

Spina bifida is a type of neural tube defect that affects the nervous system and can lead to problems such as total leg paralysis. Treatment requires physical therapy and rehabilitation. Robotic exoskeletons have been used for rehabilitation to train muscle movement and assist in injury recovery; however, most studies focus on the adult populations. The proposed framework aims to couple a novel musculoskeletal infant model with a robotic exoskeleton using vacuum-powered artificial muscles to provide rehabilitation to infants affected by spina bifida. The study that drove the input values for the robotic exoskeleton used motion capture technology to collect data from the spontaneous kicking movement of a 2.4-month-old infant lying supine. OpenSim was used to develop the musculoskeletal model and Inverse kinematics was used to estimate hip joint angles. A total of 4 kicks (A, B, C, D) were selected and the selection was based on range, transient response, and stable response. Kicks had at least 5° of range of motion with a smooth transient response and a stable period. The robotic exoskeleton used a Vacuum-Powered Artificial Muscle (VPAM) the structure comprised of cells that were clipped in a collapsed state and unclipped when desired to simulate infant's age [1]. The artificial muscle works with vacuum pressure. When air is removed the muscle contracts and when air is added, the muscle relaxes. Bench testing was performed using a 6-month-old infant mannequin. The previously developed exoskeleton worked really well with controlled ranges of motion and frequencies which are typical of rehabilitation protocols for infants suffering with spina bifida. However, the random kicking motion contained high frequency kicks and was not able to accurately replicate all the investigated kicks. Kick 'A' had a greater error when compared to the other kicks. This study has the potential to advance the infant rehabilitation field.

Henry Madany

CA - University of California - Irvine

Discipline: Health and Human Services

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Abstract Name: Effects of Roommate Compatibility on UCI Undergraduate Students' Average Hours of Sleep: A Pilot Cross-Sectional Survey

A lasting effect of the global pandemic in 2020 was a heightened awareness surrounding the chronic nature of mental disease as a result of mass reductions in physical activity and increased stress overall. While there are many novel treatments for stress, proper sleep hygiene plays an essential role in maintaining both good mental and physical health overall. The Centers for Disease Control and Prevention (CDC) recommends adults, eighteen to sixty years old, sleep seven or more hours within a twenty-four hour time period. Studies have shown that getting even two hours less sleep the CDC recommendation can lead to worsened bodily inflammation and academic performance equivalent to two days of sleep deprivation. In conducting a cross-sectional survey of UCI undergraduate students, a possible link between roommate compatibility and a student's average hours of sleep each night can be established, connecting sleep to a constant in many students' undergraduate experiences. This study, however, faces several limitations, including many confounding variables (housing arrangements, academic responsibilities, prior relationships with roommates, etc.), the limited sample size relative to the population, and the innate bias of surveys. While a larger scale followup study is required to address these shortcomings, the present goal is to draw attention to the multifaceted and highly affected nature of sleep, and to help students make conscious, informed decisions with good sleep hygiene in mind.

Michelle Madera

NY - City University of New York - City College of New York

Discipline: Mathematics and Computer Science

Authors:
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Abstract Name: Implementing a Deep Learning Model using U-Net for Mountain Glacier Segmentation

Modeling spatiotemporal glacier variations can help to understand climate change and its impacts on glacier retreat that affect water resources of people who depend on glacial runoff. Remote sensing is a feasible option to monitor glacier changes over time. With recent advances in machine learning, deep learning methods have shown promise for the segmentation of satellite images. The goal of this research is to use remote sensing for

the quantification of glacier changes due to climate change. To this end, the Landsat family of satellites and GLIMS (Global Land Ice Measurements from Space) database were used in this study to train a deep learning algorithm that was implemented using U-Net for the segmentation of glacier boundary. Landsat satellite imagery were processed using a geographic information system to create satellite composites of region of interest around Mt. Aoraki in New Zealand. GLIMS glacial outlines were used as ground truth for annotation. To augment the number of outlined boundaries, synthetic ground truths were generated. The Landsat scenes with available ground truths were then divided into patches of 256 x 256 pixels in the training phase, to reduce the computational cost. To accelerate the training phase, the model's weights were initialized using a pretrained VGG16 convolutional layers.The trained model was then used to segment Landsat scenes taken between 2000 and 2023. To evaluate the performance, segmented scenes were compared with the ground truth glacier boundaries while using the Jaccard index to quantify the accuracy of segmentation results. Achieving a promising performance with a Jaccard index of 0.8, the model could correctly separate ice from snow at a rate of 98%. However, the segmentation accuracy along the boundary of image patches is subpar and hence our future work is focused to improve the proposed technique to increase the accuracy at boundaries of image patches.

Citlalli Madrigal

CA - Chapman University

Discipline: Natural and Physical Sciences

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Abstract Name: Weather Whiplash in Global Mediterranean Climates

How do sudden shifts in extreme weather events due to climate change affect streamflow in global Mediterranean regions, and how do the regions compare to each other? Recent years have witnessed prolonged droughts succeeded by abrupt and intense floods in Mediterranean regions. California endured its most extensive recorded drought in 2022, followed by a wet year in 2023, alleviating the drought conditions. The Emilia-Romagna region in Italy faced substantial rainfall and devastating floods following a drought. Previous work has identified various Mediterranean regions in the world where weather whiplash in precipitation is persistent in future data. The primary objective of this research is to discern patterns in historical streamflow conditions, aiming to enhance our comprehension of these phenomena. This study compares all global Mediterranean regions based on the historical annual streamflow records from several stations in California, Italy, Australia, Chile, and South Africa. Comparative analyses of the durations, conditions, and frequencies of wet and dry periods offer insights into the similarities and disparities among these regions. The results underscore a historical trend wherein wet years were more prevalent until the 1980-2000s, after which dry periods increased in frequency and intensity. Despite similarities in the range of durations for both wet and dry periods across the five regions, each of the 20 evaluated stations exhibits variability in the magnitude of streamflow and the ratio of streamflow, as quantified by the indicator of whether the annual value was wet or dry divided by the mean annual streamflow. This research contributes to the evolving field of hydroclimatology in Mediterranean regions, emphasizing the critical role of understanding streamflow patterns in shaping future water supply dynamics. The implications of this study extend to water resources management, emphasizing the need for proactive measures to address the complex challenges posed by climate-induced hydrological variability in Mediterranean regions.

Princess Magor Agbozo

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
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Abstract Name: Fear As A Barrier To Cervical Cancer Screening Amongst Black Women

IntroductionScreenings have reduced the incidence rates of cervical cancer. A Healthy People 2030 goal is to increase cervical cancer screening to 79.2% but current rates lag at 73.9%. Racial disparities in cervical cancer screening, morbidity, and mortality persist for non-Hispanic Black women. Reasons for these disparities are multi-factorial for this population including but not limited to racial discrimination, medical mistrust, limited knowledge and understanding of the healthcare system, lack of health insurance, and fear. This study aims to identify major barriers to cervical cancer screening and understand if fear affects Black women's decision to screen for cervix cancer.MethodsThirty-seven Black women over 21 were recruited from the community. All women completed a demographic survey and participated in one of six focus groups about their experiences with cervical cancer screening. The sessions were audio-recorded, transcribed verbatim and checked for accuracy by research staff prior to data analysis. Two qualitatively trained research staff analyzed data using content analysis for themes. ResultsThe participants' mean age was 33.67 ± 9.03. Participants expressed different types of fears associated with cervical screening including fear of the results, fear of the medical procedure used for screening, fear of embarrassment from screening, fear of hospitals, and the fear of death.ConclusionOur findings indicate that culturally tailored cervical cancer education is needed to promote screening among Black women. The process of screening should be explained in a manner that does not scare women but rather empowers them to take their health into their own hands and screen for cervical cancer. Screening should be explained as an early treatment intervention, not posed as a death sentence. There also needs to be more research conducted with larger sample sizes to verify if fear has a significant influence on Black women's decision to screen for cervical cancer.

Carlye Mahler

FL - Stetson University

Discipline: Humanities

Authors:
#1 Carlye Mahler

Abstract Name: Women's Influence on Convenience Foods: Product Creation to Preparation

In 1950 Mason Haire published a study in the Journal of Marketing which asked focus groups to give descriptive words for a hypothetical woman based on two different shopping lists. The shopping lists were identical except for the inclusion of instant coffee on one list and traditional ground coffee on the other. The study revealed that people had harsh judgements for the hypothetical woman who used instant coffee. Just 20 years later in 1970 a replication of the study was published which revealed that people had far lower levels of judgment for the woman using instant coffee. Laura Shapiro is one of the biggest contributors to writing about convenience foods and women's role in their preparation. Specifically Something from the Oven: Reinventing Dinner in 1950s America addresses the process of presenting convenience foods in more elegant and altered fashions. The role that Betty Crocker played as a fictitious woman herself and the team of women, a large contribution to the literature on Betty Crocker comes from Susan Marks in her book Finding Betty Crocker. The advertising aspect is covered by Katherine J. Parkin in her book Food is Love: Advertising and Gender Roles in Modern America which addresses the emotional heartstrings that food advertisers pulled to influence women to buy their products. My work will contribute to the existing literature

on convenience foods and women's roles and agency in their increased social acceptance by addressing women's role in food production, food purchasing, and food preparation in a thematic chronological timeline during the twenty years from 1950-1970. I believe that it is important to view this process through the tracing of how women influenced the acceptance of these foods and were not merely passive adopters of change forced by corporations.

Stephanie Mahler

CA - California State University - Monterey Bay

Discipline: Humanities

Authors:
#1 Dustin Wright

Abstract Name: Gods and Bases: U.S. Military Presence and Its Impacts on Japanese Spiritual Customs

Japan continues to be impacted by World War II, perhaps most clearly in the continued presence of U.S. military bases. Our historical research analyzes how the occupation of Japanese spaces by the U.S. military has impacted Japanese spiritual customs in these areas over time. We interviewed various Japanese groups to learn how bases affect spiritual practices, including the ability to visit ancestral tombs, and how traditions have changed since 1945. We also visited base towns to understand broader memories and feelings around the continued base presence.

Zeyad Mahmood

EGY - The American University in Cairo

Discipline: Engineering and Architecture

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Abstract Name: Evaluating the Fatigue Resistance of sustainable Modified Binder Blends

Fatigue resistance is the ability of an asphalt mixture to resist the repeated traffic load under the surrounding environmental conditions without being fractured. The performance grades (PG) obtained from the Dynamic Shear Rheometer (DSR), along with the G*sin( ) fatigue parameter, for the tested asphalt is only based on small strain rheology and do not consider the damage resistance. Accordingly, the Linear Amplitude Sweep (LAS) test is implemented to study the fatigue behavior of the tested asphalt binders considering the damage. This paper studies fatigue cracking resistance of various modified asphalt binders by comparing their different rheological properties. Based on this comparison, the most promising modified asphalt to resist fatigue cracking was specified. The samples tested in this research were sourced out from two main Egyptian asphalt binder sources. Each of which has six different eco-friendly additives, either waste and/or industrial

byproducts: crumb rubber (CR), Low-Density Polyethylene (LDPE), CR and LDPE, Fiber-elastomer commercial modifier (Viatop), Fly Ash (FA), and silica fumes (SF). Along with these six blends, an unmodified control blend of each binder source is considered, making it a total of fourteen blends. Geopolymerization of FA and SF was conducted to produce two different geopolymer modified asphalt blends. Based on the Viscoelastic Continuum Damage (VECD) analysis, the fatigue life criterion Nf, the number of load cycles to reach failure, from LAS analysis, was determined. Master curves are obtained from the DSR machine to determine the dependency of the time and temperature to further analyze the rheological behavior of tested asphalt binders. Results show that CR+LDPE, then CR modified asphalt blends are the most promising blends to resist fatigue cracking.

Naoroz Mahmood

NY - City University of New York - City College of New York

Discipline: Education

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Abstract Name: Engaging Minds: Leveraging Asynchronous Learning with Books and Movies to Cultivate Enthusiasm for Neurology among College Students

BackgroundBy 2025, the number of neurologists in the United States is expected to decrease by 19% despite increasing demand for neurologic care. Early exposure to neurology encourages students interested in pursuing medical careers to consider neurology residency.ObjectiveWe explore asynchronous methods of introducing neurology education through books and movies to foster interest in neurology among college students.MethodsEight college students interested in clinical neurology and related fields developed a schema for selecting and evaluating books and movies for a neurology-related curriculum. Using a publication of popular neurology-related books for potential neurology book clubs and a systematic Google search for movies on stroke, migraine, Alzheimer’s disease, dementia, meningitis, and epilepsy, conditions with the highest global burden of disease among all neurological conditions, students generated a list of 5 books and 5 movies for possible inclusion into the curriculum. Students rated each book/movie on relevance to career and academic goals, informativeness, versatility, authenticity, positive impression, relevance to neurology/neuroscience (books only), and strong emphasis on disease/disorder/core topic (movies only) using a Likert scale from 1-5, with 1 being the lowest, and completed written reflections (N=96). A priori to analyses, students selected > 4.5 as a cutoff for inclusion into a curriculum.ResultsThe books Do No Harm: Stories of Life, Death, and Brain Surgery, The Man Who Mistook His Wife for a Hat, Being Mortal, and the Elective Books had grand means > 4.5. The movies My Beautiful Broken Brain, Out of my Head, Brain on Fire, Patch Adams, Still Alice, and I Never Thought to Ask: A Mom’s Quest for Answers had grand means > 4.5.ConclusionsFuture work will focus on implementing the books and movies into college neuroscience courses and clubs and creating a national book and movie club for students facilitated by neurologists.

Remsha Mahmood

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Remsha Mahmood

Abstract Name: Islam and Me: A study on Muslim woman and Opression.

Since the beginning of Islam, women have had to suffer violations of their human rights. In Western countries, Muslims are denied the freedom to practice their religion whereas in Muslim countries, patriarchal interpretations of Islam have denied women equal civil rights. This paper researches the oppression of women in Islam in both Western and Muslim countries by studying different interpretations of the Quran, secondary scholarship on feminism and Islam, and conducting surveys and interviews with Muslim and non-Muslim peers. I do not deny that Muslim women are oppressed. But, as I argue, many observers have failed to understand the true sources of this oppression. Popular media tends to fixate on violations that occur in Muslim-majority countries, but as I argue, Muslim women also face oppression in “liberal” Western democracies, ironically, sometimes because of policies that are designed to “save” them. Muslim women are oppressed, but contrary to popular belief, this is not the fault of Islam; rather, I argue that the true and more fundamental source of the oppression stems from patriarchal interpretations of Islam both by Muslims and by Western liberal ideologies.

Aisha Mahmoud

AR - Lyon College

Discipline: Mathematics and Computer Science

Authors:
#1 Brittany Florkiewicz

Abstract Name: Cracking the Code: Assessing the Communication Potential of Mammals with FACS and Python

Mammals can create various facial expressions by combining different facial muscle movements. Facial muscle movement combinations have been documented across species (using Facial Action Coding Systems, or FACS), along with the socio-ecological factors that result in interspecific differences. However, it is unclear whether the documented repertoires of each species represent their full communicative capabilities or only a fraction of them. The goal of our current project is to compile an inventory of all potential facial muscle movement combinations in mammals (such as dogs, cats, and non-human primates), utilizing FACS coding and Python programming. Facial Action Coding Systems (or FACS) were initially developed by Paul Ekman to dissect and catalog human facial expressions by decoding individual muscle movements, known as Action Units (AUs). In recent years, researchers have expanded upon the FACS to include the facial muscle movements of other species. Our current project uses FACS-coded data for chimpanzees, gibbons, and domesticated cats. Using Python programming, we are developing specialized algorithms to adhere to FACS guidelines and physiological constraints. This program generates all feasible combinations of AUs while respecting species-specific limitations, ensuring that biologically implausible combinations are excluded. The outcomes promise to unravel a deeper comprehension of the evolution of mammal facial communication, showing the details in signaling abilities and potentially revealing unexplored nuances in the expressive behavior of dogs, cats, and primates.

Victoria Mainero

PA - Keystone College

Discipline: Natural and Physical Sciences

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#2 Nicole Diette
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Abstract Name: Investigating the effect of UV light on skin microbe cell survival

There are well-recognized risks and side effects of excessive solar exposure with solar radiation itself being the top environmental risk factor for skin cancer. People are exposed to UV radiation nearly every day, whether from the sun or artificial sources like tanning beds and some types of lasers. Excess UV light is associated with skin aging and burning and furthermore, it can kill cells by inducing DNA damage that prevents the cells from replicating. In order to investigate the effects of UV light exposure on cell growth, this study will utilize common skin microbiota. The microbes on Staphylococcus aureus, Escherichia coli, and Staphylococcus epidermidis will be exposed to UV radiation. These cell lines will be plated and exposed to UV radiation at increasing lengths of time. To determine if UV radiation affects the cells' ability to grow, cell survival rates of cells without radiation exposure will then be compared with cell survival after exposure to UV light. Presented along with information about skin damage and sun protection strategies, this research hopes to promote community awareness of the dangers of excess UV exposure.

Leetavious Maines

GA - University of West Georgia

Discipline: Social Sciences

Authors:
#1 Leetavious Maines

Abstract Name: Democratic Erosion in Uzbekistan: An In-depth Analysis of Historical Dynamics, Precursors, and Future Prospects

This case study, conducted by Leetavious Maines, delves into the complex landscape of democratic erosion in Uzbekistan. The study spans the period from the country's establishment as a republic with legislative, executive, and judicial branches to its contemporary political trajectory under President Mirziyoyev. The research combines historical analysis, international perspectives, and firsthand experiences hosting Uzbek students, providing a comprehensive exploration of Uzbekistan's political, economic, and cultural dimensions.The study identifies the challenges to democracy during the 2000-2001 period, highlighting President Islam Karimov's threat to democratic values under the guise of safeguarding national interests. The shift in Uzbekistan's liberal democracy score in 2018 and subsequent developments are examined, with a focus on human rights, democracy, and the authoritative approach of the country's leadership. The impact of the Russia-Ukraine War on Uzbekistan's democracy is considered, emphasizing the country's historical ties with Russia and the current conflict's implications.The historical context is explored, emphasizing Uzbekistan's journey from a Soviet Republic to a nation experiencing intense democracy erosion. The role of the Liberal Democratic Party, limited political pluralism, and the challenges faced during President Karimov's rule lay the foundation for understanding Uzbekistan's political dynamics. The study analyzes the symptoms of erosion, precursors rooted in weak institutional checks and mainstream power structures, and methods of resistance employed by civil society groups and human rights advocates.The analysis provides an in-depth examination of the direction of democratic erosion or autocratic consolidation in Uzbekistan, considering the

delicate balance between reform and control. President Mirziyoyev's initiatives, international relations, and economic liberalization are scrutinized, offering insights into the thawing autocracy in the country. The study concludes with a prediction for democratic progress, acknowledging positive steps while highlighting the need for continuous monitoring and international scrutiny.

Matthew Mair

NC - Appalachian State University

Discipline: Business and Entrepreneurship

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Abstract Name: Factors that impact participation in Payment for Ecosystem Services programs in the Tar-Pamlico watershed of eastern North Carolina

Payment for ecosystem services (PES) programs are a recent policy approach designed to encourage the adoption of agricultural best management practices. These programs provide financial incentives to landowners who voluntarily adopt conservation practices. The decision of a farmer to participate in a PES program is primarily influenced by two factors: the specific attributes of the contract offered and the individual characteristics of the decision-maker. We examine the influence of both factors. We surveyed 197 farmers in the Tar-Pamlico watershed, presenting them with demographic questions and a choice experiment that involved two choices per respondent. Farmers were asked to choose between two hypothetical conservation programs for each choice. Respondents were also allowed to choose a status-quo option of neither conservation contract. For our experiment, contract attributes include limits on nitrogen (N) application, cover crop requirements, funding source, and payment per acre enrolled in the program. Decision-maker variables include the age, education, and experience of the land-operator, as well as farm income, land ownership, and previous participation in a conservation program. They also include the farmer’s threat appraisal (i.e., their perceived level of concern regarding nutrient loss on their farm). Performing a conditional logit regression model, we analyzed the effect of each contract attribute and decision-maker variable on the willingness of a farmer to participate in a PES program. Consistent with previous literature, we observe a highly significant positive relationship between payment and participation. As expected, we find a negative effect for strict N limits. Land ownership, farmer experience, and farmer age all demonstrate negative correlations with a farmer’s willingness to participate. We also observe a significant positive relationship between threat appraisal and participation. By understanding and optimizing these factors, we can inform policy decisions for how PES programs are implemented and targeted.

Rachel Majumder

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Impacts of primary and secondhand exposure to e-cigarette aerosols on lung function and respiratory symptoms

The current knowledge on the adverse effects of e-cigarette use (vaping) on the lungs remains extremely limited, with existing studies showing mixed and inconclusive results. Therefore, this study's objective was to investigate the impact of vaping on lung function and symptoms, with a focus on comparative effects between primary and secondhand exposed individuals. A total of 30 individuals (≥19 years old) were recruited: 10 vapers, 10 non-vapers/non-smokers living with the vapers, and 10 non-vapers/non-smokers not exposed to vaping (control). Vaping/smoking status was confirmed using a urinary cotinine test and an exhaled carbon monoxide test. Repeated lung function measurements (forced expiratory volume in the first second (FEV1) and forced vital capacity (FVC)) were obtained using a portable spirometer for three time periods over 6-months (n=28). Respiratory symptoms were recorded using a questionnaire. Forced oscillation technique (FOT) measurements were obtained in the third month (n=16). These measurements include resistance (Rrs) and reactance (Xrs) measurements. Preliminary results show that primary vapers experienced lower FEV1/FVC ratios while experiencing higher average symptom scores and higher ΔXrs (change in reactance) scores. FEV1/FVC<0.7 is used to diagnose obstructive respiratory diseases. While ratios below 0.7 were not observed for any study participants, a statistically lower mean ratio in vapers compared to controls may suggest possible early onset of airway obstruction amongst vapers. The higher symptom scores demonstrate that primary vapers, on average, experienced more adverse respiratory symptoms as well as increased severity. ΔXrs>2.8 has been used to suggest expiratory flow limitation. ΔXrs>2.8 were not observed for any participants in this study; however, increased ΔXrs observed in primary vapers may suggest a greater risk for future expiratory flow limitation. Given these preliminary results, further studies are warranted and are being conducted, including exploring the effects of vaping on distal airways.

Fatima Makama

NY - SUNY University at Buffalo

Discipline: Health and Human Services

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Abstract Name: Bean Consumption During Pregnancy and Birth Outcomes

Objectives: We assessed associations of maternal bean consumption during pregnancy with birth outcomes. Methods: We conducted a secondary data analysis of 1,121 U.S. pregnant individuals from the Infant Feeding Practices Study II. Frequency and amount of maternal bean consumption were approximated using a food frequency questionnaire completed during the third trimester of pregnancy. A birth screener questionnaire and neonatal questionnaire asked mothers to report birth outcomes including birth weight, birth length, gestational age, and Neonatal Intensive Care Unit (NICU) admission status. Associations between maternal bean consumption and risk for birth outcomes were examined using multivariable logistic regression models and linear regression models. Results: Overall bean consumption during pregnancy was low: an average of 0.30 cups/week of dried beans, 0.14 cups/week of chili, and 0.09 cups/week of bean soup. Maternal bean consumption varied by socio-demographic factors. Consumption of dried beans was highest among Hispanic mothers, mothers living in the West South Central region (0.44 cups/week), and mothers who did not smoke during pregnancy. Chili consumption was highest among mothers who were non-Hispanic Black, attended 1-

8 grade school years, had a household income of <$25,000, lived in households with 5+ people, and were WIC-recipients. Compared with non-consumers, mothers who consumed dried beans 2-3 times per month had a higher risk of NICU admission. Risk of NICU admission did not differ by chili or bean soup consumption. No significant association was found between dried bean, chili, or bean soup consumption and the risk for other birth outcomes including birth weight, birth length, gestational age, preterm birth, small-for-gestational-age (SGA), and large-for-gestational-age (LGA). Conclusions: Maternal bean consumption was low among U.S. pregnant women. Fetal growth and gestational age did not seem to vary by maternal bean consumption during pregnancy. Moderate consumption of dried beans may lead to a higher risk for NICU admission.

David Makar

WI - University of Wisconsin-Oshkosh

Discipline: Social Sciences

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Abstract Name: The effect of technology on life satisfaction: Case study of elderly population in Oshkosh.

Social scientists who study well-being know that money alone cannot buy happiness, and that happiness also varies with age. While achieving material well-being, such as home ownership and stable employment, can positively contribute to happiness among the working-age population, they are not significant factors explaining happiness among older adults. With declining health and social isolation, the elderly population are more vulnerable to depression, heart disease and stroke without contact with family, peers or others. Communication technology, such as social media and the internet, has been found by numerous studies to be helpful in coping with loneliness among older people. This project utilizes statistical analysis of survey data collected from correspondents in the Oshkosh retirement community regarding their level of happiness. The analysis is used to understand how modern communication technology, such as social media and the internet can meet the needs of the community and create suggestions for policymakers and assisted living communities to improve the well-being of aging populations.

Huda Makhluf

CA - National University

Discipline:

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Abstract Name: Crowdsourcing Antibiotic Discovery in an Eight-Week Microbiology Course.

Providing authentic research experiences is a transformative learning strategy and a powerful and effective tool that leads to increased student engagement and persistence in STEM. Herein, I share my experiences, insights, best practices, and lessons learned from implementing the Tiny Earth Antibiotic Discovery Project in an eight-week microbiology course. Starting in Week 1, students collected soil samples from various locations in Southern California. They then determined the potential antibiotic-producing isolates by culturing and testing the bacterial isolates against gram-positive and gram-negative bacteria. Using Qiagen BiOstic Bacteremia kits, students extracted bacterial genomic DNA from isolated colonies to amplify the

16srRNA gene for 16S Sanger sequencing. Sequencing results were further analyzed using the NCBI Basic Local Alignment Search Tool (BLAST) website. In the last two weeks of the course, students completed an e-poster and uploaded it to the online shell of the course via a discussion board posting in BrightSpace/D2L. Students were encouraged to present their findings in a clear and organized fashion using pictures with well-labeled legends and to discuss their results in depth. Students had to give constructive feedback to two other students who were not their lab partners and comment on the e-poster content. The peer-to-peer engagement was substantial. The constructive criticism was empathetic. Students found the process “very educational and fun” and “enhanced their overall understanding” of the project. Students felt they were active research participants in antibiotic discovery while honing their perseverance, critical thinking, communication, and collaboration skills, potentially transforming their negative beliefs and attitudes toward science.

Biola Makinde-Odusola

MI - Wayne State University

Discipline: Social Sciences

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Abstract Name: Associations between Interpersonal Violence Exposure Over Time and Adolescent Girls’ Romantic Competence through VR Simulations of Unwanted Romantic Advances

During adolescence, youth begin to forge romantic relationships (Viejo et al., 2020), a facet of social development signaling the transition from childhood to adolescence. Interpersonal violence exposure (IVE) may affect romantic development, however. Research suggests that exposure to trauma disrupts social development, resulting in low social competence manifesting in unhealthy future partnerships (Daly & Marshall, 2021). There has been limited research into the effect of IVE on romantic development during adolescence. Therefore, the current study examined the associations between IVE and romantic competence during VR simulations of age-typical romantic scenarios for adolescents. The scenarios assessed whether greater exposure to IVE led to lower competence.In a longitudinal study, participants were 64 adolescent females starting in middle school (time one) through high school (time four). At time four, participants completed a VR simulation with an avatar who had a romantic interest in the participant--participants were told they were not interested. Romantic competence for each participant was coded (ICC - .804, 95% CI = .699-.897), and the average number of instances of interpersonal violence was assessed across all four time points. IVE was not associated with social competence (r = -.003, p < .98). Exploratory analyses discovered an association between perceived aggression from the avatar and social competence (r = .25, p < .05). This suggests that increased perceived aggression may contribute to increased competence. The need to develop more social skills may be an adaptive strategy to obtain the safest outcome. Further research should explore the association between social competence and the relationship between exposure to violence and vigilance of aggressive outcomes. The results of such outcomes could have implications for youths' future relationships.

Delyla Makki

NC - Elon University

Discipline: Health and Human Services

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Abstract Name: Poaching: Experiences in Motherhood of Justice Involved Black Women

Black incarcerated women experience neglect and maltreatment when seeking maternal health services, which results in higher odds of maternal hardship and poor perinatal health. The incarceration of parenting Black women erodes family structures and can permanently damage family units due to the disruption of attachment bonds between mothers and their children. The purpose of this research is to investigate these experiences as historical reiterations of the destroyed motherly bondage of enslaved mothers due to poaching. My research defines Poaching as stealing maternal bodily autonomy, agency, and the choice of motherhood. We use convenient sampling to identify participants and leverage resources at rehabilitation or re-entry programs to recruit participants with a $25 incentive. Qualitative semi-structured interviews were conducted with participants lasting up to 30 minutes to ascertain their personal experiences when interacting with correctional facilities regarding their maternal health. After data collection, each interview will be professionally transcribed and analyzed using the Dedoose software to identify consistencies among the respondents' experiences. These consistencies will create codes, which will then be grouped into thematic categories. Thematic analysis was conducted to interpret the meanings associated with participants' experiences. Current literature proposes that the experiences of maternal bondage of enslaved mothers are parallel to the experiences of incarcerated Black women today and that there are historical motifs of Black women that affect their experience as mothers and as US citizens. Preliminary data suggests that these historical perceptions of Black women in the United States as undeserving mothers may impact their maternal experience while Justice-Involved.

Nobel Makonnen

MI - University of Detroit Mercy

Discipline: Health and Human Services

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Abstract Name: Examining the virulence of the fungal pathogen Candida albicans in Galleria mellonella

The Center for Disease Control estimates that approximately 25,000 cases of candidemia (fungal bloodstream infection) occur nationwide each year.Candida albicans is an organism known for its ability to cause infection from surface-associated microbial communities known as biofilms, particularly on implanted medical devices. A biofilm is a microbial community that forms on surfaces consisting of an extracellular matrix with interspersed yeast and hyphal cell layers. Biofilms form in a sequence that begins with yeast cells adhering to a substrate; yeast cells then spread across the adhered substrate and elongate. During maturation, fungal cells proliferate, initiating the change from yeast to a filamentous cell; once enough hyphae are grown, an extracellular matrix forms and the biofilm has reached maturation. After it has matured, any cells that have

not adhered to the matrix are released into its environment. This is the cause of infection by biofilms. The research done was focused on examining the components of adherence to determine a defect that could be a possible drug target. We look for defects by running a virulence assay in-vivo using strains from a mutant library, along with a wild type, and a negative control.

Jennelle Maldonado

PA - Villanova University

Discipline: Natural and Physical Sciences

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Abstract Name: Refining Masses and Radii in Eclipsing Binary Systems for the Purpose of Calibrating the Asteroseismic Scaling Relations

Binary systems play a significant role in astronomical research by offering insights into stellar properties and behaviors. Eclipsing binary systems are particularly intriguing because they provide the opportunity to determine precise masses and radii. Eclipsing binary systems featuring a red giant are of particular importance as they allow us to investigate the asteroseismic scaling relations. In this research, we focus on the red giant binary system: KIC 7037405. Inspired by previous studies, we reanalyze the system and increase the precision of kinematically determined masses and radii. We begin by analyzing the binary system's light and radial velocity curves, where we apply detrending techniques that remove excess noise and systematic effects. Using the PHOEBE (PHysics Of Eclipsing BinariEs) software, we use estimators to derive critical parameters that provide insights into the physical characteristics and interactions between the stars within the binary system. We then optimize the light curve and radial velocities using the Nelder-Mead method to minimize residuals. Our future endeavors involve the application of the MCMC (Markov Chain Monte Carlo) technique to increase our confidence in the masses and radii and their uncertainties. Through this research, we aim to achieve red giant mass and radius measurements to better than 1% relative precision, which then enables independent calibrations of the scaling relations.

Alexandra Mallon

CA - California State University - Monterey Bay

Discipline: Natural and Physical Sciences

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Abstract Name: Lichen Density Effects on the Abundance and Diversity of Native Plants in the Understory of Oak Woodlands

Lace Lichen (Ramalina menziesii) is widespread within oak woodlands in Central California, growing in moist areas where it traps water in the canopy from fog, rain, or dew. This water can drip from the canopy, depositing moisture and nutrients that affect plant growth in the understory. Along with the natural temperate climate of oak woodlands, the lichens may therefore affect the growth of native plants. Our research focuses on how lichen abundance affects the native understory flora in oak woodlands. We collected data in areas of oak woodlands with high and low lichen cover near Monterey, CA. We selected oaks within each woodland

area and conducted three point-intercept surveys of canopy cover and ground cover from each. Our analysis showed a slight positive correlation between lichen frequency and the presence of native plants. For non-native species, there is a greater difference in the abundance of individual species between high lichen and low lichen sites than for native species which were more evenly distributed across sites. This indicates that non-native species were more specialized to specific environmental conditions, and native plants were able to better respond to variations in moisture and nutrients. The results of our analysis indicate there may be a relationship between lichen and the relative growth of native versus non-native plants.

Morgan Malone

CA - University of California - Merced

Discipline: Interdisciplinary Studies

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Abstract Name: Environmental Impacts of Drone/Sensor Combinations in UC Remote Sensing through Life Cycle Assessment

Drones are a common tool for remote sensing and imaging applications in many sectors. This technology is often used to help answer questions about the environment and sustainability, yet the sustainability of drone-based remote sensing platforms has yet to be assessed. Previous research at UC Merced has begun to identify the environmental impacts of drone-based remote sensing platforms by performing a life cycle assessment to analyze carbon dioxide-equivalent emissions and their contributions to global warming throughout their entire life cycle. This study expands upon that research to produce more accurate and generalizable results by adding an additional scenario to the life cycle assessment on an Open-Source Hyperspectral Imager mounted to a DJI Phantom 4. We also gathered user data from others who utilize the DJI Phantom 4 across the UC system to inform and further constrain our models. This behavioral data regarding the use, reuse, maintenance, and disposal of drones and imaging sensors allowed for an understanding of the scale of human influence on life cycle emissions. Calculating emissions from materials and processes reveals that the Phantom 4/Open-Source Hyperspectral Imager combination produces more emissions that contribute to global warming than other sensor options, due to its complexity in resources and functionality, especially concerning data storage. The user data helped allow us to understand variability in parameters concerning drone user behaviors, such as the distance traveled to field sites or the average duration of a drone flight, which, in turn, allowed us to track how user behaviors influence emissions. Conducting life cycle assessments provides the opportunity for users to make informed changes to reduce harmful environmental impacts at any stage of a product's life.

Bijaya Manandhar

PA - Drexel University

Discipline: Natural and Physical Sciences

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Abstract Name: Small-molecule Tip60 HAT Activator as a Potential Alzheimer's Therapeutic

Alzheimer's Disease (AD) is a neurodegenerative disorder that impairs patients' cognitive functions and, in late stages, can diminish locomotor functions. The pathophysiology of AD is an interplay of many biological, genetic, and environmental factors. Recent studies, including research from the Elefant lab, identified epigenetic dysregulation as a hallmark of AD. Epigenetics is the study of proteins and biological mechanisms that regulate chromatin packaging, which in turn controls gene expression. Epigenetic dysregulation refers to the disruption of the homeostasis between epigenetic proteins. The two main epigenetic proteins being investigated are histone acetyltransferases (HATs) and histone deacetylase (HDACs). Specifically, TIP60 HAT levels in a Drosophila AD model are significantly lower compared to wild-type flies. Additionally, the Elefant lab published articles demonstrating Tip60 and HDAC2 target the same neuroplasticity genes, and when Tip60 levels are decreased, there is decreased expression of these neuroplasticity genes resulting in cognitive and locomotor impairment in a Drosophila AD model. Conversely, genetic overexpression Tip60 in a Drosophila AD model has been shown to restore expression levels of neuroplasticity genes, rescuing cognitive and locomotor functions. Current work in the Elefant Lab focuses on developing small-molecule compounds that are Tip60 HAT-specific activators that restore expression levels of neuroplasticity genes in order to rescue cognitive and locomotor functions. Three compounds have demonstrated the ability to increase Tip60 activity in an in vitro HAT assay. Thus this poster presents the investigation of one compound in vivo using a larval locomotor assay to identify a candidate drug and an optimal concentration.The findings from this study help us identify small-molecule compounds that rescue cognitive impairment associated with AD.

Abhay Manchala

CA - University of Southern California

Discipline: Interdisciplinary Studies

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Abstract Name: Climate Conscious: Assessing and Addressing Eco-Anxiety in the USC Student Body

Over the past decade, eco-anxiety is a phrase that has emerged at the forefront of both public and academic consciousness. Eco-anxiety is described by current research as a negative psychological response to the Anthropocene climate crisis. Despite a growing interest in the phenomenon, it is largely understudied– particularly concerning its frightening proliferation worldwide. Eco-anxiety is felt in some way by a majority of people across the globe, including by ⅔ of American adults. While much of the research on eco-anxiety has been theoretical, there has been a recent push to quantify and more accurately measure eco-anxiety, its causes, and its symptoms via survey and scale-based research. The goal of our research is to understand the causes and levels of eco-anxiety in students at the University of Southern California (USC). There has been a growing consensus that environmental awareness or knowledge is linked to increased environmental anxiety. If this is the case, then those directly involved in sustainability and climate change (like college students) are likely to be most adversely affected by eco-anxiety. It is vital for those in the fight against climate change to cope meaningfully with the reality of climate change and cultivate healthy mindsets when engaging with ecological crises. This survey, distributed over the Fall 2023 semester, has used a modified version of the Hogg Eco-Anxiety Scale (HEAS-13) to gauge levels and manifestations of eco-anxiety in students. The HEAS-13 is a 13-item scale that aims to understand eco-anxiety as a culmination of behaviors and emotions in response to climate change. After synthesizing our data, we will emerge with a list of best practices and educational interventions that will engage and empower students in the environmental field as they fight against climate change. These practices will be synthesized into a toolkit course to be taught at USC (pending approval).

Daniel Mangandi-Escobar

CO - University of Northern Colorado

Discipline: Humanities

Authors:
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Abstract Name: Determinism & Freewill: An Exploration of Gender Identity & Moral Responsibility

Determinism is a philosophical concept asserting that every event and action in the universe has been determined by previous causes, which has caused considerable debate within philosophy. Two critical issues within this discussion are the implications of determinism for human agency and moral responsibility. This research addresses these issues, asserting that our world is compatible with human free will, rejecting a deterministic viewpoint. It is vital to understand compatibilism, the assertion that determinism and free will can coexist. From this perspective, free will is not inherently opposed to determinism. Instead, our choices and actions can still be considered free under a deterministic framework. This paper extends the scope of compatibilism by applying it to the field of identity and gender, pulling from queer theory the argument that gender identity is innately performative. Through this lens, gender is considered a social construct subject to change, personal interpretation, and performance. These views align with compatibilism, challenging traditional notions of gender and allowing inclusivity and coherence in understanding our identity within the self. This paper utilizes comparative analysis, logical reasoning, and thought experiments to examine the connection between determinism and gender identity. This article explores how these seemingly disconnected concepts can inform one another. Furthermore, it highlights the implications of a compatibilist stance on moral responsibility and states that individuals can be held responsible and accountable for their actions within a deterministic world. The development of this perspective of gender identity and moral responsibility will shed light on philosophical inquiries of the self and human experience.

Monica Manmadkar

NY - Columbia University

Discipline: Mathematics and Computer Science

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Abstract Name: Analysis of Cerebral Autoregulation Impairment across Different Critical Congenital Heart Diseases in Neonates

Through hemodynamic parameters, this study analyzes post- operative neonates who’ve undergone different cardiac surgeries. Through data-driven visualizations and statistical modeling, this study presents compelling findings to engage medical professionals and contributes to the advancement of perioperative medicine and to promote patient-centric surgical planning for improved healthcare outcomes.

Kaylena Mann

CA - California State University - Channel Islands

Discipline: Social Sciences

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Abstract Name: Brand Awareness of the Oxnard Performing Arts Center Corporation (OPAC): Significance of age

The current study focuses on the Oxnard Performing Arts Center (OPAC), a historical, cultural, and artistic site whose objective is to serve the community through performance. Not everyone in the Oxnard community is aware of OPAC as a non-profit organization or knowledgeable about OPAC's activities, so our research team collaborated with OPAC on a volunteer project to evaluate brand awareness. These findings will be utilized to inform OPAC of practical solutions to increase positive brand image. Items were adapted from previously validated scales, focusing on general awareness of OPAC, brand image (Michaelidou et al., 2015), brand personality (Aaker, 1997), brand associations (Schivinski, 2021), brand commitment (Das et al., 2019), etc. My main research question was how age was related to brand awareness. Participants were recruited via social media, in-person OPAC events, and email. A total of 111 valid responses on Qualtrics were collected, with an average age of 48.86 years (SD = 16.6). Participants were primarily female (66.1%), with various ethnicities identified: Latinx (50.8%), White (29.7%), Asian (7%), African American (4.7%), and Native American (3.9%). Regression analyses were utilized, which showed that age significantly predicts efficiency ($F[1, 105] = 4.21$, $p = .04$; $R2 = .039$), dynamism ($F[1, 102] = 4.48$, $p = .04$; $R2 = .042$), excitement ($F[1, 99] = 4.60$, $p = .04$; $R2 = .044$), and brand awareness ($F[1, 101] = 4.47$, $p = .03$. $R2 = .046$). A multiple regression analysis was employed, which determined that excitement and brand Associations can significantly predict brand awareness. ($F[2, 99] = 123.86$, p <.001; $R2 = .71$) Overall, OPAC could include more events aimed at older community members through outreach, senior discounts, free bringing of friends, and increasing accessibility. These findings can help OPAC and center the importance of brand awareness in marketing for similar non-profit organizations.

Rosie Manner

CA - University of California - Santa Barbara

Discipline: Natural and Physical Sciences

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Abstract Name: Integrating Scat Collection and Hair Snares to Explore Marine-Terrestrial Connectivity along the Gaviota Coast in California

Noninvasive survey methods are becoming increasingly crucial in field studies, as they allow for larger sample sizes, cover wider areas of research, and are beneficial in the long-term studying of elusive and rare species. This research project investigates the marine influence on the diets of large terrestrial mammals at the Jack and Laura Dangermond Preserve in California, aiming to understand their potential role as ecological connectors between the coastal and terrestrial environments. This study includes a comprehensive analysis of marine-trophic interactions by surveying scat samples collected from the six target species– coyotes (Canis latrans), bobcats (Lynx rufus), mountain lions (Puma concolor), American black bears (Ursus americanus), wild pigs (Sus scrofa), and mule deer (Odocoileus hemionus). Additionally, this study also includes an independent project to design and test different hair snare designs, with the goal of evaluating the effectiveness and capabilities of these hair snares for noninvasively capturing hair samples from the same

target species. Three distinct hair snare designs were researched and constructed, and a 4-week deployment and collection plan was implemented to evaluate their performance. Isotope analysis of the hair samples will provide valuable insights into the feeding habits and trophic ecology of these mammal species. The integration of scat collection and hair snares provides a noninvasive approach to studying diet distribution, offering significant insights for wildlife management and conservation along the California Gaviota coast.

Devon Manning

CAN - Vancouver Island University

Discipline: Health and Human Services

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Abstract Name: The Lived Experience of Those Accessing Social Services

This study aimed to understand the lived experiences of those who access social services. What experiences did those accessing social service have in Nanaimo? And did their experience showcase any social barriers or gaps impeding the efficacy in accessibility? Findings offered insight into areas in need of improvement when assessing accessibility to social services in Nanaimo. Previous studies have explored the lived experience of populations in vulnerable circumstances' (PVCs) accessibility to social services in high income countries (HICs) such as Canada, the United States, Australia, and the UK. These studies focused on national populations, and/or larger cities. Less research has been focused on access to social services in smaller cities. Nanaimo, like many cities in Canada has experienced an influx of homelessness due to multiple social and societal determinants. This makes nonprofit organizations necessities in urbanized spaces to support those in need. Nanaimo is increasing in cost of living annually along with the greater Vancouver Island region. Furthermore, access to amenities is not always readily available based on where an individual lives. The time it takes to commute to access social welfare services in Nanaimo became a factor that concerned those volunteering at Risebridge. This organization wanted to find out how much it took their guests to gain access to the resources they needed. Using an ethical framework of an individual-based approach data was collected using qualitative methods. Individual interviews with Risebridge guests were conducted. Findings in this research can identify possible gaps in the current level of social services provided in developing cities in other regions. As well, it can help with future implementation of social services like Risebridge, to better offer low barrier services to those in need based on a more individualized understanding of their needs instead of one that treats PVCs like a homogenous group.

Kobie Manning

GA - Fort Valley State University

Discipline: Engineering and Architecture

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Abstract Name: Oscillator’s comparison and analysis using different types of Integrated Circuits

Oscillator’s comparison and analysis using different types of Integrated Circuits Quatarius Flowers, Kobie Manning, Savion PeakFort Valley State UniversityEngineering Technology Department Abstract This research project explores the use of different types of operational amplifiers as oscillators, with the goal of increasing their adaptability and performance across a wide range of applications. A function generator (FG) is a circuit that generates a repetitive different shape of waveforms with the capability of controlling its amplitude and frequency without any external input signal. FGs are used to generate signals for testing, measurement, and calibration in fields such as electronics, telecommunications, and scientific research. The research investigates unique waveform-generating techniques and frequency synthesis procedures using different types of Ics such as the 741 op-amp and 555 timer. Additionally, user interfaces, compactness, and energy efficiency are being prioritized. The research aims to contribute insights that will not only broaden understanding of function generator principles but also pave the way for the development of next-generation devices with improved functionality and adaptability through a combination of theoretical and design analysis, computer simulations, and practical experimentation. The project's achievements have the potential to aid businesses that depend on accurate signal creation by supporting technological and innovative breakthroughs.

Lily Mannino

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

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#1 Lily Minnino

Abstract Name: Drosophila nutrition as a factor of altered sex ratios

Sex ratios have long been researched, but many questions are still left unanswered. It has been found that sex ratios are close to 1:1 for organisms including Drosophila melanogaster. Some studies have suggested that these ratios could be altered, however. The Trivers-Willard hypothesis states that sex ratios could be altered due to the relative stress that a mating pair may face while reproducing. One form of stress that could impact sex ratios is nutritional input. This hypothesis has few experimental results from scientific studies, and it could benefit from more research to either prove or disprove the hypothesis. Drosophila melanogaster will be tested in various nutritional mediums to see whether nutrition has an effect on the produced sex ratio or not. In the previous year, we had 7 different nutritional fly food mediums. Along with a control food medium, a 30% increase and decrease in protein, carbohydrates, and fats was tested in the other six test vials respectively. Out of all the studies conducted, the 30% increase of fat fruit fly food medium produced significant results with a p-value of less than .05 ($p = .031$). We will further test this food mixture, along with 9 new food mixtures: 15% fat, 30% fat, 50% fat, 3% omega 3, 5% omega 3, 3% omega 6, 5% omega 6, Na K, and Ca Mg. Here we ask, does a change of nutrition cause a skewed sex ratio; if so, what change in nutrients causes it? The results of this test will further offer evidence supporting or limiting the Trivers-Willard hypothesis and expand the understanding of sex heritage.

Haripriya "Priya" Mantraratnam

AL - University of Alabama at Birmingham

Discipline: Humanities

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#1 Haripriya "Priya" Mantraratnam

Abstract Name: Comparing religious experience during Hindu and Muslim prayer

The questions that will be addressed are: 1) to what extent are the religious experiences of prayer in Hinduism and Islam similar or different? 2) What modes of prayer are used in these two major religions? and 3) how egalitarian are the two religions when it comes to involving different genders in prayer? Although using science to study religious experiences may seem counterintuitive or even controversial, the experience of prayer or the feeling of closeness to God can be studied scientifically as indicated by the emerging field of neurotheology. Neurotheology is defined as the study of the connections between the brain, religious experience, forms of prayer, and the well-being of different groups who pray. Experimental studies in neurotheology have found that subjective religious/spiritual experiences measured by psychological methodologies (self-reports, ratings, questionnaires, etc) can be linked to brain activity measured by functional brain imaging techniques. My study will use a scientific lens to explore the differences and commonalities in prayer as practiced by Hindus and Muslims. Peer-reviewed journal articles and scholarly analyses of sacred texts will be used to explore the nature and modes of prayer in the two religions. Existing findings in the neurotheology literature will be used to assess the extent to which there are commonalities and differences in the subjective experiences of prayer of Hindus and Muslims. Though Hinduism and Islam are anchored in very different sacred texts and followers engage in quite different modes of worship using various modes of prayer in order to induce feelings of closeness to God, it is quite likely that Hindus and Muslims likely experience prayer in a similar way, given the extant literature in neurotheology. A particular focus of the research will be the roles played by different genders in prayer.

Moren Mao

NY - Pace University

Discipline: Humanities

Authors:
#1 Moren Mao

Abstract Name: Chinese Rock and Roll: Resisting Censorship

Chinese rock and roll has been deeply entwined with politics since its conception, as reflected in both artistic expressions and creative limitations. Lyrics, instrumentals, and musical compositions are all characterized by Chinese culture and social politics. Chinese rock rose to prominence during the 80’s struggle for democracy, through music, youths openly expressed their discontent towards the corrupt authoritarian regime and an increasingly bleak future. The rock scene hit a critical turning point post 1989’s Tiananmen Square pro-democracy protests; the government escalated censorship tactics, impacting the rock community and its genre evolution.Chinese rock has always been a way to silently rebel against the oppression of daily life under authoritarian China. And this project serves as an investigation into the censorship tactics faced by the rock discourse in the 21st century. The methods of censorship discussed includes both internalized censorship and state enforced censorship. Data for this project is collected by combing through Chinese social media posts, internet forums, and other first-hand accounts. As well as examination of interviews, songs, and other publications by rock musicians to better understand their social and musical landscape. For a more in depth understanding, these investigations will be primarily done in Chinese and subsequently translated to and analyzed in English.As the fundamental principles and themes of classic Chinese rock and roll became increasingly applicable again in modern China, findings of this project will indicate why Chinese rock will continue to flourish in the oppressive environment, as well as how it will stay prevalent amongst progressively severe censorship tactics. By the conclusion of this project, I expect to build a sample data base

documenting instances of non-violent activism and censorship in the Chinese rock discourse, along with commentary and analysis of Chinese rock and roll's influence on recent sociopolitical events in China.

Melissa Mapula

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 Melissa Mapula
#2 Shiru Lin

Abstract Name: Organic Pollutant Absorption in Synthesized Metal-Organic Framework (MOF): Computational Investigation

Benzene and toluene are hazardous organic pollutants due to their potential health effects. Benzene is a known carcinogen and exposure to high levels of toluene can cause central nervous system depression. Applying porous materials for the removal of benzene and toluene can be an effective approach for mitigating the environmental and health impacts of these organic pollutants. Metal-organic frameworks (MOFs) are a type of porous material consisting of metal nodes connected by organic linkers. MOFs have unique properties such as high surface area, tunable pore size, and the ability to adsorb small molecules, making MOFs promising candidates for various applications including removing pollutants. In our study, we focus on MOF-TW1, which was formed from the crystals of the reaction of Cu(I) and Ag(I) precursors witn pyrazine (Pyz) and piperazine (Ppz) and boasting a signficant surface area (1278 m2/g) and porosity of 23.7% void volume. We applied computational chemistry methods to investigate the interaction of organic pollutants and MOF-TW1 which can guide the design and modification of MOFs for organic pollutant absorption and removal.

Aislin Marban

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Michael Springer

Abstract Name: Feminine Brushstrokes: Unveiling the Role of Women Artist after the Mexican Revolution.

In this paper I will be analyzing the role of women artists in the formation of the Mexican art world after the Mexican Revolution. First, the historical context of the Mexican Revolution is provided. Second, the changes in the social role of women in the post-revolutionary period are discussed. Third, post-evolutionary artworks produced by Mexican women artists, Aurora Reyes Flores, Lola Cueto, Carmen Mondragón, and María Izquierdo, are discussed. In addition, the movement to a more traditional Mexican style of artwork rather than the European influence that art had is addressed. The examination of the Mexican revolution establishing a more democratic republic after the Mexican Revolution is analyzed. In this discussion of artwork, the emphasis is on women as soldaderas and adelitas during the war and how their feminism advanced in Mexico. In addition to formal and iconographical examination of artworks, I utilized multiple academic articles and books in both English and Spanish to demonstrate these artwork's historical specificity. This research is important since the general audience considers women as a very passive receiver of revolutionary

change, rather than an active agent. By delving into their experiences and artistic achievements, this research aims to inspire deeper appreciation for Mexican Women's lasting impact on Mexican art and culture.

Rachel Marcus

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Rachel Marcus
#2 Trisha Saunders
#3 Mia Liadis

Abstract Name: Analysis of Racial Differences in Emerging Adults Substance Use and Psychological Well-Being

The prevalence of substance use among college students is a major public health concern, particularly with the recognition that the brain is still developing for those under 25 years of age (NIH 2013) and the links between substance use and negative psychological outcomes (Cranford et al., 2009; Kandel, 1984; Morgan et al., 2011; Sumstine et al., 2018). Additionally, there are ethnic-racial differences in the association between substance use and race/ethnicity (Sumstine et al. 2018), which may be attributed to differential experiences with racial microaggressions within college campuses. The current study examined ethnic-racial differences in substance use patterns and psychological distress among college students from the National College Health Assessment (NCHA) from Virginia Commonwealth University. Participants were American Indian or Native Alaskan (n=6), Asian/Asian American (n=78), Black/African American (n=68), Hispanic/Latinx (n=42), Middle Eastern/North African or Arab origin (17), Native Hawaiian or other Pacific Islander (n=3), White (n=268), and Biracial or Multiracial (n=29) Multiracial students reported higher levels of alcohol use (low: n=13, 59%; medium: n=39, 12.2%; high: n=9, 2.8%) than their monoracial peers; a Tukey post hoc test revealed that alcohol risk was significantly higher among Black students (1.13 ±.404 min, p=.048) and Multiracial students (1.50 ±.673 min, p=.049). There was a greater statistically significant difference between Multiracial students and students with other racial/ethnic identities, as determined by a one-way ANOVA ($F(6, 330) = 2.137$, p=.049). Our current findings support previous data suggesting heightened rates of substance use among Multiracial populations (SAMHSA, 2014). Providing more research on substance use and the themes mentioned above can help leaders create programs, legislation, and discussions to understand the matter at hand better.

Benjamin Margaritondo

PA - Villanova University

Discipline: Engineering and Architecture

Authors:
#1 Ben Margaritondo
#2 James Costello
#3 Deo Kisitu
#4 Dr. Alfonso Ortega
James Costello

Abstract Name: Implementation of a Single-Phase Water Liquid Cooling System for NVIDIA High Power Density Servers in a Data Center Rack

The high-speed computations that are ubiquitous in today's world, from credit card transactions, to on-line shopping, to web browsing, using mobile-phone apps, or running sophisticated AI software, are all performed in data centers. Data centers are buildings that house interconnected servers (i.e. the "computers") mounted in equipment racks about the size of a large refrigerator. Servers require power and generate heat. Servers running powerful high-speed applications increasingly dissipate so much heat that they must be cooled using indirect water cooling using cold plates. Cold plates are metal blocks strapped onto the heat dissipating CPUs or GPUs in the server. The coolant (water) passes through cold plates through internal channels and absorbs the heat dissipated into the cold plate. In the current project, a test reference rack was assembled in order to experimentally characterize the performance of a liquid-cooled system mock-up. The first task was to build a 3-D CAD model of the overall system in order to develop a list of components that needed to be designed, manufactured, or purchased. Simulated servers that utilize thermal test vehicles to mimic the heat generated from high performance chips were then provided by NVIDIA and installed in the rack. Cooling loops consisting of interconnected cold plates were provided by vendors and were mounted on multiple thermal test vehicles simulating the GPUs. They were instrumented with over a hundred temperature, pressure, and flow sensors to thermal-hydraulically characterize each component of the cooling systems. Experimental data was collected under conditions of maximum power in order to assess the system performance under the most stressful conditions. The experimental data showed that the flow distribution network providing cooling water to the cold plates had design flaws that caused the flow to vary over the different cold plates. Nevertheless, the vendor-supplied flow loop satisfied the thermal design targets.

Anna Marinovich

PA - Lafayette College

Discipline: Social Sciences

Authors:
#1 Anna Marinovich

Abstract Name: Vessels of Violence: Understanding Adherence to Violent Group Action and Ideology

As widely understood in past and present polarized sociopolitical climates, adopting radical ideologies can lead to organized violent group action. Though, what individual, organizational, and state-level factors can determine when members of groups adopting radical ideologies escalate to taking these violent actions? Throughout my thesis, I aim to explore the social, political, and psychological conditions that scholars argue give rise to a commitment to and indoctrination of radicalized group ideologies, drawing on theories of deviance such as differential association, strain, and anomie to inform my analysis. I then examine how individuals ultimately find themselves transformed into 'vessels of violence' within a small group organization. I aim to understand the 'construction of commitment' to extreme violence as a socializing process, negating beliefs that brainwashing is the sole influence of the adoption of deviant stigmatized ideological identities. I apply insights from scholarly work to examine what factors may help explain that commitment. These factors possess a chronological order and are 1) familial upbringing 2) presence of a repressive agent 3) sociopolitical dysfunction 4) creation of an idioculture 5) organizational practices and management 6) shared living environment 7) conformity to peer influence 8) role-taking actions. I use case studies of the radical and violent groups of the Red Army Faction, Al-Qaeda, and Heaven's Gate to explore these ideas. The data used in the profiling of these three groups are oral histories and scholarly accounts of group history and action. I highlight how existing theories help explain some commitment to violence, where these theories fall short, and what further research is needed. By conducting this sociological analysis, I intend to contribute to current discussions of violence and groupthink that have become increasingly important in the face of enduring sociopolitical violent conflicts, gauging how we may best understand the conditions giving rise to their continuation.

Rimsha Marium

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Anna Gotlib

Abstract Name: Rethinking Fear

Traditionally, fear has been perceived as a wholly negative emotion, while bravery has been praised as the only admirable response to fear. Those who overcome their fear are considered praiseworthy, and those who succumb to it are viewed as weak or otherwise morally deficient. I analyze the themes of fear and its role in the transformation of one's self through presenting regret not only as a feeling or affect, but as an emotion that is of great moral significance that underwrites how we understand ourselves and each other. In this project, utilizing insights from both psychology and philosophy, I argue that the traditional approach to fear and bravery is misguided. We ought not dismiss our responses to powerful, fear-inducing experiences; rather we ought to acknowledge, and even embrace, our fears, since our fears provide us with a deeper understanding of ourselves as moral agents. In other words, an acceptance and greater understanding of fear as an important moral emotion can eventually lead to greater self-understanding, empathy, and a broadening of one's perspectives and imagination.

Lauren Marler

CA - Scripps College

Discipline: Humanities

Authors:
#1 Warren Liu

Abstract Name: "There Have Always Been Women Like Us:" Three Women Writers of the Beat Generation

The Beat Generation was a postwar literary movement, which took place largely from 1940-1960. Writers such as Jack Kerouac, Diane Di Prima, and Allen Ginsberg wrote about taboo subjects such as drugs, sex, and queerness. They lived beyond the conservative 50s norms: not prescribing to traditional marriages, jobs, or lifestyles. This counterculture movement was progressive in many ways. However, the more well-known Beat writers are overwhelmingly white and male. Their writing often contains misogynistic undertones which expose the attitudes of the time. For men, ambition and out of the box writing was scandalous but ultimately well-received. The stories of Beat women show how hard it was to be a woman writing in the 50s, as histories of mental institutions and young suicides were unfortunately all too common. Beat women are much lesser known and their work is understudied; those that are known are often just represented in their relationships to Beat men. My project aims to address this. After reading anthologies of Beat women writers, I focused on Hettie Jones, Joyce Johnson, and Anne Waldman. I read memoirs by these writers. It was important to me to learn about their life in their own words, as they have often been underestimated by media representations. I also read two collections of letters, one between Hettie Jones and Helene Dorn, and the other between Joyce Johnson and Jack Kerouac. Lastly, I read poetry and fiction by the writers, to finally understand what they were creating and how it relates to styles and subject matters popular to the Beat generation as a whole. After my reading, I compiled an annotated bibliography featuring work by these three Beat women, to be shared with Warren Liu's Postwar American Poetry class. My hope is that interested readers will be introduced to new authors or work.

Alexis Marley

AR - Lyon College

Discipline: Humanities

Authors:
#1 Alexis Marley

Abstract Name: Witchcraft and Enlightenment: Reconstructing Witch Belief in Scotland During Enlightenment

Scottish witchcraft studies is a highly developed field, yet gaps in the literature exist, and misconceptions are substantially embedded in modern understanding. One such misconception, sustainable by modern historians and Scottish Enlightenment-era historians alike, is the idea that Enlightenment-era beliefs, such as rationality and new ideas on civility, caused both peasant and elite circles to dismiss witchcraft as superstition instead of a threat early on in the 1800's. However, analysis of legal stature, narratives of religious leaders, and Enlightenment-era Scottish histories within the context of the broader English-Scottish conflict reveal that the erosion of witchcraft belief was much more complicated. Instead, members of religious, elite, and peasant classes in Scotland still held deep-seated witch-related fears but were repressed by the changing legal landscape of Scotland, introduced by England in the 1707 Union of Nations. This union, and other Scottish-English relations during this era introduced strict concepts of scientific rationality to Scotland and its legislature, which forced Scottish elites to comply with English standards. These standards were much more progressive in terms of anti-witch belief and did not allow for the existence of superstition to inspire legislature and action. While these changes were reflected in Scottish legal codes and the end of the large-scale witch hunt Scotland was so accustomed to, they were still deeply entrenched in the Scottish population. While this belief shows up in many different facets, it arises most clearly in the last major witchcraft trials in Scotland, occurring in 1705 and 1805. Finally, this belief was further propagated by the great Scottish thinkers of the Enlightenment, such as William Blackstone, David Hume, and Walter Scott, whose works were colored with an anti-witch belief sentiment.

Maximus Marlowe

VA - Liberty University

Discipline: Humanities

Authors:
#1 Maximus Marlowe

Abstract Name: The Colonial American Historical Significance of St. David's Church

Located approximately twenty miles west of Philadelphia St. David's Episcopal Church in Wayne/Radnor, Pennsylvania is one of the oldest churches in southeastern Pennsylvania. This paper started out as an extra-credit assignment for a Colonial American History course offered last fall. However, through Dr. Sam Smith's passion for colonial church history, I became passionate about sharing the history of St. David's as it is located only two miles from my home. This paper discusses the foundations of this important church highlighting the history and growth of Episcopal churches throughout the colonial period in Pennsylvania. This paper also discusses how St. David's transformed from a small Welsh missionary community to a battleground of ideas during the Great Awakening. Overall, St. David's is an important area of colonial significance and dramatically impacted the foundations of its local community.

Nathalia Marmol

NY - Guttman Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Nathalia Marmol
Michelle Mejia

Abstract Name: Impact of Roasting on the Antioxidant Capacity and Polyphenol Content in Coffee

This study explored the dynamic relationship between the roasting process of coffee and its implications on the antioxidant capacity and polyphenol content. Coffee, a widely consumed beverage, has been renowned for its high antioxidant levels, contributing significantly to its health benefits. Notably, raw or green coffee beans are abundant in chlorogenic acid, a potent polyphenol with notable antioxidant properties, offering health benefits like reducing inflammation and protecting cells against oxidative stress. This stress is implicated in various chronic diseases, including heart disease, cancer, and neurodegenerative disorders. The roasting process, while diminishing chlorogenic acid levels, leads to the formation of melanoidins, another type of polyphenol, thereby maintaining the coffee's antioxidant properties. This study quantitatively examined the total antioxidant capacity and total polyphenol content in relation to varying roasting times. The Trolox Equivalent Antioxidant Capacity (TEAC) and Folin-Ciocalteu methods were employed to evaluate the levels of antioxidants and polyphenols respectively. Preliminary findings indicated a significant influence of the roasting process on both the antioxidant capacity and polyphenol content of coffee. These results underscored the complexity of coffee's chemical composition and its transformation through roasting. Detailed findings and further insights will be presented at the upcoming conference, contributing to a deeper understanding of coffee’s nutritional properties.

Destiny Marquez

CA - University of California - Merced

Discipline: Health and Human Services

Authors:
#1 Destiny Marquez
#2 Lindsay Crawford

Abstract Name: Impact of Living Learning Communities on Sense of Belonging in First-Year College Students

University of California, Merced (UCM) has a large population of first-generation students, many of which have difficulties adapting to their new environment. Being the first in their family to attend a four-year university, these students may struggle to find resources, adapt to rigorous course schedules, and be actively involved on campus. Living Learning Communities (LLC) have been shown to aid undergraduate students with the social and academic transition in that first year. However, there is limited research on students’ Sense of Belonging (SB) and how it is impacted by LLCs. The current study aims to close this gap in the literature and find the best practices to cultivate SB in first year students at UCM. Our hypothesis is that the LLC will improve SB among the students enrolled, which will lead to a smoother transition to college in their first semester. A cohort of 30 students will be recruited into the LLC and observed as they take part in weekly seminars, focus groups, and various social and academic events designed to aid their development. They will be compared to a control group of 30 non-LLC students. Data will be collected using the General Belongingness Scale (GBS; Malone et al. 2012), and results will be compared throughout their time at UCM.

Morgan Marsh

DC - American University

Discipline: Social Sciences

Authors:
#1 Morgan Marsh

Abstract Name: Lazarus Cultures: Society-Specific Colonial Perception in Relation to Cultural Reclamation for Michigan Anishinaabe

Current research concerning colonial influence on indigenous cultural reclamation in the United States lacks group-specificity which leads to the decentralization of the US as a colonial power and an overly simplified view of colonial perceptions within reclamation for many individual native groups. Narrowing in on the Anishinaabe, an aboriginal group that has fallen victim to this disparity, this paper will answer the question of how unique indigenous populations conceptualize and reinforce perceptions of colonialism as they pertain to their reclamation efforts. Following a focused ethnographic method, this research uses five (5) separate field observations, seven (7) expert interviews, and ten (10) dialogues with practitioners to demonstrate how the Anishinaabe have incorporated their culture, ontologies, and history in the distinct colonial understanding that informs their restorative cultural practices. This ethnography diverges from the previous emphasis placed on the French and British periods in academic discourses, instead highlighting a societal interpretation of colonialism as fundamentally linked to US-Anishinaabe interactions. Conversations with Anishinaabe leading recovery movements reveals the importance of their culture-based and differentiated understandings of colonialism as a society-specific motivator for reclamation that has been reinforced through experiential ontological methods. The diverse range of restorative efforts analyzed, crossing cultural universals, also illustrates a discrepancy in colonial understandings between indigenous and outsider-focused reclamation projects. These conclusions demand a reconsideration of the panoramic views on colonial perception within Indigenous America that are perpetuated by contemporary scholarship. They also advance the existing debate to include a critical distinction between broad audience and insider-intended forms of reclamation. From here the floor is opened for new literature relating to group-specific indigenous understandings, as told by indigenous voices, of colonialism and restorative practices.

Arianna Marshall

NY - Long Island University

Discipline: Interdisciplinary Studies

Authors:
#1 Arianna Marshall

Abstract Name: Strengthening Coastal Communities' Prosperity: The Role of Local Marine Conservation Projects in Pemuteran, Bali, Indonesia

Around the world, many established marine conservation projects have crumbled, and ongoing ones are stagnating because of lack of stakeholder engagement, making community buy-in vital to their long-term success. In turn, such communities can experience sustained economic benefits, as one formerly poor fishing village of about ten thousand permanent residents in Pemuteran, Bali, demonstrates. Conducted from September to November 2023, this qualitative case study research project explored Pemuteran community members' perceptions of the success or otherwise of locally established marine conservation projects in

increasing local prosperity, income and environmental knowledge. Drawing on participant observation, an online survey and semi-structured interviews with community members knowledgeable about marine conservation projects in the area, the case study applied a decolonial sustainable livelihood framework to analyze the data. Findings indicate that the establishment of the Biorock marine conservation project in Pemuteran in 2000, initiated and championed by community leaders through the education of local residents, is perceived by the community as a pivotal marine conservation project that has significantly contributed to the rise of local prosperity, with particular impacts on increased environmental knowledge. While the opinions of community members differ regarding the ecological impact of marine conservation projects, there are strong sentiments that the economic success of these initiatives has transformed people's connection with the natural environment, shifting it from an extractive relationship to a regenerative-based one. The research also indicates that community members perceive ongoing marine conservation projects as important due to their ability to attract tourism, thereby generating income and jobs for locals.

Isabel Marshall

NC - High Point University

Discipline: Natural and Physical Sciences

Authors:
#1 Isabel Marshall
#2 Meghan Blackledge

Abstract Name: The Effect of Antibiotic Adjuvants on Linezolid-Resistent Staphylococcus aureus

Antibiotic resistance is a growing concern in modern healthcare as the overuse of antibiotics becomes more frequent. More than 70% of bacteria that can cause serious infections are resistant to one or more antibiotics. Our lab is particularly interested in combatting this problem by utilizing compounds called antibiotic adjuvants to make existing antibiotics effective again in resistant strains of bacteria. Currently, we are interested in studying antibiotic adjuvants that are effective in Staphylococcus aureus, a Gram-positive pathogen responsible for over 100,000 infections and 20,000 deaths annually. Linezolid-resistant Staphylococcus aureus (LRSA) is a multidrug-resistant strain of S. aureus that is becoming increasingly prevalent. We have tested two lead compounds, loratadine, and 4-bromocarbazole, for the ability to potentiate linezolid and oxacillin in a panel of LRSA clinical isolates. Biological results and preliminary conclusions will be presented.

Stuart Martin

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Stuart Martin

Abstract Name: Propaganda and Visual Persuasion in Contemporary Consumer Advertising

This research looks at the relationship between graphic design and consumer behavior, focusing on the impact of propaganda-inspired design in advertising. The primary goal is to understand how design elements derived from historical propaganda posters influence consumer desires and decisions. The review of literature emphasizes the importance of advertising design in selling products, establishing brand identity, and fostering consumer recognition. To understand the origins and significance of propaganda graphic design, historical

contexts, specifically World Wars I and II, are investigated. The research delves into visual psychology, focusing on the use of color, imagery, and emotional engagement in advertising. Modern marketing campaigns are examined to demonstrate the long-lasting influence of propaganda aesthetics on modern advertising strategies. Case studies, such as the "Share a Coke" campaign, show how design elements influence consumer perceptions and decisions. The historical and contemporary approaches to propaganda design are contrasted, with simplicity, clarity, and emotional response emphasized as long-term goals. Ethical considerations are raised, with advertisers urged to prioritize transparency, honesty, and consumer autonomy. Finally, the study confirms the long-term impact of propaganda-inspired advertising design and emphasizes the importance of ethical, socially conscious campaigns in shaping consumer preferences and societal ideals.

Ivan Martin

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

Authors:
#1 Ivan Martin
#2 Seok Hyun (Joshua) Gwon

Abstract Name: Vaping Cessation for Young Adults in Rural Areas

The "Vaping Cessation for Young Adults (YAs) in Rural Areas" study aims to investigate the feasibility and preliminary efficacy of a text message-based e-cigarette cessation intervention for YAs in rural areas. E-cigarettes contain nicotine, which binds to specific receptors in the brain structure, triggering the release of various neurotransmitters. This release leads to the reinforcing effects that contribute to addiction. E-cigarette use rates among YAs, particularly in rural communities, have reached alarming levels. Our current study is of paramount importance as it seeks to address the need for effective cessation interventions tailored to the unique challenges faced by rural populations. Grounded in preliminary study insights and guided by Transtheoretical Model behavior change constructs, our team developed a text messaging e-cigarette cessation intervention program. This is a randomized controlled trial designed to assess the efficacy of the targeted intervention through text message support, multiple evaluations, salivary cotinine testing for cessation verification, and monetary compensation. These methods are used to collect participants' cessation outcomes and encourage participation. Participation criteria encompasses YAs (18-24 years) living in rural counties of Wisconsin, Minnesota, North Dakota, and South Dakota, where e-cigarette prevalence is higher than national average. Interested individuals are invited to a comprehensive Zoom session for informed consent before being randomized into either the treatment (intervention) or control (standard care) group. Intervention group participants receive automated text messages for 8 weeks, while the standard care group receives a short message with a link to national e-cigarette cessation resources during the same period. The outcomes of this study focus on the feasibility and preliminary efficacy of the intervention and can have a significant impact on public health, tobacco cessation science, and tobacco control policy by providing evidence for e-cigarette cessation among YAs in rural areas.

Jennifer Martin

FL - The University of Tampa

Discipline: Social Sciences

Authors:
#1 Jennifer Martin
#2 Benjamin Marsh

Abstract Name: Narrative Memory Differs by the Race of the Protagonist

Two experiments analyze how a narrative and its protagonist are remembered depending on the participants' race. The cross-race effect (CRE), a phenomenon where individuals have poorer memory for faces outside of ones' race compared to faces within their race, was examined. It was hypothesized that White participants would experience more race-based errors when the protagonist was a Black male in comparison to a White male. Also, White (Black) participants would be more likely to confuse the Black (White) protagonist with other Black (White) characters. Black participants (experiment 1 only) and White participants were given a short narrative about a male protagonist, Jackie. Four faces would appear: Jackie and the loiter, who alternated being Black and White, and the cashier and server, who were both White females in experiment 1, but Black or White females in experiment 2. After reading the narrative, the participants responded to a series of questions to test their memory of events and character faces. In both experiments, findings suggest that White participants had a higher rate of race-based memory error when presented with Black Jackie than White Jackie. The results suggest that patterns are used to aid in filling in memory gaps and those patterns can be related to racial expectations. Additionally, White participants, in experiment 1 and 2, misidentified Jackie the most when he and the loiter were both Black. In contrast, Black participants misidentified Jackie the most when both he and the loiter were White. In short, the CRE was supported in both experiments and in Black and White participants. Implications are that race and culture may influence the way we remember and misremember details of an event.

Natalie Martin

FL - Florida International University

Discipline: Natural and Physical Sciences

Authors:
#1 Natalie Martin
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#4 Joong Ho Moon

Abstract Name: Oral Delivery of Intracellular Proteins via Carbamoylated Guanidine Modified Polymers

The protein therapeutic industry is a rapidly growing market, expected to reach a global value of approximately $250 billion by 2028. Proteins are effective medications; however, they face limitations in cellular penetration and serum stability. As such, research and development of polymeric protein delivery systems are increasing due to their cellular permeation abilities without causing cytotoxicity. This project focuses on effective oral administration and cellular entry of carbamoylated guanidine (CG) modified polymers. Previously, our group demonstrated the success of intracellular protein delivery via polynorbornene (PN) modified with the coplanar, hydrophobic, charge-neutral, hydrogen-bonding enhanced phenyl-CG (Ph-CG). Further modifications to Ph-CG should improve biodegradability, complex stability, and intracellular delivery. Oral delivery routes for protein-polymer complexations are favored over injection techniques, as these methods may lead to pain, increased risk of infection, bleeding, phlebitis, subcutaneous port placements, high financial costs, and decreased patient compliance. When therapeutics are orally ingested, they must be resistant to the digestive tract's acidic environment and traverse the intestinal cellular layer to reach the bloodstream. The human intestine comprises a single-celled epithelial layer and mucous membrane that pose a barrier to the absorption of compounds from consumed products. Adjustments to CG-polymers will be analyzed for optimization of intestinal diffusion and resistance to gastrointestinal degradation. To replicate the intestinal environment, human colon carcinoma cell line (Caco-2) monolayers will be experimentally produced. CG-modified polymer-protein complexes will be administered to CaCo-2 monolayers, with aims of improving permeability, delivery, and absorption of orally administered therapeutics.

Giovanni Martinez

CA - California State University - Fullerton

Discipline: Engineering and Architecture

Authors:
#1 Giovanni Martinez
#2 Ngoc Nguyen
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#4 Daniel Donelon
#5 Johnathan Ong
#6 Yu Bai
#7 Maria Grushina
Ngoc Nguyen

Abstract Name: Titan Genesis: AI Empowered 3D Manufacturing

3D printing has emerged as a manufacturing method over the past 10 to 15 years. This advancement enables the average individual to learn how to model objects in Computer-Aided Design software, making it possible to create anything from affordable prosthetic limbs to replacement parts for unsupported machinery. However, most of the advancements in 3D printing technology have been confined to massive private companies with the financial resources for extensive research and development. Consequently, these advancements are often kept sheltered and private to avoid indirectly aiding their competitors. To address these issues, we propose a publicly available enhancement of consumer-grade printers, enabling the public to access most of the features through software and hardware implementations, creating a Computer-Aided Manufacturing System. To achieve our goals, we integrated a Raspberry Pi into an Anycubic 3D printer and loaded it with custom open-source software. This software allows users to create and assign tasks to multiple printers, effectively establishing a mass manufacturing program. Within this program, various features such as live monitoring, estimated print times, optimized support structures, and slicing will empower individuals to harness tools that were once reserved for industrial applications. Once this vertically integrated software is stable, AI can be introduced to speed up or increase the efficiency of it through removing tedious and recursive mathematical calculations related to point clouds, vectors, and 3D spaces. This software is of paramount significance, as it liberates individuals who were once constrained by limited resources, igniting a wave of innovation and invention that will have a profound and far-reaching impact on society as a whole.

Alexia Martinez

MEX - Universidad de Monterrey

Discipline: Engineering and Architecture

Authors:
#1 Alexia Martinez
#2 Anna Hill
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#4 Olivia Garcia
#5 Victor Garcia
#6 Mary-Anna Roberts
Anna Hill

Abstract Name: Analysis of Sediment Composition and Microplastics in Waters around the Nueces/Corpus Christi Bay Area

The proliferation of microplastics and erosion both pose concerns to the Nueces/Corpus Christi bay area. Microplastics (< 5 mm) are known to irritate organic tissue and leach chemical additives, affecting both humans and the environment. Although the risks caused by microplastics, are a notable point of interest to research, little information is available on active changes and degrees of microplastic contamination in this area. Moreover, erosion constitutes a source of coastal breakdown and a threat to waterside ecosystems and communities, making its investigation crucial as it is already eating away at the valuable coast in this area. This paired study sought to gather helpful data points on microplastic concentration in major tributaries to Corpus Christi Bay, as well as provide sediment composition data to aid in erosion modeling and prevention. In order to achieve this, sediment and water samples were collected from Oso Bay under the Yorktown Bridge, Nueces River near the Port of Corpus Christi and at Labonte Park, and Oso Creek at the Cedar Ridge Park Drainage Canal (only water). Water samples and controls were analyzed by using H2O2 to digest organic matter, a NaCl solution to separate microplastics through buoyancy and a filtration device to collect them in order to observe them through a compound microscope. Furthermore, sediment samples were examined by conducting a mechanical sieve analysis and hydrometer testing. The microplastic research was redirected by contamination issues in the negative controls, highlighting issues with the procedure, and providing insight into modifications of the process to ensure more reliable data in the future. The sediment analysis revealed that the particle size distribution in these sites consists of around 13-40 % gravel, 55-83% sand, and 4-5% silt (by mass). These data will hopefully be used in future research to aid in remediation and protection against environmental damages.

Lisa Martinez

CA - University of California - Riverside

Discipline: Natural and Physical Sciences

Authors:
#1 Lisa Martinez
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#4 Alex Bilas
#5 Kaira Carstens

Abstract Name: Determining the Role of the Volume Regulated Anion Channel in Astrocyte Volume Reduction by Hyperosmolar Solution

The volume-regulated anion channel (VRAC) is a ubiquitous anion channel expressed by all cells which plays a role in cell volume regulation. Upon cell swelling, VRAC are triggered to open, releasing anions such as chloride as well as a number of negatively charged ions and amino acids, resulting in a regulatory volume decrease of the cell. Astrocytes, a type of glial or support cell, undergo constant changes in volume in response to neuronal activity. They are important regulators of the brain's extracellular space (ECS), which plays a critical role in brain tissue excitability. However, the role of the astrocyte volume-regulated anion channel in transient or prolonged changes in astrocyte and ECS volume is unknown. Therefore, in this study, we have used transgenic approaches to selectively ablate, or conditionally knock out (cKO), astrocytic VRAC using astrocyte-specific promoter-driven Cre lines to determine the role of VRAC in acute astrocyte volume changes. I will use confocal microscopy to record real-time volume changes in fluorescently-labeled astrocytes in acute mouse hippocampal slices from VRAC cKO vs. littermate control mice by adjusting osmolarity of artificial cerebrospinal fluid (ACSF). The role of VRAC in rapid astrocyte volume reduction will be determined by application of hyperosmolar ACSF to induce cellular shrinking. The data thus far have shown that when VRAC is ablated, the astrocytes' ability to recover their volume is significantly impaired. This work has important implications for understanding mechanisms of acute cellular edema and reduction of the brain ECS.

Evelyn Martinez

FL - The University of Tampa

Discipline: Natural and Physical Sciences

Authors:
#1 Evelyn Martinez
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#4 Caitlin Katz
#5 Lauren Logsdon
#6 Michelle Roux-Osovitz

Abstract Name: What's in Our Water? Identifying uncharacterized bacteria from recreational sites in Tampa Bay

While bacteria are part of all ecosystems on earth, the presence of pathogenic bacteria such as Escherichia coli, Staphylococcus, and Vibrio species pose a risk to human health. Recreational waterways are monitored for fecal indicator organisms in order to minimize adverse health conditions within the community, but the presence of other pathogens may go undetected. Between 2019 and 2021 a University of Tampa research team sampled different recreational waters across Tampa Bay to test for the presence of Staphylococcus aureus and Methicillin-resistant S. aureus (MRSA) using microbial and genetic tests. Of the samples that displayed common microbial markers for S. aureus, many lacked the S. aureus genetic marker NucA, indicating the presence of other unidentified potentially pathogenic organisms. To identify these uncharacterized organisms, the 16srRNA gene was amplified by PCR and sequenced using the ABI seq studio analyzer system. MEGAx software and the NCBI GenBank database were used to analyze the sequence results, and a variety of genera were identified. Our data suggest the presence of mostly non-pathogenic environmental bacteria such as Cobetia, Exiguobacterium, Priestia, and Bacillus, with only a few pathogenic bacteria identified. Here we will present our current findings and discuss our approach to analyzing the diversity of the organisms we have identified. This projects' findings provide insight into the diversity of organisms in Tampa Bay and will help guide new approaches to determining the health and safety of our waterways.

Emily Martinez

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 lorry youll

Abstract Name: Older sister trauma in the Latinx immigrant household

Hello, my name is Emily Martinez. I am a women's gender and sexuality studies major at the University of Central Oklahoma. I am from a Latinx household, and I am an older sister. My research came with the passion of not only advocating for older sisters who've been parentified and who have always been the third parent, but also having the background character to have a voice. My research is a niche topic and is not always talked about due to the stigma of mental health within the Latinx immigrant community. Just like me, my mother is an older sister as well. She has also given up her hopes and dreams of raising her siblings,

seeing them grow into adults, and enjoying childhood while she had to sit back, raise them, and take care of them as if she were a third parent. My research discusses the trauma that is experienced by elder sisters within the Latinx immigrant household, the potential effects on the mental health of Latinx women, and the creation of this information into poetry. The methods that I used to do this research were reading psychology journals and personal accounts of older sisters, creating an artistic formula to transform it into poetry, adding a twist to my experience, and understanding the likelihood of what being an older sister is like for somebody who isn't an older sister. For the conclusion of my research, there is not much; it is ongoing research, and the creation of more poems is on the way. I will be doing an oral presentation of my research and having a live poetry reading of some of the poems I have compiled from my research while taking feedback from the audience.

Kimberly Martinez

CA - San Jose State University

Discipline: Social Sciences

Authors:
#1 Kimberly Martinez
#2 Robert Marx
#3 Julia Dancis

Abstract Name: Working Within and Around Anti-Trans Legislation: A Mixed-Methods Investigation of Gender-Affirming Healthcare Providers' Strategies of Resistance in Tennessee and Texas

Informed by Fontanari et al.'s (2020) insights linking gender affirmation to mental health, our study delves into the need for tailored, accessible care. Referencing Puckett et al. (2018) and Gridley et al. (2016), we tackle barriers like financial constraints and a shortage of knowledgeable providers, seeking support mechanisms crucial for sustaining care for transgender and gender-expansive (TGE) youth. Building on Hughto et al.'s (2020) exploration of gender affirmation, our goal is to understand the intricate relationship between affirmation and mental health outcomes. In 2023, the United States witnessed a concerning surge in anti-transgender legislative proposals, totaling 591 bills, including 85 focused on restricting healthcare, across 49 states (Trans Legislation Tracker, 2023). Amidst this hostile legislative environment, our research focuses on the effects of such laws on gender-affirming healthcare workers, especially in explicitly anti-trans states like Tennessee and Texas. Employing a mixed-method approach—surveys and interviews—we aim to elucidate the multifaceted impact of anti-trans legislation on gender-affirming care provision. We are planning to recruit 300 participants for a comprehensive survey and conduct 48 in-depth interviews with various healthcare providers, including therapists, counselors, social workers, physicians, endocrinologists, and psychiatrists. Anti-trans legislation contradicts medical consensus on gender-affirming care, challenging healthcare providers (Transgender Legal Defense and Education Fund, 2023).We anticipate identifying barriers resulting from legislation criminalizing gender-affirming healthcare. Moreover, our work sheds light on how providers navigate restrictive legislation to ensure continuity of care for TGE young people. We will develop recommendation booklets for practitioners, sharing strategies emerging from our research. Our overarching goal is to bridge the gap between academic insights and practical applications, contributing to both the theoretical understanding of challenges faced by gender-affirming healthcare providers and the practical enhancement of TGE youth's well-being. These implications underscore the urgent need for nuanced, evidence-based approaches in clinical practice and policy development.

Desyne Martinez

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Desyne Martinez

Abstract Name: Multiple Myeloma: Increase Longevity and Quality of Life through Early Detection

Multiple Myeloma is a rare form of bone marrow cancer where plasma cells accumulate in the blood stream attacking the skeletal system, nervous system, and kidneys of predominantly African Americans, and results in high mortality rates within 5 years of initial diagnosis. Multiple Myeloma has subtle symptoms of bone pain; doctors often send people to physical therapy missing the diagnosis. Blood tests that predict Multiple Myeloma, are listed on the International Myeloma Foundation website, but what is the best predictor of the most aggressive stage of Multiple Myeloma, Stage 3?Using 21 blood test results and demographic information on 203 Multiple Myeloma patients from 2008-2019 in Algeria, this study identifies the best predictor of Stage 3 Multiple Myeloma versus Stage 1 and 2. Logistic Regression was conducted using blood and urine tests results and demographics. Wald Confidence Intervals were used to estimate the odds ratios. Cost savings were calculated by determining the cost differential of less invasive blood tests versus the more invasive bone marrow biopsy.The Logistic Model was able to distinguish 65.43% of the time between whether patients have Stage 3 versus Stages 1 and 2. The odds of having Stage 3 Multiple Myeloma increase 1.04 to 1.56 times for each one g/dL decrease in MCHC. Lower patient MCHC levels are more indicative of the patient having Stage 3. Using an MCHC blood test has an estimated cost savings of $1734 per patient as compared to a bone marrow biopsy. Testing a patient with bone pain for MCHC can facilitate earlier Multiple Myeloma diagnosis, allowing physicians to administer earlier treatments, thereby improving patients' longevity and quality of life while coping with the disease.

Sebastian Martinez-Canedo

NY - Fordham University

Discipline: Business and Entrepreneurship

Authors:
#1 Sebastian Martinez-Canedo

Abstract Name: Making Sense of the Movies: How to Better Understand and Predict the Theatrical Window

This project investigates the connection between a film's theatrical window and its theatrical run. Its purpose is to help better understand how the timing of a film's digital release impacts a film's overall box office performance and assess whether a film's theatrical window can be predicted ahead of time. As such, this project is centered around three primary research questions: Are the theatrical window and theatrical run decreasing or increasing over time? Are the theatrical window and theatrical run correlated? Can existing box office data be used to build a framework that can predict a film's theatrical window? Existing research has shown that timing a film's transition from theatrical to digital is crucial as putting a film onto digital too soon or leaving a film in theaters for too long leaves millions of dollars on the table. Yet, it has shown neither the historical patterns of nor the statistical relationship between the timing of a film's transition from theatrical to digital. Moreover, it has not yet explored the predictive power of box office data as a potential solution to studios' timing dilemma. This project uses archival domestic box office and digital release data of 500 films released theatrically over the past decade in order to identify patterns, run correlation and regression analysis, and leverage results pertaining to the theatrical window and theatrical run in order to build a predictive equation. Data from 2013-2022 is used to build the equation while data from 2023 is used to verify the equation's predictive power. As such, results are expected to show that the theatrical window and theatrical run have decreased over time, a positive correlation, and the ability to form the basis of a predictive equation. This would emphasize the importance of studios' timing problem and provide a possible multi-million dollar saving solution.

Thomas Martynowicz

CA - University of Southern California

Discipline: Social Sciences

Authors:
#1 Shannon Gibson
#2 Thomas Martynowicz
#3 Christina Chkarboul
Christina Chkarboul

Abstract Name: Repression and Cooptation: How the Lack of Civil Society Accessibility Affects Climate Change Treaty Outcomes

This project blends participatory action research (PAR) and collaborative ethnography event (CEE) approaches — based on observations and participation at over 100 remote UNFCCC events by a team of faculty, graduate and undergraduate students, as accredited observers for the Demand Climate Justice Network — to examine the nuanced ways in which COVID-19 provided both opportunities and limitations for justice-based civil society to influence the processes and outcomes of COP26, COP27, and COP28. For this project, we focused specifically on the ways in which civil society faced cooptation and repression in these unique summitry events and how this limited access played out in relation to treaty decisions on carbon trading and loss and damage.

Siddharth Maruvada

NC - North Carolina School of Science and Mathematics

Discipline: Natural and Physical Sciences

Authors:
#1 Siddharth Maruvada
#2 Michael Bruno

Abstract Name: Design, Synthesis, and Testing of Novel Small Molecule Interleukin-6 Inhibitors for the Amelioration of Inflammatory Bowel Disease

Inflammatory Bowel Disease (IBD) is a prevalent autoimmune condition that affects 3.1 million Americans and is characterized by an excess of inflammatory cytokines. Interleukins, a class of cytokines, regulate immune cell differentiation and response. Specifically, Interleukin-6 (IL-6) is key in IBD, binding to membrane bound receptors, phosphorylating downstream targets and activating inflammatory pathways such as JAK-STAT and MAPK. IL-6 induced inflammation can be suppressed by reducing IL-6 production or blocking IL-6-mediated signal transduction. Monoclonal antibodies like tocilizumab, which target the IL-6 receptor, are currently used as IL-6 inhibitors. However, there are no small molecule inhibitors on the market that directly target IL-6. Small molecules are attractive due to their lower immunogenicity, reduced costs, and oral administrability. This project aims to computationally design, synthesize, and test novel small molecule drugs that have the ability to inhibit the IL-6 cytokine signaling cascade. The drug discovery platform Schrödinger Maestro was used to design these drugs, employing the natural compound curcumin as a template structure. More than 350 compounds were generated and a scoring profile was developed to identify the most optimal small molecules. Two compounds, Curcumin Derivative 1 (C1) and Curcumin Derivative 2 (C2) emerged as the most promising candidates due to their ideal binding affinity and high absorption

through the gut-blood barrier; these compounds were synthesized and characterized. Based on in-vivo testing in model organism Drosophila Melanogaster, both C1 and C2 are highly effective in ameliorating IBD. Subsequent investigations will focus on conducting in-vitro cellular IL-6 inhibition assays.

Bethany Marzella

NC - Elon University

Discipline: Interdisciplinary Studies

Authors:
#1 Bethany Marzella

Abstract Name: Between Conflict and Coexistence: Intra-Islamic Relations in Iraq

This research explores the developing relationship between Sunni and Shi'a Muslims in Iraq during and after the presidency of Saddam Hussein and the continuously shifting relationship between religion and politics in the country. In Iraq, Saddam ruled his country with an authoritarian “iron fist," oppressing many of his people and keeping them in check. The US invasion of Iraq in 2003 left a power vacuum that manifested in sectarian violence, causing many to flee the country. Scholarly research on this topic tends to take a geopolitical approach, privileging perspectives of political parties and leaders, at the expense of understanding the everyday experiences of Iraqis from both sects. This research takes a comparative memory approach examining how Sunni and Shia Iraqis remember sectarian relations pre- and post-Saddam. To examine this relationship, this research employs ethnographic fieldwork, participant-observation, and interviews with both Shia and Sunni Iraqis in the diaspora, including the US, UK, and Jordan. Additionally, interviews with 2nd generation Iraqis further aid in understanding how these perspectives change generationally. This research applies the concept of sectarianization, which holds that sectarian identities are not static and essential but politically and socially produced, to examine shifting sectarian identities across generations in the diaspora. This research finds commonalities among Shia and Sunni Iraqis who contend that identities such as tribe, class, geography, and family were even more important than religious identities, but that the removal of Saddam Hussein from power dissolved the coexistence between the two sects into sectarian conflict. Moreover, structural sectarianism continues to permeate diaspora communities through the physical separation of spaces. However, though many Iraqis inhabit sectarianized spaces in the diaspora, they attest to easing sectarian tensions in Iraq itself.

Shani Marzuca

CA - Loyola Marymount University

Discipline: Social Sciences

Authors:
#1 Shani Marzuca

Abstract Name: Police Reform and How Citizen Review Boards May Alleviate The Problem of Police Misconduct

The lack of accountability in law enforcement for police misconduct is an issue that has polarized the law enforcement landscape as well as the nation, awakening a renewed call from community leaders, policymakers, and advocates for citizen review boards and other methods of improving police transparency and accountability. How can Citizen Review Boards improve the rates of police misconduct and ensure greater police accountability? What methods do Citizen Review Boards employ to supervise police

misconduct? What are the limitations and problems associated with Citizen Review Boards? The primary method of inquiry employed is a literature review of social science research in the areas of law and society, criminal justice, and policing, containing keywords such as police reform, accountability, police oversight, and citizen police complaints. Online searches using JSTOR, Google Scholar, and SAGE Publications were utilized to gather information on this topic. Based on the literature, one can hypothesize that Citizen Review Boards may affect police behavior and they have the potential to play a significant role in shaping police accountability and improving public safety. Previous work on this topic exposes the issue of legitimacy with Review Boards. To combat this, Citizen Review Boards must be given power to be able to reprimand police officers for misconduct. With adjustments and requirements, Citizen Review Boards can help reduce the problem of police misconduct and lead to a safer and more just society for its citizens.

Michele Maslowski

WI - Marquette University

Discipline: Social Sciences

Authors:
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#2 David H. Hughes
#3 Adam S. Greenberg

Abstract Name: Chronometric Investigation of Object Representation Strength Yields Evidence of Compensatory Processing

Object-based attention (OBA) allows for deeper processing of an attended object among overlapping, unattended objects. Attended object representation strength is influenced by very long (1000 ms) vs very short (200 ms) preview times (Shomstein & Behrmann 2008). However, it remains unclear whether gradations in exposure duration would lead to a graded object strength. To test this, we used a rapid serial visual presentation (RSVP) paradigm to display partially-scrambled overlapping faces and houses in which preview time is related to the duration of each frame. Subjects were asked to respond when they detected a target (a specific face or house) and we evaluated performance at 6 different frame durations, across two experiments (Experiment 1: 500 ms, 750 ms, 1000 ms; Experiment 2: 600 ms, 900 ms, 1200 ms). A repeated measures ANOVA was used to compare accuracies with frame duration and block number as within-subject factors. No main effects nor interactions were significant (Experiment 1: f’s<.9, p’s>.62; Experiment 2: f’s<0.74, p’s>0.57). T-tests were used to compare reaction times (RTs) for correct versus false alarm responses. Correct RTs were significantly slower than false alarm RTs at all frame durations (all p’s<0.002), except the 1200 ms (p = 0.064) frame duration. Average RTs steadily increased from 1150 ms (500 ms frame duration) to 1860 ms (1200 ms frame duration), suggesting that object representation strength did not solely influence target detection. Furthermore, observed slower RTs for correct responses at shorter frame durations suggests that subjects compared attended objects to those appearing in subsequent RSVP frames in order to make accurate determinations. Utilizing more processing time to ensure a correct decision allowed for compensatory processing during situations of high sensory uncertainty, suggesting that OBA representation strength can be modulated by length of preview time.

Natalia Masnica

IL - Northwestern University

Discipline: Health and Human Services

Authors:
#1 Natalia Masnica

Abstract Name: Characterizing Novel PROTACs Against TG2 in Ovarian Cancer Cells

Background: Epithelial ovarian cancer (EOC) has been known for its rapid growth and is particularly challenging to treat in later stages, developing chemotherapy resistance and metastasis. Tissue transglutaminase (TG2) is an upregulated protein in ovarian cancer and is linked to EOC metastasis. The goal of our study was to characterize novel PROTACs (Proteolysis Targeting Chimeras) that most effectively decrease TG2 protein levels, causing EOC cells to lose their migrating, invading, and proliferation capabilities. Methods: We used an ovarian cancer (OC) cell line that expresses TG2 (SKOV-3) to assess TG2 protein levels by Western Blot after treatment with different PROTACs, at different concentrations. Migration and adhesion assays were used to characterize phenotypical changes caused by TG2 reduction induced by PROTACs.Results: We found that Protacs P404 and P405 induced decreased TG2 protein levels by Western blot. Of the concentrations used (0.1, 1, 10 μM), only 10μM induced a significant reduction of TG2 levels at 6 and 24 hours. In the migration assay, the % scratch area closed compared to the cells treated with PROTACs and to the control cells revealed a difference in cell migration induced by PROTACs, likely because of decreased levels of TG2 (p < 0.001). The solid phase adhesion assay demonstrated that fewer SKOV-3 cells treated with PROTACs attached to the fibronectin compared to control treated cells (p-value < 0.01). Conclusions: Our data suggest that novel PROTAC molecules are effective at inducing TG2 degradation in-vitro in OC cells. As a consequence of down regulating TG2, the PROTACs blocked cell migration and adhesion to fibronectin. We are continuing to optimize TG2 directed PROTACs structure in order to improve potency and pharmacokinetic properties with the goal of developing a novel drug that blocks metastasis and drug resistance.

Fatima Masood

MD - Howard Community College

Discipline: Interdisciplinary Studies

Authors:
#1 Fatima Masood

Abstract Name: The Unfulfilled Duty of the Federal Aviation Administration to Eliminate Airlines' Carbon Footprints

Exploring the intersection of ethical business practices and the environmental benefit of carbon credits, this research has identified elements of how the airline industry is one of the leading polluters of carbon dioxide. This research asserts that there is a moral responsibility for airlines in the United States to purchase carbon credits in order to decrease thier carbon footprints, facilitated through the Federal Aviation Administration (FAA).Some statistical figures which will be highlighted in particular are ones that indicate that the aviation industry is a top carbon polluter. For example, a total carbon emission of 179 million metric tons is produced by commercial airlines from the U.S. (around 12% of total global emissions). Yet, airlines included in the EU Emissions Trading System (EUETS) have reduced their carbon emissions by more than 17 million tons in contrast to U.S. airlines. Alongside the numerical statistics, legal policies implemented for the FAA will be analyzed and dissected, as they don’t fulfill ethical obligations to protect the environment (in contrast to the EUETS.)My methodology consisted of collecting information and analyses from research papers published by peer-reviewed sources, and interviewing individuals at my flight school and airport in order to gain a more personal insight into how certain pilots feel on an individual scale. Through an informative presentation, I will examine my findings pertaining to the possibility that carbon credits have to salvage our country’s environment, as well as why the FAA should be held to ethical standards.The morality of decisions being made by airlines are questioned in this research. The main purpose is to educate the audience on the concept and importance of carbon credits, particularly as they pertain to the FAA. The FAA has the moral obligation to take into consideration their environmental impact, and they should be upheld to such ethical standards.

Vincent Massaro

SC - The Citadel

Discipline: Natural and Physical Sciences

Authors:
#1 Jonah Charles
Jonah Charles

Abstract Name: Deployable Human Detection Device

The U.S. military requires advanced threat detection technology to determine the number of enemies in a restricted or indoor environment. Current threat detection technology includes drones and handheld thermal sensors which are not optimal for indoor deployment. To develop a tactical indoor human detector, a range of sensor types were evaluated for potential use. Pyroelectric infrared sensors (PIR) and microwave radar sensors were chosen. To further evaluate potential performance, two Panasonic long-range PIR sensors were fixed to a pivotable breadboard to determine an ideal sensor arrangement. The range, detection window, and lenses were tested, and it was determined that overlapping fields of detection would allow a microcontroller to distinguish the direction of a threat based on which combination of passive sensors were triggered. Implementation involved building a ring of staggered PIR sensors that rotates relative to the bottom section of the device. As the PIR sensors rotate, they observe changes in heat to calculate the direction of human threats and trigger the microwave radar sensor to ping the distance between the sensor and the threat. Initial testing of the microwave radar sensors concluded that an object's presence could be detected through low-density obstacles. By further researching and implementing an IR camera into the device, the threat could be analyzed with AI for human characteristics.

Jessica Massey

OK - Southwestern Oklahoma State University

Discipline: Engineering and Architecture

Authors:
#1 Jessica Massey
#2 Jeremy Evert

Abstract Name: CFD Validation of Formula One Aerodynamics

Computer-aided design (CAD) has shaped the world around us, with significant contributions ranging from everyday life to the height of competitive sport. Formula One (F1) racing is the pinnacle of motorsport where vehicle aerodynamics is consistently improved to optimize performance. This research study seeks to validate simulated data from a CAD model with wind tunnel and test track data. F1 wings are inverted to create a force above the car that suctions it to the track, this is called ground effect. Well-designed airfoils take advantage of changes in airflow to create significant downforce during sharp turns and still provide low drag for high speeds on the straights. CAD significantly reduces the cost of the design process allowing greater innovation between physical builds. Computational Fluid Dynamics (CFD) is a special type of CAD and can be used to simulate the airflow around wings. This study uses CFD to evaluate the effects of downforce and drag on car bodies. Using CFD to optimize the design helps minimize design costs for airfoils that can maximize the car's performance in the wind tunnel and on the racetrack. The ANSYS CFD software provides airflow models over different F1 front wings, varying wing shapes, and mounting angles. A wind tunnel and R/C car validate CFD predictions for downforce and drag. The data from this study suggests a correlation between CFD predictions and physical world measurements. Previous publications indicate this work can be extended to applications for aircraft design.

Jenna Mastropolo

NC - High Point University

Discipline: Natural and Physical Sciences

Authors:
#1 Jenna Mastropolo
#2 Briana Fiser
#3 Pamela Lundin

Abstract Name: Exploring Biomimetic Patterned Surfaces to Combat Bacterial Biofilm Growth

Biomimetics involves observing nature and copying or mimicking designs to develop new materials for the objective of solving complex real-world problems, like bacterial growth on surfaces. In nature, the cicada wing has bactericidal capabilities, with its sub-micron features that penetrate bacterial cell membranes, effectively killing bacteria. Patterned surfaces, like those of a cicada wing, show promise as a model for developing new technologies to fight bacterial adhesion. When bacteria adhere to surfaces, they can build up and form biofilms. When those surfaces reside in the human body, such as catheters or IVs, biofilms can lead to serious infection and death. Within the human body, biofilms cause up to 80% of chronic bacterial infections, and biofilm growth on these devices is difficult to treat because of device location. Antibiotics is one method of treatment, but the use of antibiotics may lead to a rise in deaths due to antibiotic resistance that is expected to surpass cancer and diabetes combined by 2050. Thus, researchers are exploring how surface characteristics such as stiffness, physical features, and chemical treatments can affect biofilm growth. We have investigated how varying physical patterns on surfaces can affect biofilm growth. The patterns range in

shape and size, are on the order of micrometers, and were fabricated on a silicon wafer using photolithography. We created copies of the patterns using polydimethylsiloxane, and embedded the copies into 48-well plates. Plates were incubated with Staphylococcus aureus for 24 hours and absorbance was measured to indicate bacterial growth. Surface patterning may provide a pathway toward reducing bacterial adhesion on indwelling medical devices, thereby improving the health of patients without antibiotics.

Nicolas Mastrovito

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Nicolas Mastrovito
#2 Aanandi Munshi
#3 Trino Ascencio-Ibáñez

Abstract Name: Systemic or Cell Autonomous? The Nature of ARR7 Downregulation by Geminivirus Infection in Arabidopsis

Almost all aspects of plant growth, such as cell division and shoot initiation, rely on cytokinin signaling. Cytokinins initiate growth pathways through a phosphate relay system between a His kinase and a response regulator. Arabidopsis response regulator 7 (ARR7) is among the group of type A response regulators observed to exhibit the greatest fold increase in expression upon cytokinin signaling. Type A response regulators are known for their ability to negatively regulate further cytokinin signaling and thereby lead to a reduction of plant growth. Microarray analysis of samples from A. thaliana infected with the geminivirus cabbage leaf curl virus (CaLCuV) indicates that ARR7 is downregulated during infection. It can therefore be proposed that geminivirus propagation may be reliant on some downstream growth effect of cytokinin signaling, and that ARR7-mediated negative feedback may interfere with this. It is hypothesized that geminiviruses directly induce downregulation of ARR7 expression in a cell autonomous manner, as opposed to being a systemic effect resulting from some indirect action of geminiviral components. Screening of ten A. thaliana ARR7::GFP lines identified one with the most reliable fluorescence, and preliminary immunohistochemistry assays were used to detect Rep in the cells of CaLCuV-infected tissue. Further immunohistochemical methods, in combination with the use of GFP-fused ARR7, are being developed to co-localize ARR7 with Rep in the cells of leaf and meristem sections from infected A. thaliana. It will be investigated whether fluorescence from GFP-fused ARR7 can be detected following immunohistochemical staining. In the case that it cannot, a double-staining or double-fluorescent localization method using an anti-GFP antibody may be utilized.

Sabrina Mata

MI - Northern Michigan University

Discipline: Natural and Physical Sciences

Authors:
#1 Sabrina Mata
#2 Alexander Wilson

Abstract Name: The Interactions of Botrytis cinerea with Radula complanata Endophytes and Metabolic Profiling

Radula complanata is a leafy liverwort that, although phylogenetically far from Cannabis sativa, produces structurally similar secondary metabolites to those of C. sativa plants. Previous research identified endophytes that are common in Radula marginata and C. sativa plants. Known for causing bud rot in C. sativa, Botrytis cinerea is a pathogenic fungus of concern in the cannabis industry. This study investigates compounds produced by endophytes isolated from R. complanata when in competition with B. cinerea, shedding light on potential interactions between these compounds and the mold. We collected R. complanata from various locations around Marquette County, MI. The samples were surface sterilized, and bacterial and fungal endophytes were isolated. The bacteria and fungi were identified based on morphology and sequencing of the ITS (internal transcribed spacer) of the 16S and 18S ribosomal subunit. To investigate their usefulness as a biocontrol of B. cinerea and other pathogens, we co-cultured the endophytes with B. cinerea. Extracts of the endophytes and the growing media were assayed to identify candidate metabolites that may play a role in the interaction. Compounds identified from the assays could be good candidates for use as antimicrobial agents that can be applied as a biocontrol agent in place of chemical fungicides. Chemicals isolated from R. complanata have shown bioactivity; for example, previous work has demonstrated that radulanin A possesses herbicidal activity.

Aaron Mata - Duran

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Aaron Mata - Duran

Abstract Name: Sensory Design Approach for Indoor Soccer Complex and Wellness Center

Indoor soccer complexes struggle to encourage a healthier lifestyle due to a lack of community engagement, upkeep, and sanitation, as well as a lack of programs. The project's purpose is to construct an indoor soccer complex as well as a wellness center to encourage a healthy lifestyle for people of all ages in the community. Further examination of current facilities reveals that the major issues with indoor soccer facilities are a lack of accessible applications, technology incorporation, and community engagement. A survey was done at a local indoor soccer arena, and participants were asked whether they would like to upgrade the current facility or create a new one, as well as what spa therapy services they would like. According to the study, 76.7% would like to see a cold plunge feature, 66.7% would like to see a sauna/steam room, and 60% would like to see a massage area. Several case studies show that engaging sensory design provides meaningful environments for people by assisting them in developing a healthy lifestyle through the use of their senses. The implementation of sensory design principles enhances the therapeutic effects, giving users a multisensory journey toward improved physical and mental health. Visual aspects, such as natural lighting and natural features, for example, combine to produce an aesthetically pleasant ambiance that encourages relaxation and focus. Auditory elements, such as carefully designed soundscapes and acoustics, can help to create a peaceful and motivating workplace. In addition to the indoor soccer fields, the wellness center offers a variety of services to complement the physical activities. The center caters to a wide range of wellness needs, from individualized workout programs to mindfulness workshops. Using textured flooring and wall materials, as well as technology that mimics the sound and shape of water, will help people open their senses.

Alex Matsayko

OK - University of Central Oklahoma

Discipline:

Authors:

#1 Alex Matsayko
#2 Mohammad Hossan Ph.D

Abstract Name: Fabrication of Radiopaque Polycaprolactone Filament for Biomedical Applications

Visibility of endovascular devices such as stents and flow diverters during and post-insertion are critical for safe and successful implantation. However, the visibility of fully bioresorbable implants has been a challenge. This research presents the fabrication and analysis of a radiopaque, medical grade polycaprolactone (PCL) filament by blending two biocompatible radiopaque and stable metal compounds with PCL. PCL is placed in a glass beaker and filled with acetone. A sonicator is used to stir the mixture and dissolve the PCL in the acetone. Then, a radiopaque material, such as Bismuth trioxide or Tantalum (V) oxide, is added to the PCL solution. In each trial, 0.25 grams of PCL and 3 mL of acetone are used and kept constant while the amount of the radiopaque material starts at 0.25 grams and increases by 25% for each trial up to 0.5 grams. After each trial and changing the amount of the radio-opaque material added, the mixture is pipetted out immediately after sonication and made into small chips. The chips are then placed under the X-ray camera at a fixed distance, photos are then taken, and the intensity of the X-ray reflection is measured. The chips are then put into the extruder to fabricate a 1.75mm filament. The fabricated filaments are also examined under X-ray, and images are taken. The X-ray images are analyzed, and intensity values are recorded using ImageJ software. The results show a direct correlation between radiopacity and the mass of the radio-opaque material added for individual chips and filaments. The filament visibility was much better than the individual chips due to a higher concentration of radiopaque material. The Bismuth trioxide appeared to have more radiopacity than the Tantalum (V) oxide. This study will help in developing fully bioresorbable, biomedical, endovascular implants and devices.

Takeshi Matsuda

WI - Beloit College

Discipline: Mathematics and Computer Science

Authors:
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#2 Tianlong Wang
#3 Mehmet Dik
Tianlong Wang

Abstract Name: Decentralized Machine Learning Approach on ICU Admission Prediction for Enhanced Patient Care Using COVID-19 Data

The Intensive Care Unit (ICU) represents a constrained healthcare resource, involving invasive procedures and high costs, with significant psychological effects on both patients and their families. The traditional approach to ICU admissions relies on observable behavioral indicators like breathing patterns and consciousness levels, which may lead to delayed critical care due to deteriorating conditions. Therefore, in the ever-evolving landscape of healthcare, predicting whether patients will require admission to the ICU plays a pivotal role in optimizing resource allocation, improving patient outcomes, and reducing healthcare costs. Essentially, in the context of the post Covid-19 pandemic, aside from many other diseases, this prediction not only forecasts the likelihood of ICU admission but also identifies patients at an earlier stage, allowing for timely interventions that can potentially mitigate the need for ICU care, thereby improving overall patient outcomes and healthcare resource utilization. However, this task usually requires a lot of diverse data from different healthcare institutions for a good predictive model, leading to concerns regarding sensitive data privacy. This paper aims to build a predictive model using deep learning techniques while maintaining data privacy among different institutions to address these challenges.

Ian Matthews

VA - The College of William & Mary

Discipline: Social Sciences

Authors:
#1 Ian Matthews
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#3 Pierre Noah
#4 Jason Du
Katherine Hughes
Pierre Noah

Abstract Name: Understanding Service: Georgian Military Perspectives of Cooperation with NATO Members

The Republic of Georgia has long wanted to join the European Union (EU) and North Atlantic Treaty Organization (NATO), to the extent that the government sent troops to serve in Afghanistan and Iraq with NATO soldiers. The team involved in this paper conducted over 70 interviews over the last two summers in the Republic of Georgia to understand why Georgian troops served in Afghanistan and how their service affected the Georgian military and society. This article argues the Georgian military's capabilities have improved significantly through its participation in the wars in Iraq and Afghanistan. Yet, there are still latent Soviet structures that permeate the opinions of the Georgian military class and resist complete reform. Furthermore, this article finds that opinions on Georgia's military engagement differ between politicians, high-ranking and low-ranking military officials. While all parties seem to have a sense of pride in participating in these NATO operations, the higher the rank, the less likely the interviewee was to posit that people enlisted for reasons other than pay. However, these differences in opinion frequently do not reach outside of military matters, as most veterans and Georgian politicians hold very similar, positive opinions on the West, regardless of their status.

Brandon Matthews Jr.

VA - Norfolk State University

Discipline: Education

Authors:
#1 Brandon Matthews Jr.
#2 Ann-Catherine Sullivan
Ann-Catherine Sullivan

Abstract Name: Closing the Theory-Practice Gap in Adapted Physical Education

The Theory-Practice Gap has long been recognized as an issue in higher education as practitioners struggle to integrate knowledge learned in higher education to the PK-12 classroom (Ferraz, Vidoni, Vilas Boas, 2020; O'Learly, Wattison, Edwards, 2014; Marian, 1986). Recent research with the national Adapted Physical Education (APE) Teachers of the Year (TOY) has uncovered an APE TOY Culture. The APE TOY Culture was defined in part by a strong intrinsic drive to serve the APE/APA profession beyond the job description (Piletic, Sullivan & Hilgenbrinck, 2021). The Adapted Physical Education (APE) profession has recognized Teacher's of the Year nationally since the 1990's. However, the voices of the state APE TOY's have not been heard, collectively. The research efforts included creating a comprehensive list of awardees by state and year and inviting all awardees to complete the survey. The intent of this presentation is to provide an analysis of a recent state APE TOY survey. This session will overview the APE TOY ongoing professional

development, professional collaborations and APE service. Recommendations will address ways to close the theory-practice gap.

Shaina Mattingly

ND - University of North Dakota

Discipline:

Authors:
#1 Alena Kubatova
#2 Rebecca Simmons
#3 Daphne Pedersen

Abstract Name: Course-based undergraduate research experience (CURE) and Honors Program hybrid course on microplastic detection and analysis

Undergraduate research gives students an insight into the problem-solving strategies of a certain discipline. A Course-Based Undergraduate Research Experience (CURE) and Honors Program hybrid course was designed. The undergraduate course was taught as a co-disciplinary Honors and Chemistry course and included a discussion component as well as a research component. The course was designed to increase interest in chemistry through research on a currently relevant topic, and to add discussion-based curriculum to a chemistry undergraduate course.Microplastic contamination is a currently significant topic. An undergraduate course was developed to examine the extent of microplastic contamination in the environment. The class discussed social, political, and environmental implications of plastic and microplastic contamination. The lab tested multiple samples of varying matrices for microplastics and used the fluorescent dye Nile Red for detection and confirmation of microplastics.

Skylar Mattson

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Skylar Mattson Mattson
#2 Marcie Myers

Abstract Name: Improving Balance in Women 50 and Older Through Immersive Virtual Reality Training: A Preliminary Analysis of Balance Confidence

As adults age, the risk of falling substantially increases. For women, deficits in balance and walking speed tend to occur earlier than they do in men, increasing the risk of falls. Many falls occurring in older adults can be attributed to deficits in the somatosensory, vestibular, and visual systems that combine to provide stability during walking and standing. To study a new method to possibly improve balance in women who are 50 and older, we tested the Bertec Computerized Dynamic Posturography (CDP) Immersive Virtual Reality System as a balance training intervention for women 50 years and older. Fourteen women were randomly selected to participate in either 18 (Group A) or 9 (Group B) 20-minute balance training sessions along with going through pre, middle, and post assessments (Group B started training after the first 3 weeks). One of the assessments, delivered in an interview style format pre-, mid-, and post-intervention, was the Activities Specific Balance Confidence Scale (ABC). This validated tool assesses balance confidence, rather than fear of falling, doing a variety of everyday (non-clinical) tasks. Comparing the ABC score of the two groups

during the first 3 weeks of the study, the group doing balance training (Group A) showed a trend (p=0.22) toward a higher ABC (balance confidence) score than the control group (Group B) doing no training. When all participants (Groups A and B) were combined to see if the first 3 weeks of their balance training (9 sessions) improved ABC scores, we found a non-statistically significant trend (p=0.058) toward improved confidence in balance. Thus, our preliminary findings (small sample) show that a 3-week/9-session Immersive Virtual Reality balance training intervention has promise for improving balance confidence in women 50 years or older.

Heidi Mattson

KS - University of Kansas

Discipline: Social Sciences

Authors:
#1 Heidi Mattson

Abstract Name: Strajk Kobiet: The Evolution of Polish Laws Combating Domestic Violence from 1952 to 2023

This research project seeks to analyze the evolution of Polish domestic violence laws from 1952 to 2023. The goal of the research is to answer the question, what can be learned about contemporary Polish domestic violence policies through analyzing the evolution of domestic violence and marital laws in Poland from 1952 to 2023? Little scholarship exists on domestic violence in Eastern Europe before the fall of communism, however Eastern Europe's Soviet legal attitudes influence contemporary domestic violence laws, rates, and policies. Previous researchers have sought to close similar gaps in scholarship on domestic violence in Poland through exploring factors, causes, legal attitudes, and the Soviet period, but a significant gap still exists in Polish scholarship, especially from a legal standpoint. This project will analyze eight domestic violence and marital laws in Poland from 1952 to 2023, through two rounds of thematic coding. Coding is determined through an intersectional approach, with the first round of coding covering four sections: political, social, economic, and cultural, and the second-round further codes each of these sections into a further five subsections. The research may conclude that communist legal attitudes have influenced contemporary policies toward domestic violence, due to the negative communist view of domestic violence legal protections. The only way to effectively address contemporary Polish issues combating domestic violence is by first determining the impact of previous communist legal attitudes on contemporary domestic violence policy.

Nastassja Matus

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
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#2 Xiaojun Kang
#3 Thomas D. Niehaus

Abstract Name: Characterization of Genes Involved in Detoxification of Reactive Electrophiles that Build Up in Response to Stress in Arabidopsis thaliana

Understanding how a plant responds to stress at the molecular level is crucial for developing strategies to

enhance stress tolerance. Stress changes the cellular environment, causing major changes to metabolism and impacting protein functions and increasing enzymatic side reactions. This results in changes in the amount of canonical metabolites and increased amounts of reactive, unwanted, metabolic side products. Some particularly problematic reactive electrophile side products include formaldehyde, glyoxal, and succinyl-CoA, which accumulate in response to stress. These reactive electrophiles spontaneously react to form covalent adducts with nucleophiles such as lysine residues on proteins. These adducts can affect protein and membrane functions and can become advanced glycation end-products (AGEs). The buildup of these altered macromolecules harms cellular and physiological functions and is a major contributor to aging. In order to remove formaldehyde and glyoxal, there are highly-conserved glutathione (GSH)-dependent detoxification systems. Reactive electrophiles spontaneously react with GSH to form adducts that acyl-GSH hydrolases cleave, thus releasing a benign compound and restoring GSH. Since plant cells hold high levels of GSH, GSH effectively competes with proteins for reactive electrophiles and helps in their neutralization, thereby preventing macromolecule damage. Well-characterized and highly conserved acyl-GSH hydrolases are involved in formaldehyde and glyoxal detoxification. Additionally, the Niehaus lab recently identified a conserved acyl-GSH hydrolase involved in succinyl-CoA detoxification. Arabidopsis has homologs of these three hydrolases (At2g41530, At1g11840, and At3g10850), as well as four additional acyl-GSH hydrolase homologs (At1g53580, At2g43430, At1g06130, and At2g31350). The expression levels of these seven genes are upregulated in response to abiotic stress. We predict that the four uncharacterized acyl-GSH hydrolase homologs are involved in reactive electrophile detoxification and play important roles in mitigating harmful effects of abiotic stress. The goal of this project is to identify Arabidopsis knockout lines and test whether deleting acyl-GSH hydrolase homologs impacts stress tolerance.

Rutendo Mavunga

PA - Allegheny College

Discipline: Business and Entrepreneurship

Authors:
#1 Rutendo Mavunga

Abstract Name: Analyzing the degree to which climate change has been an agent of economic malaise in African economies : Case study on Zimbabwe

This research paper seeks to examine the factors that have been significant in causing economic failure in African countries. The main focus of the paper is to explore how climate change can or has altered economic growth in African countries. However, to ensure that we maintain a holistic narrative on the factors that can impact an economy we must acknowledge other determinants by analyzing the role leadership, gender equality and technology have played in economic development. Outside of these determinants we also acknowledge orthodox measures such as FDI, population, trade and inflation that play a crucial role in shaping the stability of the economy. To further investigate how these selected variables will prove my hypothesis we will be using a time series regression model from 1980-2021, using Zimbabwe as the focus of analysis. This will be followed by a case study that will explain the correlation between the results of the regression and economic growth in Zimbabwe. Overall, the results from the empirical analysis suggest that climate change, inflation and population were more critical issues affecting the economy of Zimbabwe today. In closing this essay seeks to provide feasible solutions that Zimbabwe can harness to bring back stability, prosperity and economic growth whilst raising awareness on the impact climate change will have on African economies in the near future if preventative measures are not put in place today.

Marayna Maxwell

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
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#2 Dr. Sandra Clinton
#3 Emma Lacy

Abstract Name: Comparing Seasonal Changes in Total Phosphorus in Urban Beaver and Stormwater Ponds

Phosphorus is an essential nutrient necessary to sustain life on Earth. Its recent overuse, however, especially in urban and agricultural areas, has resulted in severe negative impacts on freshwater ecosystems. High phosphorus levels cause excessive algal growth, resulting in blooms that ultimately lead to decreased oxygen concentrations in ponds and can degrade aquatic ecosystems. In cities, green infrastructure, such as stormwater ponds, mitigate stormwater runoff by retaining sediment and phosphorus. Urban areas across the United States have seen a return of beaver populations and these beaver ponds and wetlands act as natural filtration systems, removing phosphorus and other pollutants from waterways. While there are many studies about nutrient and sediment retention in stormwater ponds and beaver ponds, there are few studies that compare these processes in urban systems and the southeastern United States. Our overall project goal is to quantify and evaluate these two types of ponds to determine which is more effective in removing phosphorus. We collected surface water from the inflow, pond, and outflow sites of 3 beaver and 3 stormwater ponds in Charlotte, NC approximately every 10 days for two years. Total phosphorus concentration was analyzed using an acid persulfate digestion method. Preliminary findings show that stormwater ponds tend to have higher total phosphorus concentrations than beaver ponds, suggesting that beaver ponds are better at retaining phosphorus. Given the negative impacts of excessive amounts of phosphorus on freshwater ecosystems, finding solutions for removing phosphorus from waterways is necessary for maintaining ecosystem health. Beaver ponds provide a low-cost nature-based solution for removing phosphorus while providing additional ecosystem services. Comparing the effectiveness of beaver and stormwater ponds at removing phosphorus from water can help us determine where to focus our efforts to prevent harmful algal blooms from endangering freshwater ecosystems.

Baily May

SD - Black Hills State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Katie Pedneau
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Katie Pedneau

Abstract Name: Enhancing HPGE Detector Performance Through Automated Cooling Systems

At the Sanford Underground Research Facility (SURF), advanced detectors are being used in the search for dark matter and neutrino properties. The sensitivity of these particle detectors to trace radiation amounts from their own component materials can cause background signals and overwhelm the rare signals from elusive particles. To minimize this background, the Black Hills Underground Campus (BHUC) assays construction materials for ultra-low levels of radiation before they can go underground into the detectors. These assays are performed using High Purity Germanium Detectors (HPGE).The HPGE's effectiveness relies on the ability to keep the germanium crystal at cryogenic temperatures. This requirement leads to the labor-intensive process of regularly checking and refilling the HPGE dewars with liquid nitrogen to ensure the crystal stays cool. This poster will detail our ongoing efforts to automate this process.

Rebekah May

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
#1 Rebekah May
#2 Shante Jeune

Abstract Name: Breakfast Skipping in College Students and its Association with Eating Behaviors.

Background: Breakfast is important in maintaining optimal diet quality and decreasing preventable diet-related disease later in life. Despite its importance, breakfast skipping is highly prevalent in the college population. Breakfast skipping may reduce one's self-regulation causing increased habits of overeating and decreased diet quality. However, eating behaviors such as eating styles and daily consumption have yet to be studied in breakfast skippers. Objective: To explore the characteristics of eating behaviors among college students who skip breakfast. Methodology: Undergraduate students participated in an observational study examining those who skipped breakfast the day prior. Participants (n=55) completed demographics, the Self-regulation of Eating Behavior Questionnaire (SREBQ), the Dutch Eating Behavior Questionnaire (DEBQ), and the Short Healthy Eating Index (sHEI). Participants were predominantly female (69%), white (58%), classified as a health professions major (40%), and the average age was 21 years old. Statistical Analysis: Descriptive statistics and bivariate correlations were analyzed using SPSS V29.0. Results: Of those who skip breakfast, students reported eating breakfast: never (20%), 1-2 days (32%), 3-4 days (42%), or 5-6 days a week (5%). Breakfast consumption frequency was positively associated with external eating (p=0.034). Additionally, lower self-regulation levels were correlated with higher levels of emotional eating (p<.001). There were 94.5% of participants who consumed added sugars above AHA recommendations (women: 24g/130kcal & men: 32g/520kcal); of this value, 47% consumed greater than or equal to 520 calories the day they skipped breakfast.Conclusion: Students who skip breakfast often skip multiple times per week, and occasional breakfast skipping may be associated with external eating. Low levels of self-regulation are related to higher levels of emotional eating. Among students who skip breakfast, added sugar consumption far surpassed recommendations. Future longitudinal studies are needed to compare variables between days with breakfast consumption vs. skipping.Funding: Support from the UCF College of Nursing.

Cierra May

WI - Alverno College

Discipline: Natural and Physical Sciences

Authors:
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#2 Rebekah Klingler

Abstract Name: In Vitro Plant Propagation through Plant Tissue Cultures

Micropropagation (in vitro plant culture) is the practice of collecting plant tissues (explants) from a mother plant to grow identical plants in a lab using a specialized nutrient medium. A sterile environment is required to grow the plant tissue, so no contamination inhibits the plant's development and growth. The importance of micropropagation lies in the fast and cost-effective production of genetically identical plants that can replicate desirable or rare traits. These plants are also protected from pests or pathogens and can be grown in

any season using less space and time which is useful for commercial production and research. Generally, the explants should grow new shoots within 3 weeks and be well-developed with roots by six weeks as long as contamination does not interfere with this process. The plants can then be placed in soil and slowly acclimated to drier and light-intensive environmental conditions. In this experiment, we sought to establish micropropagation techniques in our lab by collecting various plant tissues from local sources and observing any growth and development under varying conditions. Two different hormones (Indole-3-acetic acid [IAA] and 6-benzylaminopurine [BAP]) were used to determine their effects on the growth and root development of each explant. The explants were carefully prepared for surface sterilization with ethanol and bleach before being placed in test tubes under grow lights for several weeks. Despite occasional contamination, many plants were able to successfully grow shoots and leaves but did not grow roots. Some IAA-treated explants showed greater pigmentation, flowering, and larger foliage while the BAP-treated plants showed smaller but more plentiful foliage, though many cultures showed no differences. The results of incomplete root development in the explants requires more research about plant growth hormones and their ideal concentrations for the explants to show proper root development.

Margaret Mayo

TX - San Jacinto College

Discipline: Education

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Marissa Ortega
Emily Perez

Abstract Name: Frre the Books: Unmasking the Impact of Book Banning on Education

In the United States, the contentious issue of book banning has sparked a profound reflection on the principles of freedom of expression and the crucial role literature plays in shaping public discourse. The American Library Association's revelation of thousands of annual attempts to ban or challenge books in schools and libraries highlights a disquieting trend that has persisted for over a decade. The yearly tally has consistently hovered between 500 and 600 cases, with a significant portion targeting educational materials, revealing an ongoing clash between educational objectives and perceived sensitivities. The act of banning books, a form of restriction, raises significant concerns about hindering students' access to literature, potentially depriving them of content that resonates with their experiences or sparks their desire to share. This pervasive trend has resulted in the censorship of numerous books based on subjective claims of impropriety, palpably impacting students by stifling their freedom of expression. Teachers find themselves navigating this precarious terrain, constrained in their pedagogical approaches. If this trajectory persists, it poses a threat to the inclusion of vital discussions on controversial topics and diverse cultures. Motivations for book banning vary widely, stemming from objections to explicit content, diverse perspectives, and discussions involving race, gender, or LGBTQ+ issues. This exploration delves into the century-long evolution of book banning, identifying frequently banned books in each decade and scrutinizing the primary reasons behind their prohibition. The study investigates common rationales for banning books in U.S. schools and libraries, exploring the repercussions of removing or banning certain books from school curricula. Emerging themes include limited exposure to diverse perspectives, stigmatization of topics, impact on academic performance, and a pervasive sense of marginalization. This comprehensive analysis seeks to illuminate the complex dynamics surrounding book banning, emphasizing its far-reaching implications on education and intellectual freedom in the United States.

Sophie Mazor

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
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#3 Caren Walker

Abstract Name: Young Children's Ability to Represent Alternative Possibilities

One of the central capacities of human cognition is the ability to reason about alternative possibilities. Although there is evidence to suggest that this ability is fundamental for learning in the context of cognitive development, studies show that preschoolers typically fail tasks that require them to consider mutually exclusive possibilities. This could be due to (1) children holding a minimal representation of possibility before the age of four, or (2) to previous task designs which have masked children's true competence. To test these hypotheses, we designed a novel search task, in which 3- and 4-year-olds are asked to search for a target item inside two search boxes after it is dropped from either a fully transparent or opaque set of y-shaped tubes. The transparent tubes allow children visual access to the location of the object, while the opaque tubes allow for two possible locations. If children have a minimal representation of possibility, their search behavior should not differ between the opaque and transparent trials. However, if children are sensitive to the presence of multiple possibilities, they should spend less time searching the first search location in the opaque condition compared to the transparent one. Our results indicate that 3- and 4-year-olds spent significantly less searching the first location approached when the object was dropped into the opaque, compared to the transparent set of tubes. This suggests that children are able to consider alternative possibilities before the age of four.

Cassidy Mazyck

VA - Virginia Commonwealth University

Discipline: Education

Authors:
#1 Cassidy Mazyck

Abstract Name: Intervention Services for Black Elementary Students and Parent Intervention Programs: Autism and Educational Reach

Equal opportunities in the classroom are crucial factors for inclusive education. Despite the increase in awareness and screening for Autism Spectrum Disorder among the Black, Asian, and Hispanic communities, racial and ethnic disparities still exist, specifically among black children with Autism Spectrum Disorder (ASD). Studies have revealed that black children with ASD have consistently been on the lower end of receiving intervention services, participating in services, and attaining a proper diagnosis of ASD. Obtaining an early diagnosis and having access to intervention services are crucial for better educational outcomes, yet black children are more likely to be placed in school special education programs because of their behavior rather than disabilities. This study aimed to understand how access to special education services may play a role in educational outcomes and how the implementation of parent mentor programs that inform black parents about ASD can empower them to create an effective foundation that could improve their child’s performance both at home and in educational settings. Using peer-reviewed sources, this research examined racial disparities among black children with ASD, focusing on delayed diagnosis among black and multiracial families and parent and healthcare provider relationships. The findings suggested that parent mentor programs for black parents can bridge the knowledge gap for black parents regarding ASD by helping

them advocate for their child's educational needs. Empowering parents through these parent mentor programs can contribute positively to the educational outcomes of black children with ASD.

Sokhna Khadija Mbacke

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Khadija Mbacke
#2 Anne Carey
#3 Marshall McDaniel

Abstract Name: Does integrating poultry into organic vegetable production have an effect on biological soil health aspects?

Decades of specialization have separated livestock from crop farms in the Midwest as well as other regions of the US and internationally. Could re-integrating livestock have benefits to production, local economies, and the environment? Our project evaluates the impact of re-integrating poultry into vegetable cropping systems at three locations in the United States: California, Iowa, and Kentucky. The focus here is on how integrating poultry into these vegetable cropping systems affects soil health. We examined various aspects of the health of the soil, including physical, biological, and chemical factors, but this study will focus on the biological aspect of our measurements. At both the Iowa and Kentucky sites, we assessed the microbial biomass carbon and earthworm abundance to measure the biological health of the soil. We found that integrating chickens with vegetable cropping did not increase microbial biomass but did increase earthworm abundance by 109% compared to the control (no chickens). In the future, we will be analyzing other soil health properties and how they are affected by integrating chickens. Considering all drawbacks and benefits – including improvement in soil functioning (i.e., soil health) – is required for a holistic assessment of integrating chickens into vegetable cropping systems.

Corryn McAfee

NC - Davidson College

Discipline: Social Sciences

Authors:
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#2 Emma Jones
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#4 Cinthya Ramirez
#5 Julio Ramirez

Abstract Name: The Effects of Bilateral Entorhinal Cortex Lesions on Spatial Working Memory and Septodentate Innervation in Rats

The central nervous system is capable of remarkable functional reorganization to compensate for the loss of brain tissue by neurodegeneration or injury. The entorhinal cortex (EC) is among the very first regions to show signs of deterioration in patients with Alzheimer's disease, a neurodegenerative disease characterized by significant memory loss. This study investigated how bilateral lesions of the EC impact rodent performance in a spatial working memory task and how synaptogenesis might contribute to behavioral

recovery. A delayed-alternation task conducted using a Y-maze was used to measure the rats' spatial working memory performance. Male Sprague-Dawley rats were assigned to an lesion (n = 13) or sham (n = 14) group where they either received the bilateral EC lesions or a craniotomy, respectively. Their working memory was subsequently assessed using an acquisition alternation task on the Y-maze with an intertrial interval (ITI) of 30 seconds. Their performance was evaluated based on the number of total and perseverative errors in the task across a 6-week testing period. A histological stain for acetylcholinesterase (AChE) was used to study the sprouting response from the AChE-containing, septo-dentate pathway to compensate for the loss of the EC's input to the dentate gyrus of the hippocampal formation. The AChE stain density is used as a marker for cholinergic septo-dentate sprouting. Results of these studies highlight both the significant sprouting response in the middle molecular layer of the dentate gyrus and the importance of the EC for spatial working memory.

Micha'l McAlpine

GA - Fort Valley State University

Discipline: Natural and Physical Sciences

Authors:
#1 Micha'l McAlpine

Abstract Name: Theoretical Study of The Interaction of Select Perfluorinated Alkyl Substances (PFAS) with Transcription Factor, Nuclear Factor Kappa β

Per or polyfluoroalkyl substances (PFAS) or "forever chemicals" are a group compounds that are used for their water-resistant properties. PFAS can be classified into short or long chain compounds, based on the number of carbons they contain. Concerns for the longer chain or legacy PFAS compounds stem from their accumulation in air, soil, and water due to slow degradation in the environment. Additionally, exposure to PFAS has been linked to significant health effects and recent evidence indicates they have the potential to be neurotoxic, with the largest effect on dopamine neurons. Multiple studies show PFAS disrupt cell homeostasis by increasing oxidative stress, however the mechanism by which this occurs remains unknown. In this theoretical study, we will use computational methods to examine the potential of three PFAS chemicals (Perflouorooctanesulfonic acid (PFOS), Perfluorooctanesulfonyl flouride (POSF), and Perfluorobutanoic acid (PFBA) to interact with the transcription factor, Nuclear Factor Kappa β (NF-κβ), activation of which is important to regulation of oxidative stress and cell survival. Computational analysis included geometry optimization of PFOS, POSF, and PFBA via Avogadro using General Amber Force Field (GAFF), protein docking analysisusing Autodock Vina with Pyrx graphical user interface, and analysis of protein ligand interactions with BIOVIA Discovery Studio Visualizer. Results indicate that long chain PFAS chemicals (PFOS and POSF) had both stronger binding affinities and potential intermolecular interactions with NF Kappa B, than the short chain, PFBA. This discovery adds to our understanding of PFAS's ability to increase oxidative stress leading to neurotoxicity of dopamine neurons.

Christina McArdle

GA - University of Georgia

Discipline: Natural and Physical Sciences

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#3 Nicholas Kegley

Abstract Name: Examining whether Marfan Syndrome Variants affect O-glucosylation of Fibrillin-1

Marfan Syndrome (MFS) is a heritable autosomal dominant disorder that results in connective tissue defects in the body, affecting about 1 in 7500 people. MFS is caused by missense mutations in the gene which encodes fibrillin-1 (FBN1), a protein found in the extracellular matrix required for the proper development of connective tissue found in the aorta and the lungs. These missense mutations cause variations of the FBN1 primary amino acid sequence. FBN1 contains 47 epidermal growth factor (EGF)-like domains, which can be highly O-glucosylated through biologically significant O-glucosyltransferases, POGLUT2 and POGLUT3. FBN-1 EGFs are O-glucosylated within the putative consensus sequence, C-X-N-T-X-G-S-F/Y-X-C-X-C, where 'X' denotes any amino acid, and the bolded 'S' indicates the O-glucosylated serine; some MFS variants affect these residues. Currently, the status of the O-glucose modification on MFS variant FBN1 is unknown. To assess if the level of O-glucosylation changes in MFS variant FBN1, a set of primers including an MFS missense mutation were developed and utilized in PCR-mediated mutagenesis to produce an MFS variant FBN1 plasmid. DNA sequencing showed that the developed primers successfully produced the MFS variant N1134K, which replaced the wildtype asparagine with lysine in EGF17. Currently, we are transfecting the plasmid encoding this variant FBN-1 into mammalian cells to express the protein. The purified protein will be analyzed using mass spectral glycoproteomic methods to determine whether MFS variant affects O-glucosylation of FBN1 EGF17. This work is supported by NIH grant R01HL161094.

Marguerite McAree

PA - Muhlenberg College

Discipline: Humanities

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Abstract Name: "What is Here Told:" Traditions of Irish Storytelling in Dracula

When discussing Irish influence in Dracula, critics have often focused on the contentious Irish politics of Stoker's time or on parallels between rural western Ireland and Transylvania. This paper moves away from that focus in order to consider ways in which Irish folklore and mythology impact the novel. Exploring the oral nature of these tales demonstrates how the conflict between oral storytelling and the written word appears in Dracula. Additionally, considering elements in Irish myth, from graphically violent descriptions of battles to wide-spanning journeys, leads the reader to a greater understanding of the novel's plot structure and construction of the vampire. The paper provides a slightly different lens through which to read Dracula, and its connections to orality could have greater implications for epistolary novels.

Anthony McBain

PA - Lafayette College

Discipline: Natural and Physical Sciences

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#1 Anthony McBain
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#3 James Dearworth

Abstract Name: Comparison of Irises in Turtles using Scanning Electron Microscopy to Identify sites Expressing Melanopsin

The source of sluggishness for the pupillary light response in turtles is thought to be due to photoreception mechanisms occurring in their irises involving melanopsin. The purpose of this investigation was to compare the anatomy of irises in different species of turtles to allow for future identification of locations expressing melanopsin. Left eyes were dissected from a red-eared slider turtle (purchased from Kons Direct), an eastern painted turtle (caught from Twin Lakes, 40.93786, -75.16199), and an eastern box turtle (provided by the North Carolina State Rescue Team), and preserved in 4% paraformaldehyde. After hemi-section, removal of lenses, and gluing onto stubs, posterior surfaces of irises were imaged by a Carl Zeiss EVO 25 SEM (Scanning Electron Microscope) using the C2D detector in variable pressure mode. Presence of radial structures were used to identify locations of dilators. Annular widths of sphincters and dilators were measured from captured images using the program, Zen 2.6 (blue edition). Widths of sphincters were 160, 120, and 168 μm, red-eared slider, eastern painted, and eastern box, respectively; widths of dilators were 669, 543, and 878 μm. Therefore, the eastern painted turtle has the smallest sphincter and smallest dilator. Normalization to the diameters of the eyes confirmed the observations: for sphincters, 3.06, 2.63, and 3.11%, for dilators, 12.8, 11.9, and 16.3%. Results show that imaging posterior surfaces of irises can be used to distinguish their components, which will assist in identifying expression sites for melanopsin. To confirm results and support with statistics, measures will be repeated using additional turtles and will compare males to females. For better ability to distinguish sphincters from dilators, images also will be attempted using the cold stage with the EVO 25's extended pressure mode to preserve surface topologies and enhance differences in sphincters and dilators.

Aryee McCabe

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

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#2 Matthew Kaproth

Abstract Name: Contrasting Oak Responses to Water Stress - Osmolyte Profiling Across Species

Water represents an essential environmental factor, as it impacts plant growth, development, and structure. Drought stress induces plant acclimation to avoid tissue loss or death. Plants must adjust their physiology in response to low water conditions. One way plants acclimate to drought is by synthesizing or storing more osmolyte such as sugars, sugar-alcohols, or proline. Osmolytes are known to increase drought tolerance in plants by increasing the uptake of water by plant tissues. Oak species are well-adapted to a range of dry and well-watered environments. The objective of our research is to investigate the amount of osmolytes, specifically proline, produced by various oaks species using a common garden. This research is important because it gives us a greater understanding of how oaks and plants acclimate and are adapted to drought stress. Ultimately, this will be useful as climate change and water scarcity become more of an issue.We found that proline accounted for less than 0.05% of the total osmolyte concentration for leaf tissue. (In relative amounts, some species produce 100 times more proline than others.) The reason for this low concentration is that oaks synthesize other osmolytes and use proline in other functions (e.g., as an antioxidant). Our results motivated us to gain a greater understanding of how oaks naturally respond to drought. To serve this end, a future direction would be to research if osmolytes are dependent on soil factors (topsoil pH and organic content) that may influence nutrient availability. For example, studying the native environmental conditions of each oak will give us a greater understanding of the natural drought strategies of these oaks.

Katherine McCain

MI - Hope College

Discipline: Natural and Physical Sciences

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#2 Kenneth Brown

Abstract Name: An Analysis of Homocysteine and Homocysteic Acid in Bipolar Disorder

Homocysteine (HCY) is involved in methionine metabolism in the body. This chemical is also associated with the progression of neurodegenerative disorders such as bipolar disorder, schizophrenia, and Alzheimer's disease, as reported in several papers. When HCY reaches high concentrations in the body, it is believed to be converted into homocysteic acid (HCA), which contributes to cell neurotoxicity. Following analysis of our cell and media samples using liquid chromatography/mass spec (LC/MS) and high performance liquid chromatography (HPLC) with electrochemical detection (EC), we found abundances of HCY, and nitro-HCY. Other LCMS and HPLC data collected from the rat samples yielded high concentrations of what we believe to be homocysteine sulfinic acid and low concentrations of HCY. The oxidized forms of HCY, nitro-HCY, and homocysteine sulfinic acid have the potential to be either intermediates in the HCY to HCA transformation or simply alternative oxidized forms of HCY. We will continue to investigate the relationship between bipolar disorder and the presence of these compounds.

Haley McCall

NC - High Point University

Discipline: Humanities

Authors:
#1 Haley McCall

Abstract Name: Percy Jackson: The Hero Who Redefines “Troubled” Children

Rick Riordan wrote The Lightning Thief to bridge the gap between children’s literature and non-reading students by redefining fantasy fiction protagonists. Percy Jackson shares an abundance of traits with a stereotypically struggling student. Percy is a literary protagonist who does not like to read and is considered a “bad student” who bounces between specialized schools for “troubled” children. He is kicked out of school after school and comes to internalize his perceived academic shortcomings. His dyslexia, low-income household, and abusive stepfather are situational factors that contribute to the obstacles he must overcome on his hero’s journey and narrative struggle. Percy struggles to fit in at school due to the social gaps between varying degrees of “troubled” students. He is constantly anxious about his perceived academic aptitude due to the psychological self-sabotage of being labeled “troubled” and the subsequent expectations of poor academic performance. His desperation to earn the conditional respect of his mentor is tempered by his desire to give up attempting to please his authorities. At home, he feels inadequate to protect his mother from his stepfather’s cruelty. His mother is the sole figure of love and support for Percy despite her own shortcomings. Percy flees to a world of Greek mythology brought to life. However, unlike other fantasy fiction protagonists, this is no magically perfect escapist setting for Percy to claim as his new home. Instead, his personal and interpersonal struggles follow him. He is once again at odds with his authorities and his peers. Instead of academic pressures to perform, his conditional approval from his peer group hinges on his physical and magical capabilities. The Lightning Thief presents an alternative children’s literature protagonist whose relatability as a “troubled” child grounds the nuanced forces of expectations on youth in his heroic journey.

Peyton McCarley

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Peyton McCarley

Abstract Name: Exploring Selectivity Differences in Aromatic C-H Borylations Catalyzed by Iridium Coordinated to Electron-poor 2,2'- Bipyridine Derivatives

One challenge regarding the direct functionalization of aromatic C-H bonds is borylation with ortho-directed selectivity. These catalysts typically operate under steric control making direct access to sterically hindered aryl boronate esters and acids very difficult. Nonetheless, ortho borylations have been successful with ligands that are a combination of heterocycles, which allow for iridium coordination to one nitrogen and one non-nitrogen atom rather than two nitrogen atoms like with bipyridine/phenanthroline ligands, which typically yield meta/para substitutions. Therefore, we started to consider the main structural difference between bipyridine and phenanthroline ligands, which is their aromatic connectivity, where bipyridine has a single connectivity point, and phenanthroline has an aryl group connecting the pyridine groups. We hypothesized that this differing connectivity would allow for flexibility in the bipyridine connection that's not in the phenanthroline ligand, possibly allowing the bipyridine to "rollover-metalate" to the iridium leading differences in directed selectivity. More recent developments in this area have found that electron-poor bipyridine ligands affect borylation ortho to moderate directing groups such as amides, thus we focused on ligands with carboxylate esters. We set up reactions with dimethyl benzamide where we used the ligand diethyl 2,2'-bipyridine-5,5'-dicarboxylate, where we observed strictly ortho substitutions, as well as the ligand diethyl 1,10-phenanthroline-3,8-dicarboxylate, where we saw only meta borylation with small amounts of bis-meta transformations. These findings pinpoint that this functional difference between the bipyridine and phenanthroline moieties of the compounds is making a distinct difference in selectivity as they have the same functionalized side groups.

Sage McCarty

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Sage McCarty

Abstract Name: Voter Behavior and Terrorism-Related Arrests: Understanding the Electoral Successes of Far-Right Political Parties in European Parliament Elections

European countries' domestic politics are marked by threats of terrorism; meanwhile, electoral successes among far-right political parties are increasing within the European Parliament. Previous research revealed that a given European Union member country's total numbers of terrorism-related arrests and terrorist attacks in a given year are not correlated with far-right support in the country's elections for the European Parliament during the following year. Considering the effects that terrorism has on European countries, more insight is required into whether more specific variables related to terrorism, as differentiated based on motives, are correlated with the electoral success of far-right parties. Therefore, this new project seeks to reveal whether support for the far-right in the European Parliament elections of given year is correlated with variables pertaining to religiously inspired/jihadist terrorism and/or right-wing extremist terrorism during the election year and/or the previous year. These variables include the numbers of arrests related to religiously inspired/jihadist terrorism and the numbers of arrests related to right-wing terrorism in given years. As related to these variables, this project uses correlations to test the alternative hypotheses that support for far-right

parties is comparatively low in the context of a high number of arrests related to right-wing extremist terrorism and support for far-right parties is comparatively high in the context of a high number of arrests related to religiously inspired/jihadist terrorism. Relevant data is pulled from the European Parliament's election results and Europol's European Union Terrorism Situation and Trend Reports. This project seeks to uncover whether voter support for far-right parties is correlated with terrorist threats in Europe, as quantified by numbers of terrorism-related arrests in a given year, allowing for a greater understanding of voter behavior in Europe.

Jacob McCauley

PA - Lafayette College

Discipline: Engineering and Architecture

Authors:
#1 Jacob McCauley

Abstract Name: Strengthening FDM 3D Printed Components using an Active Annealing Process

Additive manufacturing (AM) processes are an emerging group of manufacturing processes with the ability to produce products previously impossible with traditional subtractive manufacturing processes. Of the various AM processes, one of the most commonly used processes is Fused Deposition Modeling (FDM). FDM works by extruding a thin line of heated plastic, often PLA, and building up a component layer by layer. These components can be made quickly; however, they will typically fail through a process called layer delamination, where the layers of the part will peel away from each other. This fundamental flaw stands in the way of FDM's widespread adoption into mass production, and if there was a way to solve it it could lead the way for a future of more sustainable manufacturing. A common method to prevent layer delamination is to anneal FDM parts by heating them in an oven to fuse the layers together and make the parts stronger. While this method is effective at increasing strength, it could lead to distortion and reduce dimensional accuracy. In my research, I modified an FDM machine to reduce layer delamination using supplemental heating. A Prusa i3 MK3s was modified with a heater that is held precisely over a printed part to melt the previous two layers of a part together. A series of tensile test specimens based on the ASTM Standard D638-22 will be printed and then tested using an Instron tensile testing machine. Besides testing the effect of heating, the effects of dwell time and heating temperature variations will also be tested.Based on preliminary results, I predict an increase in inter-layer strength compared to unmodified parts without the dimensional changes caused by traditional annealing, with the best results predicted to be generally produced by higher temperatures and dwell times.

Ariana McCaw

CA - Occidental College

Discipline: Natural and Physical Sciences

Authors:
#1 Ariana McCaw
#2 Rachel Jiang
#3 Leah Stiemsma

Abstract Name: The breast cancer genome and its association with the breast tissue bacteriome

Breast cancer (BC) is the most prevalent and fatal cancer type in women. BC forms in microenvironments in

which genes and bacteria are in close proximity. Existing research evidences gene-bacteria communication, but the relationship between the BC genome and breast tissue bacteriome is poorly understood. This investigation hypothesized that genetic variation in the top ten genes commonly linked to BC: BRCA1, BRCA2, PTEN, TP53, PALB2, CHEK2, ATM, BRIP1, BARD1, and STK11 would be associated with variations in the breast tissue bacteriome. We conducted 30X whole genome sequencing on 60 breast tissue samples (healthy, H (n=15), pre-diagnostic, PD (n=15), tumor, T (n=15), and adjacent normal, AN (n=15)) which were previously analyzed for microbiome composition and function using 16S rRNA sequencing (mSystems, 2022). Following sequence pre-processing, variant calling, and alternate allele frequency calculation by the UC Davis Bioinformatics Core, we isolated high and moderate variants for these genes with a quality score ≥ 55 for further analysis. 8 of 10 genes met these criteria within our data set: BRCA1, BRCA2, PTEN, TP53, PALB2, CHEK2, ATM, and BRIP1. Alternate allele frequencies and genotypes of variants with differences in alternate allele frequency among the tissue types were then associated with bacterial ASVs deemed differentially abundant relative to the H tissue type (mSystems, 2022) using MaAsLin2. Three BC-linked genes BRCA1, TP53, and ATM show significant associations with the taxa Muribaculaceae, Alcaligenes faecalis, Oceanobacillus, Romboutsia, Pseudomonas, and Pseudomonas fragi (p-value ≤ 0.01, q-value ≤ 0.25). These genera belong to phyla which can produce cancer-causing DNA damage or are associated with other types of cancer. The discovered associations further our understanding of the genetic and microbial determinants of BC and may highlight the breast tissue bacteriome as a biomarker of BC.

Billie McClosky

NY - St. Lawrence University

Discipline: Interdisciplinary Studies

Authors:
#1 Billie McClosky

Abstract Name: Influences on Identity: How does Self-Proclaimed Cultural Identity Affect Psychological Well-being?

How does cultural identity affect psychological well-being? Varying perceptions of identity allow us to establish an understanding of it, its theory, its values, and its connections to life in a multitude of ways. Simply calling identity by its name opens up the understanding and the assumption of the thing to be vast and expansive, as identity itself is subjective to each person and entity which experiences it. While identity as we know it can emerge from scholarly settings, inter and intrapersonal settings, and as a self-established construction of acknowledgement of characteristics, personalities, and a menagerie of things that make humans feel alive, it has a plethora of subsets that makeup the entirety, grandiose umbrella that it is. Personal identity, social, intellectual, academic identity, the list goes on and on and yet they all make up someone's background or how they connect to the world and see themselves in it. One thing in particular, however, has consistently drawn my attention when I read and learn about identity studies, being the subset of cultural identity: how the social relates to the personal, and what makes up our notion of self in the environment that we are given. An analysis of published works allows the presentation of this paper to discuss the impact of disruption and instability on one's cultural identity and how that identity, however stable or insecure, affects one's psychological well-being. Through an analysis-based methodology one will find that through film and literary analysis of representation supported by published research in supporting and related fields, we can understand how a surplus of emotion, stress, or any other factors can lead to the development of effects on how secure one feels within their self-proclaimed cultural identity.

Isabella McCollum

PA - Duquesne University

Discipline: Engineering and Architecture

Authors:
#1 Isabella McCollum
#2 Rana Zakerzadeh

Abstract Name: Computational Study of Vocal Fold Tissue Oxygenation: Effects of Physiological Parameters

Vocal folds (VFs) are two bands of smooth muscle tissue found in the larynx. During voice production, air travels between the folds producing a biomechanical fluid-structure interaction (FSI) that causes a vibration known as phonation. Computational modeling of this FSI provides a prediction of VF dynamics and glottal flow which can lead to an improved understanding of these interactions. Our prior research studied the liquid dynamics within the VF by considering a poroelastic model for the tissue. In this current study, we aim to combine our FSI-porous VF model with a mass transport model to investigate the association of interstitial flow with oxygen transport within the VF. Previous experimental observations report contradictory relationships regarding the effects of phonation on the flow within the tissue and the associated oxygen partial pressure. It has been hypothesized that physiological conditions may influence VF oxygenation, which corresponds with dysfunctions such as hypoxia and localized lesions.To quantify key features that contribute to oxygen transport in the VFs, we developed a multiphysics computational framework of coupled mass transport-FSI methodology. The transient airflow in the larynx was described by the Navier-Stokes equations, while the oxygen transport was modeled using the advection-diffusion-reaction equation, and the interporous flow was solved via the Brinkman equation. Physiological parameters such as oxygen reaction rate, lung pressure, and tissue permeability were varied. Coupled biomechanical simulations of transient glottal aerodynamics, VF tissue dynamics, interstitial fluid dynamics, and oxygen flow were performed. The simulation results focusing on the interstitial velocity streamlines and oxygen concentration contours were analyzed.It was found that oxygenation is inversely related to reaction rate, directly related to permeability, and not noticeably affected by lung pressure. It was also found that filtration velocity is not affected by reaction rate but is linearly proportional to lung pressure and exponentially related to permeability.

Jordan McConville

MD - Towson University

Discipline: Social Sciences

Authors:
#1 Jordan McConville

Abstract Name: ISIS's Strategic Use of Human Trafficking

Since its creation in 2014, the Islamic State of Iraq and Syria (ISIS) has been proven to participate in the human trafficking of minority women. This study expands on the research related to ISIS’s use of human trafficking to uncover the extended strategic use of human trafficking by the terrorist group. Through use of government sources on human trafficking and on terrorism, primary sources as published by ISIS, and victim testimony, this research serves as an expansion on the previously understood uses of human trafficking by ISIS. In addition to trafficking women for sexual slavery, ISIS also traffics prisoners to be sold for profit, and children for forced criminality. Additionally, as the definition of human trafficking is better understood, the recruitment practices of ISIS are considered human trafficking when the recruits are exploited after joining and are persuaded to join through deception or coercion. This study serves to fill the research gap in how repatriation is affected by the designation of foreign fighters as victims of human trafficking.

Lauren McCormick

NY - SUNY Geneseo

Discipline: Humanities

Authors:
#1 Lauren McCormick

Abstract Name: Adichie and African Womanism

Chimamanda Ngozi Adichie has always been a symbol for the ideals of female empowerment. An outspoken feminist Adichie is always very vocal about her ideas but has never called herself an African feminist or African Womanist believing that feminism should be universal but her writing provides diverse ways of thinking about empowerment beyond her goals. When we examine Adichie's works we see how overcoming trauma and oppression to get back to the community plays a huge role like Ifemelu overcoming her own negative self perception to find Nigerian community through her blog (Americanah), Kambili overcoming her father's trauma to relate to her aunt (Purple Hibiscus) and Akunna letting go of her old dream in order to become her fullest, most empowered self (The Thing Around Your Neck). This research examines the values of African/Black feminisms and African womanism, how those principles have been exemplified in Adichie's literary work and how her writings are useful to the African Woman. It also discusses the impact Adichie has had on African womanism, African feminism and how her writing has contributed to the movement. We look through most of her seminal pieces such as Americanah, Purple Hibiscus and The Thing ARound Your Neck and how themes such as Spiritual Connection, Connection and empowerment through community, and self reclamation have been used to exemplify the experience of the African woman. We discover how Adichie uses her own personal experience to convey a message of self empowerment and confidence in one's identity.

Nathan McCoy

UT - Utah State University

Discipline: Health and Human Services

Authors:
#1 Nathan McCoy

Abstract Name: miRNA in Ovarian Exosomes Influence Neurological Health in Mice

Aging-associated changes in motor function often leads to the development of musculoskeletal tremors. In women, the development/severity of tremors is causally related to ovarian failure at menopause. In the laboratory, mice can serve as an effective model for the development of aging-associated tremors. Based on our previous studies, ovarian somatic tissues transplanted from young mice to old mice significantly decreased the tremor amplitudes and lowered levels of gliosis in the brains of the older recipient mice, compared to age-matched control mice1. The study was carried out using both germ-cell-containing and germ-cell-depleted ovarian tissue. Neurological improvement and overall health were achieved using both types of tissue with similar results indicating that it may be a non-hormonal influence that is responsible for this phenomenon. This study is aimed to identify which properties of ovarian tissue causes these neurological health benefits to occur. Ovarian tissues excrete exosomes, vesicles that can be filled with miRNA which are transported throughout the body. We aim to isolate these exosomes from ovarian tissues using density gradient based centrifugation and have them introduced via injection intraperitoneally into mice to see if the same neurological improvements are achieved as it was done in mice with ovarian somatic tissue transplants. If such improvements are corroborated then ovarian exosomes will be sequenced to identify which miRNA sequences signal the body to undergo these health improvements.

Ya'Mar McCoy

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ya'Mar McCoy
#2 Dawit Hailu

Abstract Name: Exposure of radiation emission from cellphone in use

The impact of phone radiation on human health has been a topic of debate and research for many years. On one hand, some studies have suggested that long-term exposure to phone radiation may be associated with an increased risk of certain types of cancer, such as brain tumors. Additionally, there are concerns about the potential impact of phone radiation on male fertility and reproductive health. On the other hand, there are conflicting studies that have found no clear evidence of a link between phone radiation and adverse health effects. Furthermore, the telecommunications industry has implemented safety standards and guidelines for the emission of electromagnetic radiation from mobile phones, which are intended to minimize potential health risks. This project will compares the radiation emission from an iPhone and an android.

Azaan McCray

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

Authors:
#1 Azaan McCray
#2 Noelle Chesley

Abstract Name: The Impact of the Job Search Process on Young Job Seekers

Current entrants to the labor market are seeking work at a time when the economy is recovering from the COVID pandemic , when technology and automation play an increasing role in the hiring process , and in an era of economic uncertainty. How well job seekers are navigating the hiring process may depend on their previous job seeking experiences and their ability to navigate digital spaces well. Young labor market entrants are unique in that they have limited knowledge of the hiring process in general and their expectations about how it works may be more malleable than more experienced job seekers. Young entrants are also potentially more familiar with how to navigate hiring platforms and technology. These characteristics—a lack of work experience, few set expectations, and familiarity with platform technologies generally, make them an interesting group to study with respect to navigating the hiring process. How are young entrants to the labor market experiencing the job search process? To address this question, we interviewed young people living in the United States who have been actively applying to jobs. Interviewees were asked a series of open-ended questions about why they were looking for work, what sorts of jobs they aspired to, and the strategies and processes they use to locate possible employment, among other questions. These interviews were analyzed thematically using a system of open, and then systematic coding to identify common themes across interviews. This presentation will share preliminary findings from the interview data and speculate about their larger implications for job seekers more generally.

Summer McCune

KY - University of Kentucky

Discipline: Mathematics and Computer Science

Authors:
#1 Summer McCune

Abstract Name: Herculaneum Data Processing

Currently, EduceLab faces a challenge in processing the collection of images of around 3,500 trays of physically unwrapped Herculaneum scrolls that they have cultivated. The Herculaneum scrolls are ancient scrolls carbonized during the eruption of Mount Vesuvius in 79 A.D. Throughout history, attempts were made to physically unwrap these scrolls, which led to the vast collection of trays of physically unwrapped fragments that EduceLab has imaged. Due to the large amount of data, it has become increasingly important to have an efficient and effective post-processing pipeline for these physically unwrapped scrolls. While EduceLab has produced most of this post-processing pipeline, there are still some areas that require improvement. Specifically, within the datasets where there are a multitude of close-up images of singular trays. These multiple images complicate the study of the Herculaneum material by requiring manual stitching to obtain the complete image. This manual stitching can be incredibly time-consuming and labor-intensive due to the immense amount of images in a dataset. The goal of this project is to address this issue through the implementation of a stitching prototype program that will combine the multiple images into a singular cohesive image. This implementation will improve the post-processing pipeline by allowing the previously unstitched tray images to travel through the rest of the pipeline as a complete image. The completion of this project will provide a more efficient means of studying Herculaneum material through the elimination of the hindrance posed by fragmented imaging. Furthermore, it will advance the overall understanding of Herculaneum material and the human history associated with it.

Ali McDearmond

AL - University of Alabama at Birmingham

Discipline: Social Sciences

Authors:
#1 Ali McDearmond
#2 Benjamin McManus
#3 Keith Chichester
#4 Despina Stavrinos

Abstract Name: Predictive Validity of the Social Determinants of Health on Adolescent Licensure

Mobility is vital for daily tasks, including obtaining food and healthcare, attending school, and navigating one’s community. Access to such resources may impact the decision to obtain a driver’s license. Licensure rates among adolescents are declining. However, Social Determinants of Health (SDOH) variables may influence adolescent licensure decisions. This project examined the association of SDOH variables and sociodemographic factors on the odds of having a driver’s license in a sample of adolescents. Drawn from a larger, longitudinal study, adolescents (n=118) aged 16- to 18-years with and without a driver's license (Mage=16.65 years, nLicensed=50) provided demographics, family and home addresses. Various SDOH variables were gathered from the U.S. Census Bureau, geospatial software, etc. Principal Components Analysis (PCA) was conducted to assess SDOH components. Logistic regressions indicated increased neighborhood scores were associated with increased odds of licensure (OR=1.987, 95% CI=1.029-3.836), and higher built environment scores were associated with decreased licensure odds (OR = 0.350, 95%

CI=0.161-0.758). These findings suggest that the structure of adolescents' neighborhoods may influence an adolescent's decision to obtain a drivers license. Community leaders should work to improve the quality of neighborhoods to better the health and well-being of adolescents. Municipalities may target areas for additional transportation options (e.g., public transit). Future research should evaluate the impacts of SDOH variables on the odds of licensure and on driving outcomes for populations in other areas and of other ages.

Jade McDonald

CA - Chapman University

Discipline: Humanities

Authors:
#1 Jade McDonald
#2 Julye Bidmead

Abstract Name: Queering Fairytales: A Study in Transformative Retellings

In this project I analyze a number of traditional fairy tales including Sleeping Beauty and Beauty and the Beast through a radical queer theoretical lens, drawing from theories including Jack Halberstam's concepts of queer failure and wildness, Michel Foucault's panopticism, Adrienne Rich's compulsory heterosexuality, and Judith Butler's gender performativity. The central idea of this project looks to Susan Stryker's work exploring the association between monstrosity and otherness and reclaiming the historical abjection of trans and queer bodies. These ideas, developed within the field of queer theory, reveal a great deal about the social norms we live under and how oppressive they can be for everyone, not merely for those who identify as queer or who otherwise enact forms of opposition against these norms. This project stands in the field of folklore studies and queer theory, placing an emphasis on queer cultural criticism. My work is informed by and pays homage to the tradition of queer fairy tale rewriters such as Kate Donoghue as well as scholars in the field including Kay Turner and Pauline Greenhill. The primary form of analysis is critically retelling these tales, utilizing a self-aware meta narrative voice to criticize the problematic aspects of the original versions while also exploring new, transgressive ways of valuing queer experiences.

Ashley McDonald

CA - California Polytechnic State University

Discipline:

Authors:
#1 Ashley Ringer McDonald
#2 Jessica Nash

Abstract Name: Programming and Data Training in an Undergraduate Summer Research Program: A workshop from the Molecular Sciences Software Institute

Cyberinfrastructure (CI) skills, including computer programming, computation, data analysis, and data visualization, are of increasing importance to the research enterprise in almost all STEM disciplines, including many disciplines which did not previously emphasize these skills. Students' exposure to CI skills in their standard undergraduate curriculum can vary widely by discipline and institution, ranging from no exposure at all to advanced discipline-specific computational courses. Undergraduate researchers benefit from having more CI skills, and students who already have exposure to these skills are often advantaged over students who do not. To help all our students develop these important CI skills and enhance their

undergraduate research experience, we have partnered with the The Molecular Sciences Software Institute (the MolSSI) to offer a programming and data analysis workshop at the beginning of our College's summer research program each year since 2019. The MolSSI is an institute funded by the National Science Foundation which aims to improve software, education, and training for the broad computational molecular sciences community. The workshop assumes no prior programming experience and teaches the students foundational programming and data analysis skills using the python programming language. Topics covered are intended to be immediately applicable to undergraduate research students and include basic python syntax, parsing files and searching for information, reading and writing data files, working with numerical data in the python library numpy, and data visualization using the python library matplotlib. The workshop comprises six hours of instruction, which includes live coding lessons and programming exercises. All of the workshop resources are open educational resources that are available on the MolSSI Education website (education.molssi.org), such that other institutions can easily adopt a similar workshop program. This presentation will discuss the curriculum and implementation of the workshop and examples of students using their CI skills in their summer research projects.

Kendall McGhee

OK - Oklahoma State University

Discipline: Humanities

Authors:
#1 Kendall McGhee

Abstract Name: Presidential Posters: The Power of Visual Media

In the United States, all you hear about is the politics. It's on billboards. It's on the news. It's on TV. It's flooded through your social media as you scroll down. It can even be caught in a random conversation. It's heard in all forms of media and creates propaganda to go for either politician that's in the running. Before and even during each president's run, propaganda begins to spark to the audience. But do people ever acknowledge the art that can come from these controversial topics? From early to present times in history, there have always been art for politicians that convey meanings from a bias standpoint. Whether from street artists or Congress themselves, the designs give the audience something to think about.

Nicole McGinty

NC - Elon University

Discipline: Health and Human Services

Authors:
#1 Nicole McGinty
#2 Elizabeth Bailey
#3 Amanda Tapler

Abstract Name: Putting Knowledge into Action

Adolescence is a critical phase of development and a key time for laying the foundations of good health, as during this time patterns of behavior are often established. During puberty adolescent girls experience many changes in their bodies that may impact behavioral and mental health. Girls appear to be less physically active than boys, with notable drops in physical activity that begin around age nine. Within the population of adolescent girls, Latina girls are more vulnerable to poor health outcomes such as obesity and physical

inactivity. This community engaged research project is modeled after Alamance Girls in Motion and was implemented at the CityGate Dream Center, a community center serving a racially diverse population. To customize the program, the intervention was designed based on the needs obtained from parental focus groups and a survey with girls aged 9-12. Findings from the parent focus group (N=15) centered around themes of social, physical, and mental well-being and awareness of supportive community programs. The girls focus group (N=5) and survey (N=4) identified challenges to mental health, body image, and dealing with periods. Therefore, Dream Center Girls in Motion, an 8-week program for girls aged 9-12, focused on providing girls with the information, support and opportunities to engage in behaviors that improve their overall social, physical, and mental well-being. Twelve racially diverse girls from Alamance County aged 8-12 years old and 9 racially diverse Elon University female mentors participated in the program. To assess the identified needs, the girls completed the Rosenberg Self-Esteem Scale and Emotional Regulation Questionnaire for Children and Adolescents prior to the start of the program and upon conclusion. Program evaluations will be completed by the girls, mentors, and parents. Ultimately, the goal is to utilize the combined findings to ensure an effective and sustainable program.

Morgan McGlynn

NC - Elon University

Discipline: Social Sciences

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#1 Morgan McGlynn
#2 Aaron Sparks

Abstract Name: Climate Change Policy Development: A Multiple Streams Analysis of The Inflation Reduction Act 2022

Climate change has been on the national agenda since the late 1970s, yet until recently, little progress had been made because of the dominance of the fossil fuel industry within the policy subsystem. In this paper, we draw on Multiple Streams Analysis using process tracing methods to examine why significant climate policy was able to pass in 2022 when previous attempts had all failed. We examine two key case studies, the failure of Waxman-Markey and the success of the Inflation Reduction Act. In 2010 some climate organizations were hesitant about cap and trade as a policy mechanism to address climate change and failed to stimulate advocacy in their grassroots. Since then, climate groups have rallied around an alternative policy approach, which involves investing in clean technology. Activists built significant power within the Democratic party, evident in climate policy remaining prominent on the policy agenda at the beginning of Biden's presidency. Moreover, media outlets have improved their coverage of extreme weather events by tying them to climate change. In short, the political dynamics changed with climate activist building a base of power within the Democratic party, motivating citizens to elect Democratic leaders capable of passing cliamte legislation and keeping cliamte high on the policy agenda.

Jordan McGrath

GA - Emory University

Discipline: Humanities

Authors:
#1 Jordan McGrath

Abstract Name: A case morpheme or a verbal morpheme: Ho morpheme in Taiwanese Southern Min

This study analyzes the use of the "ho" morpheme in Taiwanese Southern Min (TSM). Previous literature has identified several functions of "ho" in Southern Min, including as a marker for double object construction, causative, dative, and agent (Hu, 2020). However, there is disagreement among researchers regarding whether "ho" can also function as a compound verb, preposition, or secondary predicate (Huang, 2007). Our research aims to validate these uses of "ho". To gather data, we conducted six elicitation sessions with an older male TSM speaker, resulting in 61 sentences with "ho". Our findings confirm the use of three of these markers, but indicate that "ho" cannot be used in compound verbs or as a verbal marker. Instead, our data suggests that the "ho" morpheme functions as a case marker in dative and passive constructions. Additionally, we found potential evidence suggesting that passive constructions with "ho" may carry a negative connotation. These findings indicate possible variations in the use of "ho" in double object constructions within Taiwanese Southern Min, and provide further insights into passive constructions in this dialect.

Megan McGuire

IA - Iowa State University

Discipline: Interdisciplinary Studies

Authors:
#1 Megan McGuire
#2 Stephanie Reinders

Abstract Name: Producing Datasets: Capturing Images on Multi-Camera Smartphones for Source Camera Identification

The lack of data available in the forensic science community proves to be an ongoing problem. This project’s main objective was to create a dataset with a sizeable number of images from all available cameras on multi-camera smartphones that will be publicly available, and representative of images potentially found on a person of interest's smartphone. The digital evidence team at the Center for Statistics and Applications in Forensic Evidence (CSAFE) worked with sixty recent models of multi-camera smartphones to create this dataset. Among the sixty smartphones were ten Samsung Galaxy Note 10s, ten Samsung Galaxy s20s, ten Samsung Galaxy s21s, ten iPhone 11 Pros, ten iPhone 12 Pros, and ten iPhone 14 Pros. Each of these sixty smartphones contains four individual cameras: the front selfie camera, the rear telephoto camera; the rear wide-angle camera; and the rear ultra-wide-angle camera. For each camera on each phone, the CSAFE team captured one hundred natural scene images and one hundred flatfield images. Natural scene images contain indoor and outdoor scenes but exclude all personally identifiable information. The flatfield images are photos of evenly-lit blank white walls which allow each photosite in a camera’s sensor array to be given similar information while the natural scene images provide examples of an image that could potentially be found on a person of interest’s phone. Each photo was taken with specific camera settings to ensure consistency throughout the images. While collecting data, a second sensor was found in the wide-angle camera for the Galaxy Note 10s, and so more images were captured so each sensor would have one hundred images. This dataset will be available and free for public use at some point this year and will be used by research teams at CSAFE to develop and test source camera identification methods to further forensic science research.

Eleanor McHugh

NY - Long Island University

Discipline: Natural and Physical Sciences

Authors:
#1 Eleanor McHugh

Abstract Name: The Integration of Te Awa Tupua (The Whanganui River Claims Settlement Bill) Into Whanganui's Local Governance, Culture, and Tourism Industry in the Context of the 2023 New Zealand Election

Internationally, several policies enumerating the rights of nature have been adopted, representing a shift towards recognizing Indigenous rights to stewardship of water within colonial legal contexts. In 2017, New Zealand implemented Te Awa Tupua, a policy which grants legal personhood to the Whanganui River. Te Awa Tupua represents a shift in Whanganui's perception from seeing the river as a resource to be used and exploited, to understanding the river as an entity that the community relates to and protects. Research surrounding Te Awa Tupua predominately relates to the philosophical foundations and historical context for the implementation of the policy, but there is a gap in research analyzing the success of the policy's implementation. This three-month transdisciplinary qualitative case study aims to analyze the extent to which Te Awa Tupua has impacted the culture, governance, and tourism industry along the Whanganui River in the context of the 2023 New Zealand election. The theoretical framework of this study is underpinned by Decolonial Theory and Kaupapa Māori, which encourage research to be conducted through the lens of an Indigenous Māori worldview, while data was obtained through participant observation, semi-structured interviews, surveys, and archival research. The findings indicate that Te Awa Tupua empowers Māori communities to share the ontologies underpinning their relationship to the awa (river) with Pākehā (non-Maori) and has provided a platform for Māori and Pākehā collaboration in protecting the awa. However, the research also showed that, in addition to specific limitations to the scope of the policy outlined in the legislation, Te Awa Tupua is limited by the constraints of the very colonial legal structure it is embedded in. Finally, within the context of New Zealand's 2023 election, the study suggested that environmental regulation and Māori rights to water stewardship are contentious political issues that affect the policy's implementation.

Miles McIntosh

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Indigenous place names as a way to study land characteristics

Indigenous names of geographical locations and towns can grant insight into the area: whether that be the natural features or cultural significance. Due to the manner settlers from Europe interacted with Natives in the 17th-19th century, many places had their names changed to what the settlers preferred. The original Indigenous names can help us unmderstand what the area looked like before settlers arrived. For this project my collaborators and I focused on locations in Wisconsin. The primary questions being: what were the

original names of areas and their physiographic and environmental implications of the area? Many of those features have changed through time due to climate change and/or human actions: wetlands being drained or forests being cut due to urbanization.Our project involved taking names of Wisconsin locations with Indigenous names, finding probable Anishinaabe language(s) used in the name, then finding possible meaning(s) with help of a native Anishinaabe speaker. We examined if the original name is still applicable and displayed our findings via story map.Our project shows how the land features have changed throughout history and insight into our geologic past. Original Indigenous place names gave place-based knowledge: this story map can help keep this tradition alive.

Cooper McKee

IA - Iowa State University

Discipline: Mathematics and Computer Science

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Abstract Name: PERFOGRAPH: A Numerically Aware Program Graph Representation

Artificial Intelligence (AI) has revolutionized software development, creating platforms offering functionality such as code optimization, error detection, and even code suggestions. This progression has continued to include tools for code generation, advanced debugging, and modern chatbot development assistants. These tools often utilize a deep learning model to derive this functionality. However, a consistent challenge exists when using deep learning models on source code. Unlike natural text, source code has specific structures and entities that make applying the latest natural language processing techniques difficult. There are nuances to various naming conventions, function implementations, and data structures across programming languages that do not conform to a specific standard. Program representation is a process that aims to represent the programs for deep learning models for their better understanding. Several program representations have been proposed, many of which use graphs to represent programs. However, these solutions need more compile-time numerical awareness as well as insight into aggregate data structures such as arrays and vectors. When this information is not explicitly included, the performance and insights of GNNs are limited, as they cannot accurately and precisely intuit this information from current graph representations of programs. PERFOGRAPH was introduced to address this gap. It introduces a standard graph representation for programs that provides more detailed information on numbers at compile-time, aggregate data structures, and variables. This numerically aware approach to program representation provides Graph Neural Networks with this information, allowing them to better learn the features of the programs for downstream tasks.

Abigail McKenna

NY - Wells College

Discipline: Natural and Physical Sciences

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Abstract Name: How Increases In Occurrences of Wildfires Pose a Significant Security Threat

Wildfires have the potential to harm and create significant issues for public health and safety, the

environment, and the military in the United States. This study aims to understand the impacts of wildfires and steps that can be taken to mitigate these impacts. The adverse impacts of wildfires can be studied by using tenets of fire ecology and management, and protection plans can be created to ensure the nation's security. Using ArcGIS software maintained by Esri, an investigation of wildfire patterns and adverse impacts were studied. A topographic base layer and multiple living atlas layers were used to create maps that allowed the data to be reviewed. The study found that there were relationships between wildfires and drought intensity, air quality index (AQI), and military divisions/field offices of the U.S. Army Corps of Engineers that create rising concerns for the safety and security of society. The study determined that in locations where current wildfires were occurring, the drought intensity and air quality index were high. The study also determined that the U.S. Army Corps of Engineers field offices and divisions within Alaska, California, Oregon, Texas, and Utah are at the highest risk for adverse impacts due to wildfires. These impacts include damage to property, illness, and fatalities attributable to the unpredictability of wildfires. To conclude, educational information and means of prevention and management must be implemented to ensure the safety and well-being of the people of the United States.

Chloe McKeown

DC - American University

Discipline: Social Sciences

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Abstract Name: The Rise and Fall of Safe Sex: Socio-Political Implications Preventing Comprehensive Sex Education

Sex education is often regarded as one of the best policy tools to curb STI rates. However, not all sex education curricula have the same effects. Scholars have established that comprehensive sex education (CSE) in public schools is more effective than abstinence-only programs in lowering STI cases. This literature, however, fails to address critical elements that influence STI rates beyond sex education programs, like access to broadband internet or religious identity, that mediate the efficacy and influence of these programs. Using data from the Center for Disease Control and Prevention (CDC) and the SEICUS 2022 state profiles, this project tests whether states with government-mandated inclusive or CSE programs have lower STI ratings than those having exclusive or abstinence-only sex education programs when controlling for internet access, religiosity, state party identification, and GDP. I find that religiosity is the highest predictor of STI case rates. Thus, states with higher levels of religiosity will have a higher STI rate per 100,000.

Roderick McLeod

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Discipline: Engineering and Architecture

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Abstract Name: Study of Different Manufacturing Processes to Minimize the Weight of a Composite beam

This undergraduate research plan is geared towards designing and constructing a beam using composite materials and focusing on the efficiency of the construction and maximizing strength to weight. The study specifically explores the impact of varying orientation and weight on the flexural behavior of composite beam structures. Each team will leverage a range of materials, including Carbon Fiber, Fiberglass, and environmentally friendly options like Bamboo and Hemp Fibers. Our testing arsenal comprises a Universal Test Machine and a Compression tester. To achieve our objectives, we are committed to fostering teamwork, capitalizing on diverse perspectives from individuals of different genders and backgrounds. Weekly in-person meetings will serve as dynamic platforms for knowledge-sharing and collaboration with our advisor. The project's significance lies in the acknowledgment of the finite resources on our planet, many of which are currently unsustainable. Composite materials present a sustainable avenue, allowing us to curtail the use of unsustainable materials and recreate products with similar or enhanced characteristics.This project is poised to deepen our understanding of composite materials beam and design principles, offering invaluable insights for future endeavors. The anticipated outcome encompasses the identification of more efficient manufacturing processes for designing and constructing beams, surpassing prevailing engineering standards. In essence, the overarching objective is to propel global sustainability through the strategic utilization of composite materials, thereby reducing resource waste and elevating engineering efficiency.

Kayla McLeod

MD - Bowie State University

Discipline: Natural and Physical Sciences

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Abstract Name: Dynamics of a Helical Spring Model using Optical Laser Diffraction

Diffraction imaging is an important topic that spans across multiple educational fields. Biologists use macromolecular crystallography – a diffraction-based technique similar to coherent diffraction imaging to obtain the structure of proteins and use phase retrieval programs to reconstruct the image. In physics, diffraction imaging is used in x-ray crystallography. Perhaps the most famous example of the application of these principles to a biological problem is the use of x-ray crystallography to study the structure of DNA. Since technical challenges make it impractical to study crystalline DNA in introductory physics, the helical structures can be approached by substituting an optical laser source for x-rays and a ballpoint pen spring for DNA molecules. In this work, we introduce an advanced methodological strategy to demonstrate Hooke’s Law by using helical structure through the benefit of a novel optical diffraction imaging technique.

Alexander McLintock

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Abstract Name: Optical System Design for Detection of Oil Spills

This research project has been a collaborative research project between InterOcean Systems, LLC, and San Diego State University addressing the environmental & economic impact of oceanic oil spills. The primary objective of this collaboration is to develop an early detection optical system of oil spills on the ocean surface, preventing unnecessary damage done to the ecosystem and minimizing economic losses. Our proposed solution is a long-range, fluorescent-based optical system. Where the detector shines UV (ultraviolet) light onto the ocean surface, the oil-slicked surface will fluoresce back into the detector, signaling a positive reading. UV LEDs have recently become more affordable and effective, making them the prime choice for the project, as opposed to more expensive lasers used by most other similar products. Zemax OpticStudio was used to design the necessary optical components and their position to create the most practical and efficient system. Through a combination of computer modeling and experimental measurements, a UV projection and oil detection system consisting of two telescopes, a UV LED, various filters, lenses and detectors laterally attached to the telescope were created. We've rigorously tested the system with various oil samples in both well-lit and low-light environments. We were also able to successfully detect a square meter of oil from a target distance of 60 meters with remarkably high signal to noise ratios, including in daylight conditions. In this presentation, we will delve into the key features of our prototype's design while also sharing our most recent results.

Madison McMaster

OK - Oklahoma State University

Discipline: Visual and Performing Arts

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Abstract Name: The Creation of Modern Logos: Family Crests and Heraldic Symbols

This essay explores the relationship between family crests and heraldic symbols and the design of modern day logos. This essay will specifically analyze the symbolism of different icons in medieval crests that led to a deeper understanding of the families that used them, linking them to logos and their ability to visually communicate a company's values. The evolution of modern logos will also be further studied as they continue to change with the ever changing dynamics of contemporary branding. By considering the history of these visual languages, a connection of these intricate histories can be made and used to further advance logo design in the present. This analysis showcases the evolution of symbolic representation from ancient heraldry to logos and contributes to the understanding of each as a separate and a whole. This essay provides a deepened overview of visual language and the evolution of symbolic representation and how they connect to culture and the design world. Family crests and their use of symbols and tradition in their designs has influenced the creation and evolution of modern logos.

Alison McNeal

CA - Dominican University of California

Discipline: Humanities

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Abstract Name: TRAGEDY TO TRANSFORMATION: THE ONGOING IMPACT OF SEPTEMBER 11TH

On September 11, 2001 (9/11), a coordinated Islamist terrorist attack hit the United States, consisting of four commercial airline hijackings and suicide attacks by 19 militants associated with the Islamic extremist group, Al-Qaeda. This paper identifies the significant and enduring influences of 9/11 on the United States including discrimination against people of Middle Eastern descent following the attack, a connection between the events of 9/11 and the enhanced interrogation techniques at the Abu Ghraib prison, and a surge in patriotism characterized by a sense of public solidarity and a notable rise in military enlistment in the Armed Forces. Through an examination of the historiography, government reports, and testimonials from soldiers and detainees at Abu Gharib, the collected data reveals a deeper understanding of the discrimination found within the United States and the unwarranted torturing at Abu Gharib. Furthermore, the legacy of 9/11 is enhanced by a more scientific understanding of patriotism, measured by an increase of American flags displayed outside of homes, freeway overpasses, car antennas, etc., and the profound transformation of U.S. public opinion and public unity in hopes of rebuilding a divided and broken country. Analyzing these post-9/11 outcomes supports the future development of effective strategies for counterterrorism, policy, legal reforms, international relations, combating racial discrimination, and increasing the active engagement of individuals toward their nation.

Danielle McNerney

MD - Towson University

Discipline: Social Sciences

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Abstract Name: Afterschool as an Antidote: How Can Afterschool Programming Play a Role in Gun Violence Prevention?

As of May 2023, one in four Baltimore gunshot victims who were 18 or under were shot near a school in the 2022-2023 academic year. In 2022, 84 shooting victims in Baltimore were victims 17 and younger; the threat of gun violence for Baltimore youth continues to rise as nearly one in three shooting victims in 2023 were high school aged or younger (Little et al., 2023). Gun violence cripples families, devastates communities, and often morphs into a deadly cycle as community members who witness violence become perpetrators in the future. Although preventing gun violence is a multifaceted issue that cannot be resolved through only one means of prevention, a powerful tool for combating youth exposure to gun violence is the implementation of afterschool programming for students. Afterschool programs provide students protection from the increased threat of victimization that occurs when youth lack parental guidance between the afterschool hours of 3-6pm. Currently, through partnerships with the city, faith-based organizations, and Chicago Public Schools, all Chicago Public School students have access to afterschool care through the “After School Matters” program that operates across the city. While Baltimore City offers numerous afterschool programs for students, the

standardized approach that is taken in Chicago is not replicated in Baltimore City. Instead, a “patchwork” of programming is created. Some students have more opportunities for afterschool care than others because afterschool care depends heavily on the success of individual community partnerships created between individual schools rather than an entire system. I propose that afterschool programming is one pillar of gun violence prevention that Baltimore City officials must consider strengthening and hypothesize that if a standardized afterschool program was implemented for all Baltimore City students to access, the striking threat of gun violence that Baltimore City youth currently face may lessen.

Madilyn McWilliams

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: Investigating the Role of the ESCRT Pathway During Peripheral Nerve Myelination

The endolysosome pathway is critical for the trafficking of internalized cell surface cargo required for maintaining homeostasis. Internalized cargo is sorted through a series of endosomal compartments to facilitate either it’s recycling back to the cell surface, trafficking to a specific endosome location, or degradation by the lysosome. The endosomal sorting complex required for transport (ESCRT) pathway is an essential part of the endolysosomal system and plays a key role in regulating many neuronal functions, including development and synaptic function. Components of the ESCRT pathway directly interact with proteins linked to Charcot-Marie-Tooth (CMT) disease, a type of demyelinating peripheral neuropathy. Hepatocyte growth-factor-regulated tyrosine kinase substrate (HGS) is one component of the ESCRT pathway and functions as a scaffolding protein on the endosome to identify cargo that is to be sorted by the endosome. Previous studies have shown that inactivation of HGS in Schwann cells results in motor and sensory deficits and blocks Schwann cell maturation, indicating that HGS is a key component in endosomal sorting necessary for peripheral nerve myelination. To determine how HGS may function in the endolysosomal pathway during myelination, we investigated the colocalization of HGS with markers for the early endosome, late endosome, lysosome, and recycling endosome in both wild type and P0CreHGS sciatic nerves. The findings from these studies will uncover the specific requirements of HGS along the endolysosomal pathway and provide insight into the molecular causes of demyelinating peripheral neuropathies.

Magnolia Mead

DC - American University

Discipline: Social Sciences

Authors:
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Abstract Name: Fossil Fuel Money and the Fate of Climate Action in Congress

As the climate crisis worsens, environmental leaders have attempted to pass climate legislation in the United

States (US) Congress to completely decarbonize the economy and stop greenhouse gas emissions. However, lawmakers in the US have yet to take sufficient action to prevent climate change. One explanation for the failure of climate legislation in Congress is the influence of fossil fuel donations on members of Congress. This research finds that members of Congress in the House of Representatives who receive more donations from the fossil fuel industry are less likely to cosponsor environmental justice legislation. It also finds that there is no relationship between fossil fuel donations to members and their support for environmental justice legislation in more public floor votes. These relationships are analyzed using correlation and regression tests using data on fossil fuel donations to members of the 117th Congress during the 2020 campaign cycle, members' voting behavior on environmental issues, and members' cosponsoring of Green New Deal legislation. The results indicate that although members' votes are not being affected significantly, fossil fuel finance is influencing climate legislation in Congress behind the scenes and should be further investigated.

Paulina Medellin Alvarez

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Abstract Name: Combined Inhibition of RAF, MEK, and FAK Attenuates Melanoma Brain Metastases and Prolongs Survival in Preclinical Models

Despite promising results from recent FDA-approved therapies, many advanced melanoma patients develop resistance to immunotherapy and targeted therapy. A common resistance mechanism to targeted therapy is upregulation of the PI3K/AKT signaling pathway, which has promoted the development of melanoma brain metastases. Historically, AKT inhibitors have failed in the clinic due to their limited efficacy or intolerable toxicity. Proteomic analysis comparing non-metastatic vs brain metastatic primary tumors in mice revealed focal adhesion kinase (FAK) as an AKT1 specific effector and a potential alternative therapeutic target. FAK is a non-receptor tyrosine kinase that localizes primarily to focal adhesions to regulate cell migration. To determine whether targeting FAK alone or in combination with the RAF/MEK inhibitor avutometinib reduces brain metastases and prolongs survival, we utilized autochthonous and syngeneic melanoma mouse models. Mice with either subcutaneous tumors or established brain metastases were treated with FAK inhibitor, RAF/MEK inhibitor, or the combination of both. Each cohort was assessed for tumor onset, growth, metastasis, and survival. Our results show that combined RAF/MEK/FAK inhibition significantly delays tumor onset, causes regression of established tumors, prevents brain metastases development, promotes established brain metastases regression, and prolongs survival. In addition, patient-derived BRAF-V600E melanoma xenograft mouse models resistant to the BRAF inhibitor dabrafenib and the MEK inhibitor trametinib, were sensitive to combined RAF/MEK/FAK blockade. The addition of the BRAF inhibitor encorafenib to these models further enhanced the effect on tumor growth. These results support the initiation of a clinical trial evaluating the efficacy of the RAF/MEK inhibitor avutometinib in combination with the FAK inhibitor defactinib in patients with brain metastases from cutaneous melanoma. Additionally, we are

assessing non-canonical roles of FAK in modulating the tumor microenvironment to determine whether avutometinib and defactinib also enhance the efficacy of immune checkpoint inhibition in this disease.

Lydia Medina

WI - University of Wisconsin-Oshkosh

Discipline: Health and Human Services

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Abstract Name: Interventions for Multiple Adverse Childhood Experiences

This study is built on the foundation of Vincent Felitti, Robert Anda, their colleagues, and the Center for Disease Control's (CDC) study of Adverse Childhood Experiences (ACEs). The meta synthesis expands on the original 10 ACEs to include trauma types not included in the original study. The paper acknowledges the negative affect trauma can have on an individual's mental health, physical health, and likelihood to engage in risky behaviors, resulting in negative life outcomes. Current literature relating to trauma and interventions are examined and grouped into common themes across studies. Themes are also grouped by intervention types. Word coding is used to identify characteristics and results of interventions. There are currently specific interventions for specific types of ACEs. The meta-synthesis will attempt to answer, what are the most effective interventions for people with multiple ACEs? Answering this question will help professionals implement the most appropriate interventions for people with multiple ACEs to result in positive life outcomes. The paper looks through a macro level lens in addressing trauma and adversities. Findings suggest the importance of building empowered communities, especially within communities with high levels of ACE's. Results indicate the importance of healthy and positive relationships, community level interventions, and complementary and alternative medicine (CAM).

Isaac Medina

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Discipline: Health and Human Services

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Abstract Name: Differences in Central Pain Mechanisms and Sociocultural Factors Among Older Adult Hispanic Americans and Non-Hispanic Whites

Chronic Pain is a result of alterations to the Central Nervous System, which is responsible for receiving and interpreting pain messages. When central pain mechanisms are negatively affected, pain inhibition is reduced, and pain summation is exacerbated. Evidence also considers the influence of sociocultural factors on pain

perception. Authors suggest that disparities in health outcomes exist between populations, chronic pain being more common among Hispanic Americans (HA); however, limited research has been done to compare central pain mechanisms and sociocultural factors between older adult Hispanics and Non-Hispanic Whites (NHW).The preliminary analysis included 24 participants (58.3% females), 15 Hispanic, 9 Non-Hispanic Whites (Mean age=68.12 years, SD=6.469). Validated questionnaires provided at the beginning of the sessions assessed demographic and sociocultural factors. Participants underwent quantitative sensory testing that included thermal pain threshold, tolerance, Temporal Summation (TS), and Conditioned Pain Modulation (CPM). T-tests were performed to assess differences in pain sensitivity, central pain mechanisms, and sociocultural factors between HA and NHW. Correlation analyses were also performed. Independent t-tests revealed there was not a significant difference in the level of inhibitory process [$t(21)=-1.636$, $p=0.117$] or in pain summation at 50 °C [$t(18)=1$, $p=0.331$] between HA and NHW. However, there was a significant difference in the level of optimism [$t(20.16)=3.449$, $p=0.003$], where HA had significantly higher levels of optimism (Mean=2.07, SD=0.44) than NHW (Mean=1.62, SD= 0.18). Significant correlations were found between inhibitory process and level of optimism ($r=-0.577$, $p=0.004$), and between inhibitory process and resilience ($r=-0.432$, $p=0.04$). Preliminary results on this study have demonstrated that ethnicity does not play a significant role in central pain mechanisms between HA and NHW; however, HA do seem to display greater levels of optimism. Regardless of ethnicity, one's level of optimism and resiliency seems to affect their central pain mechanisms.

Srijan Meesala

NC - Duke University

Discipline: Natural and Physical Sciences

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Abstract Name: LGALS3 Expression in KRT13+ Hillock Cells: An Immunomodulator in Squamous Cell Lung Cancer

Lung squamous cell carcinoma (LSCC) is a subtype of non-small-cell lung cancer (NSCLC) associated with poor survival outcomes due to a lack of targeted therapies. Our laboratory previously created a genetically engineered mouse model (GEMM) of LSCC driven by SOX2, a highly overexpressed oncogene in LSCC. Recently, we analyzed single-cell RNA sequencing data from mouse tumors and identified a distinct LSCC population marked by keratin-13 (KRT13). Interestingly, KRT13+ cells are found in unique "hillock" structures in the differentiating lung epithelium that express squamous-lineage markers and are immunomodulatory. We hypothesize that KRT13+ cells in LSCC are similarly important for squamous fate and immunomodulation. We analyzed scRNA-seq and human transcriptomic data for enriched genes in KRT13+ LSCC cells, identifying Galectin-3 (encoded by Lgals3), a secreted protein that regulates myeloid recruitment and is also enriched in KRT13+ Hillock cells in the mouse lung. To test if Galectin-3 can alter myeloid infiltration in LSCC, we genetically deleted Lgals3 in tumor organoids that have KRT13+ populations, which secrete high levels of Galectin-3 by ELISA. Knocking out Lgals3 should decrease myeloid migration, which we will determine using transwell assays in vitro. In addition, we will knock out Lgals3 in GEMMs in vivo to validate the results from the tumor organoids. We expect that Lgals3 knockout will lead to a decrease in myeloid recruitment in tumors, which we will measure by immunohistochemistry (IHC) staining. To test if Galectin-3 is sufficient to alter myeloid migration, we overexpressed Lgals3 in a small-cell lung cancer GEMM that has low Galectin-3 expression and low myeloid infiltration. Here, we expect that IHC staining will reveal that Galectin-3 promotes myeloid recruitment. Together, these studies will determine if KRT13+ secretes Galectin-3 as a mechanism to alter immune populations in LSCC, which may be further developed into developing therapeutic strategies to improve patient outcomes.

Juhi Mehta

FL - University of Central Florida

Discipline: Health and Human Services

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Abstract Name: Physical Activity of Children with Autism Spectrum Disorder During Weekend Days versus Weekdays: A Systematic Review

The ‘Structured Days Hypothesis’ suggests during less-structured periods, such as summer months or weekend days, children’s physical activity (PA) is lower and, thus, may be detrimental to health. Exploring this hypothesis in children with autism spectrum disorder (ASD) is important, given they are less active and tend to prefer structure and routine compared to neurotypical peers. Weekend days are similar to summer days since both have reduced structure in comparison to the consistent weekday routine. The purpose of this review was to examine differences in PA levels of children with ASD during weekend days versus weekdays. Three databases (PubMed, APA PsycInfo, and ERIC) found 604 studies for screening. Seven studies met inclusion criteria (e.g., children 5-13 years, ASD diagnosis, weekend day and weekday PA outcomes). Three of the seven studies reported PA was greater on weekdays, two reported that PA was greater on weekend days, and two reported no differences. Findings provide researchers with insight into potential differences in PA of children with ASD during weekdays versus weekend days. Further studies are needed that purposefully measure PA during different environments to help inform PA interventions targeting children with ASD.

Jeslyn Mei

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Abstract Name: Lineage-specific Overexpression of LMX1B Elicits Different Responses in the Basal and the Apical Calvaria

The calvaria, the top part of the skull, consists of the frontal, parietal, and occipital bones held together by sutures and fontanels. The supraorbital mesenchyme acts as the ossification center to form the frontal and parietal bone and coronal suture that separates them. These cranial bones are derived from embryonic cell populations that form distinct tissue lineages: neural crest-derived frontal bone and mesoderm-derived parietal bone. However, the mechanism by which sutures determine their position during development is largely unknown. The anti-osteogenic property of LMX1B has been shown to be crucial to proper calvaria formation. Here, we investigate the effect of neural crest-specific overexpression of LMX1B on calvaria formation using a Cre-loxP system on a mouse model. To label the mutant and non-mutant cells, we used ROSA26-YFP Cre reporter. We also performed microCT morphometric analysis of mutant and control calvaria to examine the relative position of the coronal suture within the frontal bone-coronal suture-parietal

bone complex. We found that the apical coronal suture shifted to the anterior in the mutant due to the reduced frontal bone. Surprisingly, the basal coronal suture shifted to the posterior in the mutant. Further lineage analysis showed that mesoderm-derived cells contributed to the frontal bone to compensate for the loss of neural crest-derived bone in the basal calvaria. The apical calvaria lacked compensation by the mesoderm bone. Thus, the basal calvaria, but not the apical calvaria, has a mechanism to resist the anterior shift of the coronal suture, which appears to have overcompensated in our mutant.

Jacob Meiners

MN - Augsburg University

Discipline: Business and Entrepreneurship

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#1 Jacob Meiners

Abstract Name: The Effect of Biomechanics on Throwing Velocity and how Velocity Affects Pitcher Salaries with Reference to Pitching Output

Average fastball velocity throughout Major League Baseball has increased dramatically over the previous 15 years. This research examines the factors leading to this increase and provides a cost-benefit analysis to determine whether throwing consistently at high velocities is worth the injury risks, compared to financial benefits, from the player perspective. Additionally, this analysis examines if paying hard-throwing pitchers is worth the monetary risk from a team executive's perspective, due to increases in leaguewide throwing injury rates. The production of advanced motion capture technology to obtain real-time biomechanical data has given way to the optimization of pitchers' biomechanics, with the goals of increasing throwing velocity and injury prevention. This innovation may be the driving force behind the significant increase in average fastball velocity throughout Major League Baseball in its recent history. An empirical model was developed using multiple regression in R to analyze the average impact in which a range of "point of interest" (POI) biomechanical measurements have on fastball velocity for pitchers (via Driveline). Preliminary results show that many POI biomechanical features significantly influence fastball velocity in pitchers at all levels, most notably, energy transfer across the throwing elbow between foot plant and ball release, peak shoulder internal rotation, and peak torso axial rotation velocity. With the use of 2023 MLB pitcher salaries, this study also found that pitchers in the top 10% of the league, in terms of average fastball velocity, tend to make less money than the rest of the pitchers throughout Major League Baseball, on average. Many factors other than throwing velocity also play into this observation and are examined in the analysis. The financial benefit of consistently throwing at elite fastball velocities may not be worth the risk, due to the increasing injuries resulting from prolonged stress on the throwing arm at high throwing velocities.

Sophia Meisner

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Discipline: Social Sciences

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Abstract Name: Examining a Wisconsin Farmers' Market SNAP Incentive Program - Using Survey Data from 2019-2023

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition

Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. We have selected one Wisconsin farmers' market that sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. This presentation will show that in 2020, COVID-19 increased the number of families facing food insecurity and using SNAP. Our administrative data illustrates the increases and subsequent decreases in SNAP shoppers at the market as we moved through the pandemic. In 2023, the number of SNAP shoppers declined significantly as did the spending, but the SNAP caseload stayed constant. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at this farmers' market using the MMP over this period. This presentation is connected to another submission analyzing a variety of data from surveys of SNAP households shopping at this farmers' market using the MMP during these years.

Mohammed Meje

TX - San Jacinto College

Discipline: Natural and Physical Sciences

Authors:
#1 Eddie Weller
#2 Jonathan Silberg
#3 Matthew Dysart

Abstract Name: Diversifying RNA-Based Memory Storage Devices for Studying Promoter Activities in Non-Model Bacteria

The central dogma of molecular biology states that genetic information stored in DNA is converted to RNA and then protein. Current methods to monitor the first step in individual organisms are hard to compare across non-model bacteria. A new technology called RNA Addressable Memory (RAM) was recently engineered to store transcriptional information in cells. To store information, a ribozyme (RNA-enzyme) is encoded in a plasmid that performs a trans-splicing reaction which yields 16S rRNA with a synthetic barcode. The prototype RAM design was modified to: (i) swap out the promoter that transcribes the ribozyme, and (ii) alter the barcode sequence. To compare these designs, the vectors were conjugated into Shewanella oneidensis and Pseudomonas stutzeri. Ongoing research is measuring the barcoding using quantitative PCR with the goal of improving the information storage capabilities of RAM. This new approach is expected to facilitate studies of how a given promoter functions across distantly-related non-model bacteria.

Michelle Mejia

NY - Guttman Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Michelle Mejia
Nathalia Marmol

Abstract Name: Antioxidant Capacity of Raw Coffee and the Effects of Roasting on Its Change

Antioxidants, often mentioned in discussions about healthy foods and drinks, are closely linked with numerous health benefits. These substances, found abundantly in various foods, act as reducing agents that protect cells from damage by neutralizing harmful free radicals called reactive oxygen species (ROS). The antioxidants serve as electron donors and play a crucial role in stabilizing these radicals, thereby preventing cell dysfunction, which can lead to various diseases. Regularly consuming antioxidant-rich foods is believed to offer protective benefits against certain diseases. Take coffee, for instance, a beverage enjoyed by millions worldwide in various forms. Since raw coffee beans are not typically consumed, most antioxidant research has focused primarily on commercially available roasted coffee beans and particles. In this research, efforts were made to study the total antioxidant capacity of three different originated raw green coffee beans, including Ethiopian, Colombian, and Mexican beans, and how it changes during roasting. The Trolox equivalent antioxidant capacity (TEAC) method was adopted to assess and compare the total available antioxidant capacity. The preliminary experimental results confirmed that raw coffee beans possessed a significant amount of antioxidants, with more detailed information to be presented in the upcoming presentation.

Wajiha Mekki

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Wajiha Mekki
#2 Radhika Gangaraju
#3 Chen Dai
#4 Ella Johnson
#5 Karan Bansal

Abstract Name: Disseminated Intravascular Coagulation as a Risk Factor for Bleeding in Acute Leukemia Cases

Acute leukemia, comprising acute promyelocytic leukemia (APL), acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL), is characterized by the rapid proliferation of immature blood cells, often leading to hematopoietic insufficiency and an increased risk of bleeding complications. This study aims to provide a comprehensive analysis of the risk factors associated with bleeding in patients diagnosed with acute leukemia. A retrospective observational study on newly diagnosed acute leukemia patients diagnosed between May 2012 and November 2022 was conducted using recorded International Society on Thrombosis and Hemostasis Disseminated Intravascular Coagulation profiles (including prothrombin time, D-dimer, and fibrinogen), age, and bleeding events. Patients without complete datasets were excluded. Continuous patient data was compared using Gray's test. Categorical patient data was analyzed with between-group comparisons using the chi-squared or Fisher's exact test. Univariate and multivariate predictors of hemorrhagic events were evaluated using logistic regression analysis (backward stepwise method), with results expressed as hazard ratios (HRs) and 95% confidence intervals (CIs). Multiple risk factors contributing to bleeding complications in acute leukemia were identified; DIC score was most significant and the focus of the study and emerged as a primary contributor to bleeding events. Additionally, the specific subtype of acute leukemia played a pivotal role in defining the bleeding risk profile. Patient-related factors, such as age, exhibited insignificant associations with bleeding outcomes. Furthermore, the impact of treatment modalities, including chemotherapy was highlighted as a crucial determinant of bleeding risk. This comprehensive analysis underscores the multifaceted nature of bleeding risk in acute leukemia, encompassing hematologic, genetic, patient-related, and treatment-related factors. Recognizing and understanding these risk factors are essential for optimizing therapeutic strategies, tailoring supportive care measures, and improving overall outcomes in patients with acute leukemia. Further research is warranted to refine risk stratification models and explore targeted interventions aimed at mitigating bleeding complications in this population.

Nathan Mekuria

TX - Texas Tech University

Discipline: Health and Human Services

Authors:
#1 Nathan Mekuria
#2 Joaquin Gonzales

Abstract Name: Meeting The Recommended Daily Step Count Does Not Alter Heart Rate Variability In Young Adults

We investigated the influence of meeting the recommended amount of daily steps on heart rate variability (HRV) in college students. Thirty-three young adults (M/W: 18/15; 23 ± 5 years) were asked to wear accelerometers at the hip for at least ten wake-time hours across seven consecutive days. On the eighth day, HRV was measured in the morning using 3-lead electrocardiography (EKG). Heart rhythms were assessed for 10-minutes during seated rest with both feet on the ground, eyes closed, and in a fasted state. The last five minutes were used for HRV analysis to determine root mean square of successive differences (RMSSD), standard deviation of NN intervals (SDNN), low-frequency power (LF), high-frequency power (HF), and LF/HF ratio. Daily steps were averaged across all seven days, and participants were categorized into two groups using the threshold of 7500 steps/day which is recommended for adults to achieve health benefits associated with a physically active lifestyle. Independent sample Student t-tests were used for group comparisons. No differences were found between adults that met the daily step threshold (active) versus those that did not (inactive) for RMSSD (active vs. inactive: 34.9 ± 18.2 vs. 38.3 ± 19.5 ms, P = 0.60), SDNN (47.2 ± 23.8 vs. 51.3 ± 20.3 ms, P = 0.60), LF (7.0 ± 1.1 vs. 7.2 ± 0.8 log ms2, P = 0.55), HF (5.9 ± 1.0 vs. 6.1 ± 1.2 log ms2, P = 0.61), or LF/HF ratio (1.9 ± 0.2 vs. 2.0 ± 0.4, P = 0.35). These results indicate that HRV in young, college-aged adults is not influenced by being physically active, as reflected by total daily steps.

Bontu Melaku

UAE - Zayed University

Discipline: Health and Human Services

Authors:
#1 Bontu Melaku

Abstract Name: The Awareness, Knowledge, and Practice of Female Zayed University Students Regarding Folate or Folic Acid

Background: Adequate folic acid intake before and during early pregnancy can prevent the development of most Neural Tube Defects (NTDs). However, there is a shortage of up-to-date literature on how much childbearing-age women including university students are informed about folate or folic acid, in the United Arab Emirates.Objective: This study aimed at evaluating awareness and knowledge level of folate, and folic acid (FA) supplement usage among Zayed University female students. Further, it tried to assess the risk level of inadequate folate intake among the target population and to identify major demographic factors associated with the knowledge and FA usage while particularly emphasizing pregnancy experience.Methods: 239 female students of the two Zayed University campuses whose age was 16 to 40, from both health and non-health colleges, completed a self-administered online questionnaire. Collected data was analyzed using SPSS version 29.0.Result: 63.2% of participants heard about folate or folic acid and overall 44.8% had a good

knowledge level. Further, 77% didn’t ever regularly use folic acid. Based on the food habit analysis, 38.5% were at higher risk, 29.3% were at moderate risk and 32.3% were at lower risk of inadequate folate intake. Health science specialization, and history of folate deficiency or anemia were associated with awareness and knowledge of folate/FA. Additionally, those married or divorced were most likely knowledgeable and FA users. History of folate deficiency was also associated with FA usage; however, pregnancy experience neither had a significant association with knowledge nor use of FA.Conclusion: The findings indicate a significant gap in knowledge and folic acid intake among female young adults besides their higher risk status for inadequate folate intake. Therefore, effective education programs with the involvement of health professionals and families are required to raise knowledge and promote the consumption of folate-rich foods and FA use.

Bonnie Melamed

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Bonnie Melamed

Abstract Name: Personal Experiences with Mental Health and Family Openness on the Mental Health Literacy of Undergraduate Students

Abstract: Mental health literacy—knowledge or beliefs on mental health disorders—is a prerequisite for early recognition and intervention of psychological disorders. According to Cheung et al. (2017) and Gulliver, Griffiths, & Christensen et al. (2010), early intervention and diagnosis are crucial in improving mental health—to the extent that the individual will seek help. In this context, low mental health literacy may be a barrier to seeking help. It is, therefore, essential to identify how different variables affect mental health literacy and, subsequently, remediate low mental health literacy levels in vulnerable populations. My project uses data collected from Brooklyn College undergraduate students to reveal the intricate relationship between personal variables, encompassing one’s own psychological history and family openness to discussing mental health, and the impact of these variables on an individual’s mental health literacy. Miles and colleagues (2020) found notable differences in levels of mental health literacy between men and women, younger and older age groups, those who have had previous experience with mental health versus those who have not, and those who have families open to discussing mental health issues. That study's results revealed that high performers were between the ages of 28-32, female, white, and in their fourth year of college. Those who have taken courses in psychology and majored in psychology or scientific fields have been diagnosed or treated for psychological disorders also proved to be higher performers. This thesis will further challenge the variables studied in Miles et al. (2020), specifically, the association between variables of interest (e.g., previous diagnosis, counseling experience, family openness to talking about mental health issues) and scores on a multiple-choice questionnaire of mental health literacy.

Gabrielle Mellor

LA - Louisiana State University, Baton Rouge

Discipline: Social Sciences

Authors:
#1 Gabrielle Mellor
#2 Vanessa Burke
#3 Tin Nguyen
#4 Sydney Roux

Abstract Name: You Work Like a Girl: Understanding Evaluations of Masculinity Violations in the Workplace

Previous research has discovered that men have a tendency to apply punitive measures to their peers when their behaviors deviate from established norms associated with "toughness", "anti-femininity", and "status" (Moss-Racusin, 2010). While this insight advances our understanding of gender norms in society, there exists a notable gap in research regarding these dynamics within organizational settings, and how they impact both individuals and organizations. Our study sought to address this void by providing valuable insights into the workings of male gender norms within organizational contexts and their subsequent effects on individual well-being and organizational success. Employing Experimental Vignette Methodology (EVM), we recruited 400 participants, each compensated with $1.30 for their 15-minute survey participation. Participants were randomly assigned to either the "masculine violation" or "masculine confirmation" condition in which they read a vignette about an employee in a work setting. In the masculine violation vignette, participants encountered a scenario where an employee's behavior deviated from traditional masculine norms, exemplified by a calm and empathetic demeanor. Conversely, the masculine confirmation vignette presented a scenario where an employee adhered to conventional masculine expectations, displaying a confident and bold demeanor. Post vignette presentation, participants shared their perceptions of the individuals and reported emotional experiences during the survey. Questions ranged from perceived levels of respect received by the presented employee to the extent of anger experienced while reading the stories. A notable finding of our study was that the employee in the vignette in which masculine gender norms were violated was consistently rated higher on levels of respectability, promotability, likability, approachability, and effectiveness. These findings have wide-ranging implications for understanding the interworkings of gender dynamics within organizations.

Jaden Melnick

MO - Missouri State University

Discipline: Interdisciplinary Studies

Authors:
#1 Jaden Melnick

Abstract Name: Resurrecting Progressive Education: What the Revival of a 75-Year-Old Survey Reveals About the Trends of Education Philosophy in the Ozarks

Nearly a century after the height of the progressive education movement, the philosophies guiding the modern public school classroom are a far cry from the child-centered pedagogy of John Dewey. The revival of a 1928 survey of the teacher ideologies leading Springfield, Missouri public schools provides new insight into the permanence of progressive education. Previous research, including the historical analyses of Lawrence Cremin, has determined that the United States began moving away from experience-based psychology and sociology education theories in the mid- to late-20th century. Utilizing data from the original 1928 survey and the modernized 2023 version, this paper examines the social and historical contexts that are responsible for the transformation of teacher opinions on educational practices. The results of the study support the idea that the education system has shifted into a structure designed to create efficient workers rather than fostering a democratic community of diverse creatives. These findings are significant to the educational narrative of the Ozarks and the greater Midwest.

Madeline Meltesen

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Madeline Meltesen

Abstract Name: Analyzing the Spatial Distribution of Lithics at Frog Bay Tribal National Park

This research focuses on the Frog Bay archaeological site (47BA60), located within Frog Bay Tribal National Park (FBTNP) in Red Cliff, WI as part of Geté Anishinaabe Izhichigéwin Community Archaeology Project (GAICAP). This project is directed by the Red Cliff Band of Lake Superior Chippewa's Tribal Historic Preservation Office (THPO) and academic archaeologists. As such, this work is done collaboratively with Red Cliff community members. Frog Bay is a multicomponent site, meaning there were several different past human occupations of the site. The oldest material dates to 3327-2931 cal BC, during the Middle Archaic period. This study examines shovel test pits (n = 469) that were excavated from 2018 to 2022 and cover an area of approximately 1.96 hectares (4.84 acres). Using maps created using ArcGIS Pro and a lithic (stone toolmaking debris) attribute analysis, this research defines artifact accumulation areas to better understand how Indigenous people used the area of Frog Bay in the past and to identify high-potential areas for future excavations. Furthermore, spatial inferential statistics are used to determine whether distributions of different size classes of lithics and raw materials are randomly distributed, clustered, or dispersed across the site. Overall, this analysis provides key information about cultural patterns in northern Wisconsin, particularly pertaining to lithic tool-making activities which Geté Anishinaabe people have participated in for more than 5,000 years.

Ngun Men

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Ngun Men

Abstract Name: Best Practice in Teaching ESL Burmese Family Caregivers Regarding At-home Fall Prevention

Background: Falls are a huge global concern. Falls can happen to anyone, regardless of age, but they are more common in older persons aged 60 and up. The purpose of this study is to identify some risk factors for falls and to educate the Burmese community to reduce fall incidents in the home.Method: Participants will be a sample of convenience of the Burmese community that attends a local church. There will be two groups, where one (control) group will receive education regarding fall prevention and the other group (uncontrolled) will not receive any education regarding falls. Face-to-face education will be conducted for 30-60 minutes, and a semi-constructed survey will be provided after a month to evaluate the effectiveness. This study used a total of 16 literature reviews which were carried out globally.Limitations: This study is mainly for the Burmese community and participants are local church attendees only. The questionnaire used to conduct this study was developed in China, thus it may not accurately represent older persons worldwide.Discussion: This study will underline the significance of these events and the necessity for further study. Positive behavioral changes in the Burmese community are expected, leading to reduced incidence of senior falls and enhanced care delivered by family members to the elderly.Keywords: Fall prevention in the Burmese Community, Fall risk factors, Fall-related injury

Britney Mendez

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Britney Mendez

Abstract Name: Celebrity Influence on UMD Students' Perception of the Death Penalty

The topic of the death penalty has been debated for many centuries. College students' attitudes have been explored. Yet, there has not been enough research regarding how the influence of a celebrity figure may play a role in shaping a young individual's perspective on the controversial topic. This research aims to answer the following questions: How influential are celebrities when it comes to spreading awareness of the death penalty? Does this differ when an expert on the topic tries to influence people's attitudes? To answer these questions, this study uses a five-group, post-test-only experimental design in which participants are randomly presented with either one of two videos challenging the death penalty (one of a celebrity and one of an expert), one of two written statements (one attributed to a celebrity and one attributed to an expert) challenging the death penalty, or the control group in which no video or statement was presented. The research revealed that celebrities influence individuals but that the delivery of information matters. Participants reported that the written statement of our selected celebrity was more persuasive and more likely to change their opinions than the video presented by that same celebrity. However, our measure of the strength of death penalty support was found to be higher for those reading the celebrity statement than those watching the celebrity video. Among death penalty supporters, experts, though seen as less persuasive, had a greater impact on actual death penalty opinion. Though support for the death penalty is often robust and resistant to change, the current study presents evidence that both celebrities and experts can have an effect on attitudes.

Audrey Mendoza

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Audrey Mendoza

Abstract Name: College Students Experience With Helicopter Parents And Their Academic Self-Efficacy

Autonomy development and decision-making are the first part of becoming independent. Existing studies highlight a significant challenge within the college-aged demographic due to helicopter parenting, hindering the development of autonomy among college students. The present study explores the effect of helicopter parenting on academic self-efficacy in college students. The researcher hypothesized that perceived helicopter parenting would influence reducing academic self-efficacy in college students. In this study, helicopter parenting was measured with the Helicopter Parenting Scale (Padilla-Walker & Nelson, 2012) and Helicopter Parenting Behaviors Questionnaire (Schiffrin, 2014). Academic self-efficacy was measured with the Academic Self-Efficacy Scale (Greco et al., 2022). The sample included 103 full-time college students from a Christian university. A t-test and a simple regression analysis were conducted to analyze the data. The findings in this research revealed that perceived helicopter parenting has no significant impact on academic self-efficacy ($b1 = .094$, $p = .087$). In addition, there was no statistically significant difference in academic self-efficacy between males and females ($t = -4.34$, $p = .66$). The findings emphasize the need for society and university institutions to recognize that academic self-efficacy in college students is impacted by different types of parental support. Furthermore, future implications address the need to understand how perceived types of parental support can be studied among college students.

JULIA MENDOZA

CA - California Baptist University

Discipline: Health and Human Services

Authors:
#1 Julia Mendoza

Abstract Name: Exploring the Correlation Between Physical Activity Levels and Depression in College Students

This study aims to explore the relationship between depression symptom levels and physical activity levels among college students. The project is a quantitative study in which data were collected from the PHQ-9 survey and QPAR Scale. In this study, the researcher analyzed the data using descriptive statistics, including frequency, mean, standard deviation, and inferential statistics, such as independent sample T-test, ANOVA, and Regression. The findings in this research revealed that there is not a statistically significant relationship between depression symptom levels and physical activity levels. The implications of this research study are that regardless of depression symptom level status, students should be involved in some type of physical activity based on the slight effect size demonstrated. Future studies should be done on the different types of depression, comparing males and females who are physically active and those who are not. Self-esteem would be a helpful variable to consider for future reference to measure depression symptom levels. Integrating anaerobic and aerobic physical activities in the study would also be beneficial in understanding if certain exercises benefit students more than others.Keywords: depression, physical activity, college students

Apollinaire Mendoza

FL - Miami Dade College

Discipline:

Authors:
#1 Apollinaire Mendoza

Abstract Name: Carpathian Peaks to Miami Beach: A Phenomenological Study on the Acculturation of Ukrainian Immigrants

Armed conflict is one of the principal drivers of forced migration, an involuntary or coerced act for a person or people to move from one's home or country of origin. Whether they are internally displaced or seek asylum, immigrants acculturate to the dominant culture of their new home. The most recently displaced people in Europe have been Ukrainians, caused by political unrest and armed conflict: Euromaidan, Revolution Of Dignity, and the Russo-Ukrainian War. These periods of unrest, starting in November 2013, have displaced nearly six million Ukrainians across Europe. In this phenomenological research study, six Ukrainians who immigrated to the United States beginning on January 1, 2013, were interviewed to discover their lived experience of acculturating to American culture. The themes that connected their distinct immigration stories, challenges, coping mechanisms, employment, and relationship with their culture were documented and studied.

Jimena Mendoza

IA - Iowa State University

Discipline: Social Sciences

Authors:
#1 Jimena Mendoza
#2 Amie Zarling

Abstract Name: ProACTIVE: A culturally responsive program on intimate partner violence

Intimate Partner Violence (IPV) is an ongoing issue in the United States and accounts for approximately 15% of all violent crimes, according to the National Coalition Against Domestic Violence. Individuals convicted of this offense are mandated to attend behavior change programs through the criminal justice system. However, men of color face an extreme disadvantage in the criminal justice system, which was created around racism and bias. A new community-based program, ProACTIVE, is a voluntary intervention that encourages acceptance of emotions and commitment to healing without any form of judgment. ProACTIVE is a trauma-informed and culturally responsive program that hopes to reach men of color who are at risk for IPV and to help create a healthy mindset by using Acceptance and Commitment Training (ACT). A mixed methods approach will be used to determine if ProACTIVE is effective for men who have not been mandated to attend any program, especially for men of color. We will evaluate the effectiveness and feasibility of the program through pre- and post-treatment surveys as well as follow-up interviews. If ProACTIVE is effective for men of color, these surveys should show commitment to healthy behaviors and emotional healing without involvement in the criminal justice system.

Aramis Mendoza

CA - California Institute of Technology

Discipline: Engineering and Architecture

Authors:
#1 Aramis Mendoza
#2 Soon-Jo Chung

Abstract Name: Designing the Drive System Handoff Module for Lunar Crater Traversal

The lunar environment is populated with unexplored terrain, craters with up to 40 degree slopes preventing current robotic systems from successfully examining their promising unknown properties. LATTICE (Lunar Architecture for Tree Traversal In-Service of Cabled Exploration) was designed to expel these unknowns with an efficient, ever-expanding robotic system transforming the well-known cable car into lunar infrastructure. The LATTICE drive team have been designing an elevator drill system for an earth scale demonstration which will plant the stakes containing cable for the robotic shuttle to traverse. A stake handoff system was necessary to drive these stakes. The handoff system, in the form of a linear rail, was designed to hold 2 meter stakes, weighing 15 kg, close enough so that they can be drilled, but firm enough so that the stakes do not slip. The handoff was developed as a passive mechanism which releases as the drive system is driven away.

Sydney Menear

AL - University of North Alabama

Discipline: Natural and Physical Sciences

Authors:
#1 Sydney Menear
#2 Jared Truitt
#3 Cynthia Stenger

Abstract Name: Identification of previously undescribed residues in lysyl hydroxylase 1 that are predicted to influence substrate-enzyme interactions in the Fe2+ catalytic site

Lysyl hydroxylase 1 (LH1) is a homodimeric alpha-ketoglutarate-dependent hydroxylase class enzyme that catalyzes the hydroxylation of lysine residues in the triple helices of fibril-forming collagens. This process produces the hydroxylysine residues necessary for pyridinoline cross-link formation between collagen fibrils in the extracellular matrix (ECM). Ferrous iron (Fe2+), alpha-ketoglutarate (AKG), molecular oxygen (O2), and ascorbic acid (vitamin C) act as cofactors that facilitate oxidization. Previous studies have performed site-directed mutagenesis utilizing a baculovirus vector and insect cells to identify the residues that bind the Fe2+ and AKG cofactors to their corresponding binding sites. This study aims to identify additional residues not discussed in the literature that influence the binding of Fe2+ cations in LH1 via in-silico simulations that simulate in-vitro site-directed mutagenesis. A homology model of LH1 was retrieved from the SiMPLOD database. PrankWeb, a machine-learning tool that analyzes homologous proteins to identify pockets of residues that may influence the binding of a protein's cofactors, was used to identify residues of interest yet to be discussed in the literature (positions 641, 642, 645, 665, 680, 709, 719, and 724). The H656S variant was selected as a control, as previous studies have demonstrated that this mutation completely inactivates enzyme activity. An evolutionary conservation analysis was performed using ConSurf. In-silico prediction tool scores were retrieved using Ensembl Variant Effect Predictor (VEP). Molecular-dynamics simulations (MDS) were conducted in YASARA for each amino acid position of interest, with each residue replaced with glycine, to assess each variant's impact on protein movement in a simulated aqueous environment. Each variant's average carbon alpha root mean squared fluctuation (RMSF) and carbon alpha root mean squared deviation (RMSD) were graphed. The distance between each monomer and Fe2+ cation at fixed nanosecond intervals was measured and compared to the distance at the initiation of the simulation for each variant.

Barkot Menkir

MN - Minnesota State University - Mankato

Discipline: Health and Human Services

Authors:
#1 Barkot Menkir

Abstract Name: Culturally Enriched Memory Books: Enhancing Engagement and Well-being in Individuals with Dementia

Dementia presents significant challenges in communication and emotional well-being. Providing meaningful interventions that engage individuals with dementia is crucial to improving their quality of life, Culturally enriched memory books have the potential to provide such engagement by tapping into personal and cultural memories. This research aims to investigate the effects of culturally enriched memory books on the engagement, emotional well-being, and quality of life of individuals with dementia. Memory books containing culturally relevant content, specifically focused on Ethiopia, was shared with residents in a memory care unit. The study will explore the role of meaningful interactions and cultural exposure in dementia care, and the therapeutic value of incorporating audiovisual elements, such as traditional music.

emma Mergen

WI - University of Wisconsin-Superior

Discipline: Social Sciences

Authors:
#1 emma mergen

Abstract Name: How Can We Improve our Juvenile Recidivism Rates Among female Juveniles

The rise of female youth being detained as juvenile offenders is increasing. Female youth offenders have higher rates of mental illness than male youth. Delinquency rates among females have increased by 92% between 1985 and 2002. Female youth have more trauma and a history of abuse that contribute to their delinquent behavior. Female youth are committing person, property, drugs, and public order offenses. There is a rise in females committing more violent and nonviolent crimes. Girls account for the majority of arrests for certain types of crimes such as 59% in running away, and 69% in prostitution and vice. Females who participate in nonsocial behavior can directly be linked to delinquency and affect them through adulthood. Females have a higher tendency to be in an abusive relationship, drug abuse, and criminal behavior. Age, Gender, Race, and Ethnicity are factors that also play in juveniles being delinquent. As individuals get older they are more likely to engage in criminal and delinquent acts. The Uniform Crime Report shows that individuals are more likely to engage in delinquent behavior at the age of 16. Black and Brown youth are more likely to be detained than youth who are non-Hispanic and white. Since 2006, the population of female delinquent youth has not been the same until recent studies have shown these numbers are increasing. This study focuses on the impact of females being in the juvenile system and what are the risks and causes through qualitative interviews of professionals in the Midwest who have worked closely with juveniles, such as correction officers, police officers, and probation officers.

Avery Merta

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Avery Merta
#2 Connor Vincent
#3 Matthew Laatsch
#4 Krysti Knoche Gupta
Connor Vincent

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate

cultures, one with La3+-rich media and one with Ca2+-rich media. Spectrophotometric assays confirm higher activity for the bacteria grown in La3+-rich media than bacteria grown in Ca2+-rich media. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria in solution versus immobilized on electrode surfaces will be compared, and an optimized bioelectrochemical electrode will be developed.

Jessica Merzy

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
#1 Emily Esquea

Abstract Name: Novel ACSS2 inhibitors sensitize to radiation to kill breast cancer brain metastatic cells ex vivo

Brain metastases (BMs) in breast cancer patients is considered an end-stage event, with no effective drug treatment and a median survival after diagnosis measured in months. The first line of defense against BM is radiation resulting in static tumor growth. Currently, there are no effective drug treatments for BM patients, thus there is an urgent need to develop novel treatment strategies. BMs must adapt to lack of nutrient availablity in the brain environment and become heavily dependent on Acetyl-CoA Synthease 2 (ACSS2) for the generation of acetyl-CoA for lipid and fatty acid synthesis. Here, we test the ability of novel ACSS2 inhibitors to reduce tumor growth in an orthotopic ex vivo tumor-brain slice model. Subsequently, treating these tumor-brain slides with radation syngerizes with inhibition of ACSS2. This data identifies ACSS2 as a novel therapeutic target for treatment of BMs and show promising synergy with first line of defense treatment of radation.

Mariana Mesa Castillo

KY - University of Kentucky

Discipline: Engineering and Architecture

Authors:
#1 Mariana Mesa Castillo

Abstract Name: Excavating Campus Expansions

My ongoing research initiative of the 2023-2024 academic year has been a collaborative effort with an Assistant Professor at the University of Kentucky. The research uncovers the social and racial implications that stemmed from the expansion of three higher-education institutions—the University of Colorado Denver, Metropolitan State University and Community College of Denver—into Denver's Auraria neighborhood during the city's urban renewal era in the 1970s. The establishment of the Auraria Campus entailed demolishing large sections of a predominantly Hispanic, low-income working-class neighborhood. Simultaneously, this research proposal examines Auraria Campus's uncanny connection to another controversial campus expansion thirty years prior in Chicago: the Illinois Institute of Technology (IIT) campus expansion that wiped out the predominantly Black neighborhood of Bronzeville and was designed by modernist architect Mies van der Rohe. The Auraria campus expansion was led by Jacques Brownson, a

protégé of Rohe's, who referenced planning and architectural techniques from Mies' IIT project. Employing a comparative methodology, the research meticulously analyzes historical archival materials, including but not limited to aerial maps, Sanborn maps, newspaper clippings, and drawings produced by the architect. The intent is to analyze past and present conditions of the site, map out, reconstruct, and calculate (in 2D and 3D) an index of the demolished residential and commercial buildings during the expansion, as well as tracing language tactics utilized to falsely frame the neighborhood's conditions, making the expansion seem like the best, if not only, option. Ultimately, this research seeks to contribute unique perspectives to the deeper understanding of the social and racial consequences of influential architectural projects. By tracing the parallels between Auraria and IIT expansions, the study strives to question and complicate Mies van der Rohe's legacy in America, emphasizing the need for a more critical examination that incorporates the social and racial dimensions of architecture.

Milena Mesfun

AL - University of Alabama

Discipline: Engineering and Architecture

Authors:
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#3 Arit Das
#4 Michelle Calabrese

Abstract Name: Magnetic Field Induced Ordering Of Block Copolymers

Poloxamers are amphiphilic ABA type triblock co-polymers that act like a surfactant in water, creating a micelle with a "B" type hydrophobic polypropylene oxide core and "A" type hydrophilic polyethylene oxide coronas. They are widely applicable as hydrogels; notably, they have been utilized in biocatalysis, drug delivery, and drug stability. In this project, we probed an atypical response of disordered poloxamer solution to ordered gel transition in response to magnetic fields. The behavior of a poloxamer solution in presence of an applied magnetic field (B = 0.5T) was investigated using magnetorheology, where the rheological characteristics of the samples were studied while exposed to an in situ magnetic field. Specifically, the time required by the poloxamers to transition from their disordered to gel state under magnetization, referred to as critical time, was tracked as a function of block ratio and molecular weight. The gels were characterized using small-angle x-ray scattering (SAXS), which revealed structural information about the gels obtained post-magnetization for 3 hours beyond the critical time. The critical time decreased exponentially and the modulus remained relatively consistent when increasing the molecular weight of the poloxamer. These results are helpful for future applications by demonstrating the tunability of magnetically-induced poloxamer gels.

Anesa Mesic

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
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#3 Ram Kandasamy

Abstract Name: Design, Synthesis, and Biological Evaluation of New Multitarget-Directed Ligands for the

Treatment of Chronic Pain

Chronic pain is deteriorating quality of life of 1 in 5 of U.S. adults. Current treatments include Nonsteroidal Anti-Inflammatory Drugs, providing mild to moderate pain relief; while opioids carry a high risk of addiction, tolerance, and death by overdose. Soluble epoxide hydrolase (sEH) and fatty acid amide hydrolase (FAAH) are enzymes involved in the metabolism of lipid signaling molecules associated with arachidonic acid and are both associated with pain and inflammation processes. Co-administration of selective sEH and FAAH inhibitors produced antinociception without undesirable side effects in animals. However, the co-administration has many drawbacks, including the possibility of drug-drug interactions in vivo, which complicate preclinical/clinical studies and drug development.The long-term goal of our lab is to develop a single drug that can inhibit both sEH and FAAH simultaneously. We have previously discovered several dual sEH/FAAH inhibitors having low nanomolar range potencies at both enzymes. In this project we will perform structure-activity relationship (SAR) study of 4-phenylthiazole-phenyl moiety using a four-step synthetic route. We first optimized Hantzsch-Thiazole reaction with microwave irradiation and reducied the reaction time from 2.5 hours to 3.45 minutes. Using this reaction, we were able to obtain 12 different aniline intermediates in high yields and use them to synthesize final 4-phenylthiazole-phenyl analogs. All compounds underwent biological assessment in enzymatic assays for both sEH and FAAH inhibition. Our SAR study demonstrated that incorporating fluoro and methyl groups are well-tolerated in both enzymes, leading to the discovery of numerous potent dual inhibitors. We performed docking experiments in both enzymes to further analyze binding modes of these dual inhibitors. The most potent inhibitor will be sent to our collaborators at CSU East Bay for in vivo testing.This research is supported by the National Institute of General Medical Sciences of the National Institutes of Health under award number R16GM149204.

Kayleigh Metcalf

GA - University of West Georgia

Discipline: Business and Entrepreneurship

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Abstract Name: The Use of Analytical Methods to Enhance the Marketing of Chick-fil-A

Chick-fil-A, the American fast-food chain, prides itself on fresh, delicious chicken along with fast and effective service. Although Chick-fil-A's upper management has a positive business reputation, they should use this project to assess how their business compares to Popeyes. The project aims to evaluate and improve Chick-fil-A's overall customer service and satisfaction. UWG students gathered data for the project via a questionnaire, which included both Likert and demographic questions, to get a better understanding of customers' perceptions of Chick-fil-A and Popeyes. Using an online survey called Qualtrics, the class collected 318 responses from family, friends, and colleagues around Georgia. Students analyzed the data through SPSS to provide valuable information to Chick-fil-A about one of their competitors. Approximately 84% of the surveyed respondents believe that, overall, Chick-fil-A is a better restaurant compared to Popeyes. The research concludes that the survey is representative of Georgia's population in terms of gender. The research is not representative of Georgia's population in terms of race. Independent sample T-tests showed that respondents value Chick-fil-A more than Popeyes. They strongly believe that Chick-fil-A offers a quick

meal, offers quick service in the drive-thru line, and overall is a great dining experience. Many also agree that they are a regular at Chick-fil-A, the restaurant offers healthy options, the menu offers a good variety of options, and they offer an inexpensive meal. Regression analysis showed that overall satisfaction of Chick-fil-A's service was dependent on the overall customer perception that Chick-fil-A is a great dining experience. The class recommends that Chick-fil-A should add a value menu, gather input from their male customers, expand business hours to being open 7 days a week, and expand their clientele to the African American community through advertising campaigns. Overall, our research shows that Chick-fil-A is accurately serving its Georgia customers.

Ayleen Mexquititla

PA - Moravian University

Discipline: Natural and Physical Sciences

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#2 Joshua Lord

Abstract Name: Selfish Shellfish: Shelter Sharing in Grass Shrimp (Palaemon pugio)

As a scientific community, we often assume that invertebrates are like mini-robots that should respond predictably to external variables and environmental cues, but their behavior is often more complex than we give them credit for. From eusocial shrimp to cultural transmission in insects to harassment and anxiety in crustaceans, a growing body of research ascribes complex behavioral patterns to invertebrates. Whether or not these are characterized as 'emotion' or 'personality' is up for debate, but it is clear that many invertebrate intra- and inter-specific interactions are more complex than previously anticipated. Our recent research involved a common Atlantic shrimp (Palaemon pugio) and investigated the link between grass shrimp claw size and shelter use in a tank that simulated their natural environment. The tank contained a high-value and a low-value shelter, as well as 5 large-clawed and 5 small-clawed shrimp that were tagged and observed with time-lapse photography. Analysis indicated that they were unlikely to share shelter and claw size controlled access to it, although the claw size and shelter use relationship actually flipped depending on the source of the shrimp (wild caught from New Jersey or aquaculture-raised). Wild caught shrimp had displayed behaviors that were expected while aquaculture shrimp would share shelter among small clawed shrimp. Results revealed dominance hierarchy formation and a possible difference in social behavior between wild-caught and aquaculture-raised shrimp, suggesting that there are many complex factors at play that affect shelter use in grass shrimp. While much is yet to be investigated to further understand shrimp dominance hierarchies and their ecological ramifications, these 'unusual' behaviors paint a complex portrait of marine invertebrate behavior.

Emily Mezni

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Emily Mezni

Abstract Name: Childhood Trauma, Stress, Gender, and Depression's Impact on Suicidal Behavior

Suicide is one of the leading causes of death in young adults. Continuous prevention and intervention efforts

throughout the world have been made to reduce suicide risk in this population. Two of the biggest known risk factors for suicide is childhood trauma, a traumatic event or events that occur during youth, and depression. Researching the impact childhood trauma and depression make in conjunction with other factors will help to increase knowledge of suicidal behavior. In this study, recent stress and gender will be factored with childhood trauma and depression severity to predict suicidal ideation and attempt. Recent stress is useful to see recent life events that may be negatively affecting one's mood. Gender has shown differences that are displayed not just in the prevalence of suicidal ideation and attempt, but also in childhood trauma, depression, and stress. Young adults will make up the demographic of this study to better understand the relationship of multiple risk factors to suicidal ideation and attempts within this age group. Young adults experience stress in many ways, through transitioning to adulthood, studying, and working towards long-term career goals. The aim of this research will be to understand and address how childhood trauma, recent stress, gender, and depression severity impacts suicidal ideation and attempts. Two hypotheses will be tested in the study: (1) Childhood trauma, recent stress, gender, and depression severity predicts recent suicidal ideation. (2) Childhood trauma, recent stress, gender, and depression severity predicts suicide attempts. Research will consist of a quantitative study through an online survey consisting of self-report questionnaires that utilize multiple well-known scales. Inclusion factors for participation in the study are those enrolled in college and ages 18 to 25. This study will ask questions on past childhood events, recent stress, depression severity, recent suicidal ideation, and suicide attempts.

Cailyn Mickelsen

NY - Pace University

Discipline: Humanities

Authors:
#1 Cailyn Mickelsen

Abstract Name: Unmanning Richard II: The Inherited Queer Discourse of Ricardian Chronicles

In "Unmanning Richard II: The Inherited Queer Discourse of Ricardian Chronicles," I examine how fourteenth- and fifteenth-century historical chronicles portray King Richard II—who ruled England from 1377 until his deposition in 1399—as queer through the creation, deployment, and accumulation of the "unman" archetype that amalgamates the traits of youths, women, and "sodomites." Previous scholarly work has explored aspects of the queer reign and representation of Richard II, including several studies into the medieval development of anti-queer discourse, historical definitions of "manliness," and fourteenth-century associations between misrule and sodomy, as well as investigations into the "validity" of defining Richard as queer. This project seeks to elide these isolated inquiries into a cohesive, diachronic narrative of how anti-queer discourses function—in both the Middle Ages and the present. In this project, I examine contemporary Ricardian chronicles through a threefold lens that engages medieval ideas about sodomy, modern queer theory, and historical and literary criticism; I thus enact a queer historiography, rereading negative portrayals of Richard as both drawing from anti-queer discourse and serving as queer signifiers. The "unman" in Ricardian chronicles represents an accumulation and fulfillment of the many threads of medieval sodomy discourse, allowing queer portrayals of Richard to signify as castigatory propaganda and vice versa, thus intertwining manhood (and, implicitly and explicitly, personhood) with honor and dignity—and an absence of manhood, rendered as a queer state, with an absence of that same honor and dignity. This project, through the lens of José Esteban Muñoz's vision of queer utopia, seeks to reimagine the past as an empowering queer space, affirming queerness in the present and looking ahead to a future where queerness is divested of moral associations.

Lynetta M. Mier

CO - Regis University

Discipline:

Authors:
#1 Lynetta M. Mier

Abstract Name: Filling in the Blanks: A Student-Designed, Research-Based Instrumental Analysis Laboratory

Instrumental Analysis Laboratory is an excellent catapult for independent, student-drive experimental design and execution. Through the design of a viable experimental approach centered on a single piece of instrumentation students learn the ins and outs of instrument capabilities and limitations. Peer review of these experiments opens doors to essential colleague critique, honing of standard operating procedures, and enhanced discussion on experimental design, data and error analysis, and execution. Students actively engage with the experimental design process, develop methods, teach their colleagues, and gain a better understanding of the research process. I have created a curriculum that centers around the research process, to help students gain an understanding of the central role research plays in chemistry. This presentation will provide an overview of the curriculum, lessons learned, and student feedback.

Lynetta Mier

CO - Regis University

Discipline:

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#2 Ashley N. Fricks-Gleason
Ashley N. Fricks-Gleason

Abstract Name: Engaging Academically At-Risk Student Populations in Structured Undergraduate Research as a Student Success Initiative

Regis University is enrolling an increasingly diverse student population, including academically at-risk (AAR) and underprepared students. AAR students are a diverse and challenging population of undergraduate students who are at the highest risk of not realizing their goals of attaining a college degree. In an effort to serve – not just enroll – these students, we are investing in support mechanisms to ensure their academic success. One such program is the Undergraduate Research Certificate (URC), which encourages academically underprepared students to engage in mentored research. The URC has been designed to meet the needs of populations often excluded from research by providing structured training, support services, and community-building opportunities. Many HIPs, including at Regis University, (e.g. honors programs, study abroad, internships, etc.) systematically exclude AAR students because: they do not meet the GPA requirements of these programs; students need to self-select into these programs while still in high school; or there is a financial burden that comes along with participation. We have intentionally integrated our URC into the curriculum in a way that does not increase cost to the student, does not require them to identify their affinity for research before getting to college, and does not erect barriers based on previous academic performance. This structured approach is especially critical for our AAR students who have been shown to benefit most strongly from scaffolded HIPs. Through targeted recruitment, we are actively increasing the number of AAR students enrolled in the URC and are assessing various academic success outcomes (e.g. persistence/graduation rates, GPA, credit completion rates), while controlling for affective and cognitive factors (e.g. academic self-concept, perceived social support, academic self-efficacy, achievement emotions). Intentionally leveraging HIPs, like structured independent scholarship, as tools for the retention and success of AAR students is a critical step in achieving equitable academic outcomes for diverse learners.

Samantha Migliore

FL - University of Central Florida

Discipline: Health and Human Services

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Abstract Name: Toward More Functional Upper Limb Prostheses: Evaluation of Organic Hand Dexterity,

Grip Strength, and Anthropometric Measurements

The design of upper limb prostheses blends mechanical performance with human-machine interfaces. Using electromyographic devices requires significant training, which can result in patients becoming discouraged and subsequent device rejection. To maximize functionality, prosthesis designers examine parameters of manual dexterity, which is a fundamental part of daily life and expression of creativity. Due to its multifaceted nature, dexterity can be challenging to benchmark for prostheses. Iterations of the Box and Block Test (BBT) are commonly used research and rehabilitation tools to establish a baseline. Past studies have utilized the tests for assessing manual dexterity in individuals training to use upper limb prostheses. This study aims to understand how dexterity, strength, and anthropometric measurements correlate for organic limbs, establishing updated baseline comparisons for future prosthesis design iterations. Data was collected from 50 collegiate participants aged 18-24 with full control of their upper extremities. Parameters collected include scores from variations of the BBT, grip strength, hand measurements, and a comparison of left vs right handedness via the Edinburgh Handedness Inventory. The results included grip strength scores for the study-collected sample, which were consistent with the national standards. Weak correlations between grip strength and dexterity scores on the BBT and modified BBT ($r = 0.268$ and $r = 0.167$, respectively) for organic hands signify a need to optimize device grip strength and dexterity. With validated equipment, the testing methods from this study will be used for comparison to prosthesis patients enrolled in an ongoing clinical trial training to use the Limbitless Solutions prosthesis. The dexterity results will serve as benchmarks for direct comparison to prosthesis patients, with biomechanical parameters correlating with performance to be used for improving prosthesis design considerations. Implementation of new design criteria from this study may enhance the overall dexterity of a prosthesis.

Iva Mihajlovic

CA - University of California - Riverside

Discipline: Business and Entrepreneurship

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#2 Ye Li

Abstract Name: Mindfulness, patience, and intertemporal choice: Can mindfulness increase patience?

Intertemporal choice is the process of making decisions that involve trade-offs between present and future outcomes. It is important for many aspects of life, such as health, finance, and education. However, many people are too impatient and tend to overly discount the future, preferring immediate gratification over long-term rewards. Impatience can lead to suboptimal choices and negative consequences. Therefore, finding ways to augment intertemporal choice is a valuable goal. One possible way to improve intertemporal choice is through mindfulness, which is the practice of paying attention to the present moment with openness and curiosity. Mindfulness has been shown to have various benefits for psychological and physical well-being, such as reducing stress, anxiety, and depression, and improving attention, memory, and emotion regulation. Mindfulness may also influence intertemporal choice by reducing impulsivity and the perceived temporal distance to the future. In an experiment with university students, we tested the hypothesis that mindfulness can increase patience. We randomly assigned participants to watch either a 3-minute guided meditation video or a 3-minute video on how to tie a tie. Participants then completed a time preference measure consisting of choices between smaller-sooner or larger-later financial rewards. We also measured their emotions, perception of how long 1 month, 6 months, and 1 year were from today, and risk preferences.Counter to our hypothesis, we found that the mindfulness video did not decrease patience, compared to the control video. We also found that the control group was more happy, cheerful, and relaxed, whereas the meditation group reported feelings of boredom. Finally, we surprisingly found that the control group made the overall less risky decision. Moving forward, we plan to find a better mindfulness manipulation, and hope to find valuable insights regarding the enhancement of intertemporal choice.

George Mikhail

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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Abstract Name: Design and Validation of a Traffic Light Controller Utilizing 555 and 4017 ICs

This study delves into the practical application of the 555 IC, an integrated circuit renowned for its versatility across three operational modes: bistable, monostable, and astable. The bistable mode is a set/reset flip-flop, while the monostable mode is a pulse generator, yielding a single output pulse. The 555 IC acts as an electronic oscillator in the astable mode, dictating specific timing intervals. Additionally, we incorporate the 4017 IC, a decade counter well-suited for counting tasks within the lower numeric range. Operating in binary form, this counter sequentially counts from 0 to 9, providing a decimal representation of the count. To validate the practicality and functionality of our traffic light controller design, we initially constructed and tested it using Multisim, a simulation software. Subsequently, we advanced to implementing the controller on a physical breadboard. Both the simulated and hardware designs consistently exhibited the anticipated performance, thereby affirming the successful operation of our traffic light controller system. In our future work, we will employ AI technology and incorporate additional sensors to ensure reliable performance even in challenging weather conditions, such as dense fog or intense sunlight.

Abigail Milhaven

PA - Lafayette College

Discipline: Social Sciences

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#2 Lauren Myers

Abstract Name: A Caregiver Tool or an Inconvenience? How Mobile Apps Could Influence the Effectiveness of Supplemental Social-Emotional Skills Taught at Home.

The practice of recognizing emotions and using socially appropriate strategies to manage them is known as emotional regulation and develops rapidly during early childhood (Harrington et al., 2020). There is also developmental and societal value to teaching children about regulating emotions as early as preschool. Early childhood caregivers often provide these lessons about emotional regulation; however, other tools can be supplemental resources. Digital media is one example of a tool children learn from since it is accessible and delivers content in multiple formats (Barr, 2019). Using caregiver reports and a 10-day longitudinal design, this study aims to analyze the effectiveness of mobile apps with different levels of scaffolding as a supplementary social-emotional learning opportunity for preschool children. Correlational matrices will be

used to assess the associations between dependent variables: joint media engagement (DV1), likelihood of child demonstrating emotional regulation skills (DV2), and frequency of app use (DV3). In each correlational pairing of dependent variables (DV2 and DV3; DV1 and DV3; DV1 and DV2), the Embedded-Scaffolding app (Daniel Tiger for Parents) is expected to have a stronger positive correlation than the other conditions. Additionally, it is expected that the Embedded-Scaffolding (Daniel Tiger for Parents app) condition will have a stronger difference between pre and post-test DV3 scores compared to the difference between pre and post-test DV3 scores in the other conditions. The present study aims to understand potential influences when assessing the effectiveness of digital media used as a supplemental social-emotional teaching tool at home. Ultimately, maximizing accessible resources used in this population has the potential to educate children about critical social and developmental skills equitably.

Nasya Miller

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

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#3 Dr. Christina Hull

Abstract Name: Adaptation of Cryptococcus deneoformans to gradual increases in temperature

Climate change poses many threats, including the potential evolution of certain environmental microbes to adapt to living at human body temperature. One of these microbes, Cryptococcus deneoformans, is an invasive human fungal pathogen that produces spores. C. deneoformans has been developed as a model for the study of human fungal pathogens. When spores are produced and inhaled, they can germinate into yeast that spread to other tissues, such as the brain. Because germination is required for disease, our lab has focused on the conditions that initiate germination and developed a quantitative germination assay (QGA) to measure it. To assess the ability of laboratory strains of C. deneoformans to adapt to growth at higher temperatures, we will slowly expose them to incrementally higher temperatures from 30°C to 37°C over time. We will then test how these strains respond to conditions that test properties associated with survival in diverse environments. We hypothesize that temperature-adapted strains will show more robust survival phenotypes than non-adapted strains and will produce spores that germinate more efficiently at high temperatures relative to non-adapted spores. If high-temperature adaptation promotes more robust survival under a variety of conditions, our data may provide information on how global temperature increases due to climate change will impact environmental fungal pathogen survival overall.

Sarah Miller

KY - Morehead State University

Discipline: Education

Authors:
#1 Sarah Miller

Abstract Name: Classroom Managed: Teaching and Behavior Management Strategies Implemented in Eastern Kentucky Schools

In recent years, the increase in teacher attrition has become a salient issue in schools in both Kentucky and

across the nation. In 2019, 44% of new teachers reportedly left the field within the first five years of teaching. Educators list student behavior challenges as one of their top concerns. Beginning teachers are often overwhelmed with misbehavior, causing a feeling of job dissatisfaction, and is often listed as a reason for teacher attrition. Classroom management, a necessary tool for educators to use in the classroom, reduces the number of disruptions that occur and improves productivity.Classroom management refers to different strategies teachers use to create positive and effective learning environments for students. Large amounts of instructional time are lost when teachers lack effective classroom management skills. New teachers struggle to implement classroom management, resulting in a loss of instructional time and an increase in behavior issues. The lack of experience and time leaves many new teachers struggling to implement an effective management system that supports instruction and reduces misbehavior.This research study examines data collected from educators of varying experience in Eastern Kentucky. The data results help to determine what strategies in classroom management are most successful. Using a mixed method of interviews and surveys, educators from elementary, middle, and high schools share how classroom management differs for each age group. Responses encompass various strategies regarding student behavior, parent involvement, previous classroom management training, and individual strategies implemented by beginning and experienced teachers. Evaluating classroom management strategies used in Eastern Kentucky classrooms provides direction for new teachers struggling to identify their management style, allowing for an easier shift into implementing their own classroom management techniques in the field.

Kaylee Miller

VA - Roanoke College

Discipline: Humanities

Authors:
#1 Kaylee Miller

Abstract Name: “Women are meant to be seen and not heard- unless they are SOE agents.”

World War II gave way to a new form of intelligence gathering; Britain created the Special Operations Executive, SOE, as a response. Their F-Section that focused specifically on France hired the most unlikely of spies, including mothers, Jewish women, a disabled American, and a Sufi Princess. In this small section, they produced vital work that aided the allies in their D-Day victory and the French Resistance in their fight against the Germans. When the war was over, the SOE dissolved, and society struggled with how or if they wanted to commemorate the work of these women. When the war ended, there was a spike the women receiving awards and recognition, but within ten years they were forgotten about by the society that once honored them. Starting in the 2000s, there has been a steady rise in scholarship about these agents, many had passed away before they could see their work celebrated. Now, they are being commemorated in a variety of ways such as having their stories told on the big screen, making their stories more assessable to future generations. My research drew from the SOE file of Virginia Hall, films about the women, and the rise in scholarship in the form of books and articles. There is a nice mix of primary and secondary sources used for this niche research topic.

Sarah Miller

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Sarah Miller
#2 Ashley Eng

#3 Michelle Martel

Abstract Name: The Effects of Menstrual Cycle Hormones on Borderline Personality Disorder and Attention-Deficit/Hyperactivity Disorder Symptoms

Prior literature shows that attention-deficit/hyperactivity disorder (ADHD) and borderline personality disorder (BPD) interact in important ways, as people with a comorbid diagnosis tend to have higher levels of negative affect and impulsivity than those with only ADHD or BPD. However, there are few studies that examine the impact of the menstrual cycle on symptoms of ADHD or BPD, with even fewer focusing on their comorbidity. We aim to investigate the effects of reproductive hormones on this clinical population that we hypothesize is more likely to be sensitive to hormone fluctuations. Participants in this study were 46 young adults (ages 18-25) who were assigned female at birth (AFAB). Participants were divided into two groups: 1) a high BPD symptoms group if they endorsed four out of nine symptoms of BPD while also meeting diagnostic criteria for ADHD (n=14, 30.0%) and 2) other participants who did not meet this criterion (n=32, 70.0%) based on semi-structured interviews (i.e., the SCID, SCID-PD). Every participant completed four laboratory visits at targeted menstrual cycle phases (i.e., midfollicular [rising estrogen]; postovulatory [declining estrogen]; midluteal [rising progesterone]; & premenstrual [declining hormones], during which they completed self-report surveys (i.e., the DRSP; UPPS) assessing their levels of negative affect and impulsivity. Our findings did not show a significant difference in symptom severity among the ADHD-BPD participants at different points in the menstrual cycle ($p \geq 0.1$). Our findings also did not indicate a significant difference in the levels of variation in negative affect or impulsivity between the two groups ($p \geq 0.1$). However, some findings trended towards significance, with negative affect increasing during the cycle's midluteal phase more significantly in the ADHD-BPD group. Findings should be replicated with a larger sample in order to allow more powerful tests of menstrual cycle effects on negative affect and impulsivity in those with ADHD and BPD.

Lydia Miller

MN - University of Minnesota - Rochester

Discipline: Interdisciplinary Studies

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Abstract Name: Seeking Closure: Measuring Impact of Lesson Closure on Laboratory Students' Learning Outcomes

Although life science laboratory courses (or components) are important for student success, these courses repeatedly demonstrate a failure to meet the intended learning objectives, especially those relating to understanding theoretical concepts. Lesson closure is a strategy where students' working memory intentionally processes key points, learning objectives, and the what, why, and, how of the novel information. Facilitating lesson closure has shown to increase student comprehension and confidence in materials taught in lecture-based courses. To date, no studies report the use of lesson closure on student's performance on laboratory learning objectives. With our study, we intend to expand on the research of lesson closure and investigate closure in a life science laboratory-based course by implementing terminal closure sessions preceding the completion of labs. With this strategy, we aim to answer the question: What is the impact of utilizing terminal closure in laboratory environments on student's understanding of theoretical concepts, confidence of that understanding, and future retention of lab content? During the closure sessions, the instructor will prompt students to collaboratively discuss the purpose of the experiment, their results in context, and why each step was necessary. To assess the impact of terminal closure sessions on student learning, we will use pre and post laboratory 3-tiered multiple choice diagnostic tests. The first questions will test basic comprehension, followed by listing potential explanations for the previous questions, and finally

the third level will ask students to rate their confidence of preceding answers. Evidence collected and analyzed in this study will guide future development of laboratory-based courses by providing instructors with a strategy and instrument for gaining and assessing laboratory outcomes, in addition to better equipping students with knowledge and skills for careers in the life sciences.

Austen Miller

UT - Utah Valley University

Discipline: Natural and Physical Sciences

Authors:
#1 Austen Miller
#2 Josh Leon
#3 Geoffrey Zahn

Abstract Name: Spatial dynamics of foliar fungal community structure in the Pando Aspen Clone

The Pando aspen grove in Central Utah is a remarkable organism comprising a clonal colony of Quaking Aspen (Populus tremuloides) in Fishlake National Forest. While Pando has garnered plenty of attention, the role of the fungal microbiome within this clonal system remains relatively uncharted. This research project delves into the endophytic and epiphytic fungal communities inhabiting the leaves of this giant single organism, employing meta-barcoding techniques to analyze the fungal ITS2 region from both the leaf surface and interior. The clonal nature of Pando means that plant genotype is consistent across a broad area, allowing us to test hypotheses about how plant-associated fungi disperse and associate with their hosts. In particular, we are testing whether proximity to a forest edge affects foliar fungal community structure. This research will enhance our understanding of how forest patch size and location contribute to plant-fungus community formation. These findings may also have implications with the potential to affect the health and resilience of this aspen clonal colony, which could in turn inform conservation strategies and forest management in the face of environmental challenges and the shifting ranges of aspens and fungal symbionts.

Nicholas Miller

IL - Illinois Institute of Technology

Discipline:

Authors:
#1 Nick Miller
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#3 Cindy Voisine
#4 Molly McDonough

Abstract Name: StRoNG Net: Undergraduate Research in Genomics.

Since the first release of a draft human genome, almost a quarter of a century ago, there has been a quiet revolution in genomics. Dramatic technological advances have made sequencing the genomes of "non-model" organisms throughout the tree of life feasible and affordable. Often, non-model genomes are sequenced in pursuit of specific scientific questions that only examine a small fraction of the overall genome, leaving the rest unstudied.Understudied genome sequences from non-model organisms are a great opportunity for undergraduate scientists to conduct original research. As a field of study, genomics is well suited to undergraduate research for several reasons:1. Genomics research projects can be granular and highly

scalable. A project can be as simple as identifying one or two genes of interest or as complex as comparative studies of genomes from multiple species.2. Genomics research is highly accessible. Data are often stored on central servers and accessed through web interfaces. Students only need a web browser to participate in research.3. Genomics provides a forum to introduce students to advanced computational topics like machine learning and artificial intelligence.4. Genomics is well suited to providing Course-based Undergraduate Research Experiences (CUREs) to large cohorts of students.StRoNG Net (STEM Research on Non-model Genomes Network) is a community of educators and researchers supporting undergraduate research in genomics. The network provides a forum to develop research opportunities and to share experience and best practices.

Mary Miller

LA - Baton Rouge Community College

Discipline:

Authors:
#1 Mary Miller

Abstract Name: Building the Louisiana Freshwater Sponge Project: The interdisciplinary undergraduate research hub at Baton Rouge Community College

After moving from a 4-year research University to Baton Rouge Community College in 2013, Dr. Miller quickly realized that there were no research opportunities for the students on the campus. Knowing the impact undergraduate research has on student success, in 2015 Dr. Miller set out with a mission to secure funding and change the campus experiences to include research. In this presentation, she will share her journey of how her initial implementation of Course Undergraduate Research Experiences (CUREs), evolved into a leading hub of freshwater sponge research in the United States. She will share how she and her collaborators have secured over 1.5 million dollars in Federal, State, and local grants to support student stipends and build a state-of-the-art research project, The Louisiana Freshwater Sponge Project. Since its formal development in 2019, the project has provided forty community college students with part-time employment while they gain transferrable workforce skills, resulting in a 95% retention and graduation rate. These students have participated in cutting-edge research focused on the diversity, taxonomy, and ecology of freshwater sponges in Louisiana. This research has equipped students with a wide range of skills ranging from field methods in ecology to lab-based molecular techniques and computer coding. These students have also participated in local outreach initiatives to raise public awareness of freshwater sponges. Dr. Miller will discuss the importance of collaborating with other institutions to provide the most impactful experiences and reflect on student experiences including student travel, conference presentations, and upcoming publications. She will also share mentorship advice for leading an interdisciplinary project that has provided undergraduate research experiences to computer science, general science, pre-engineering, pre-professional, and nursing majors.

Jalyn Miller

PA - Swarthmore College

Discipline: Engineering and Architecture

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#4 Joseph Towles

Howard Wang

Abstract Name: Toward the Development of a System to Measure Thumb-tip Movement Produced by Muscles

Thumb-tip movement impairment, often resulting from neurological injuries, leads to loss of grasp functions vital in daily activities. Understanding the specific movements produced by thumb muscles is key to improving surgical and rehabilitation interventions for grasp impairment. To date, the thumb-tip movements that muscles produce remain unclear. Our work aimed to clarify these movements. We developed an arm fixation device, along with motion tracking and actuation systems, to accurately capture thumb-tip movements that muscles produce. In our study, two cadaveric specimens were dissected to expose the extrinsic thumb muscles: the extensor pollicis longus (EPL), extensor pollicis brevis (EPB), abductor pollicis longus (APL), and flexor pollicis longus (FPL). Each muscle's tendon was pulled five times using a linear actuator to a displacement of 39 mm and at 28 mm/s. We measured the resulting thumb-tip movements. Thumb-tip trajectories ranged between 16 mm and 64 mm with FPL generating the smallest trajectory and EPB the largest trajectory. Of the four muscles, FPL exhibited the most intra-trial variability in its thumb-tip trajectory. Lastly, of the muscles tested, only EPB produced a thumb-tip trajectory consistent with its nomenclature. That is to say, EPB produced primarily an upward/dorsally-directed thumb-tip movement. The observation that muscles produced different amounts of movement than the input movement (39 mm) suggests that the thumb behaves like a variable transfer function depending on the muscle involved. The observation that most muscles produced thumb-tip movements inconsistent with how they are named points to the complexity of musculoskeletal biomechanics. Both findings agree with previously published results on muscle-produced thumb-tip forces. This work begins to provide a better understanding of muscle-produced thumb-tip movements. This has the potential to aid in enhancing models of the hand that are used to design improved interventions for grasp function following neurologic impairment.

Alexander Millette

NH - Southern New Hampshire University

Discipline: Humanities

Authors:
#1 Alexander Millette

Abstract Name: Breaking Boundaries: The Legacy of the Institut für Sexualwissenschaft in LGBTQ+ Rights and Activism

This paper delves into the influential role played by the Institut für Sexualwissenschaft (Institute of Sex Research) in the early 20th century, particularly focusing on its impact on LGBTQ+ rights and activism. Founded by Dr. Magnus Hirschfeld in Germany, the institute pioneered research into human sexuality, gender diversity, and LGBTQ+ issues during a time when societal attitudes were far from accepting. Through an analysis of the institute's groundbreaking research and educational initiatives, this paper highlights how it challenged prevailing prejudices and advocated for LGBTQ+ rights. It also explores the enduring legacy of the Institut für Sexualwissenschaft in shaping contemporary discussions on sexuality and gender diversity, emphasizing the lasting importance of its early contributions to the ongoing pursuit of LGBTQ+ equality and acceptance.

Megan Millsap

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Megan Millsap

Abstract Name: NCUR Abstract

Chefs Kiss is a home for Christine Ha who is a blind chef. The main question for this project was how do you design a homey yet functional space for someone who is completely blind but also a chef who loves to cook at home and entertain people in her home? Through a lot of research and listening to guest speakers I learned that designing a home for someone who is visually impaired involves paying a lot of attention to little details that you normally might not have paid much attention to. An example of this is providing more outlets than a typical home to allow the homeowner to adequately use all of the technology they use to go about their daily lives. You also have to pay attention to things such as the contrast between walls and baseboards or walls and door frames to make it easier for the user to clearly see where they are and when they are entering new spaces. For my research, I read many different interviews Christine has had where she spoke about how she lives her life and how she navigates her world, and how she manages to cook while being completely blind. For my final design, I chose materials that contrast well with each other as well as incorporating more opportunities for technology to be integrated within the home to make the home adaptable to Christine and her husband as they age within the home. I also integrated smart appliances within the kitchen and throughout the rest of the home as well as selected furniture pieces that do not have any sharp edges, making it safer for Christine to walk throughout the home. Overall, I believe my design for her home is the perfect mix of homey and functional.

Bratoljub Milosavljevic

PA - Pennsylvania State University

Discipline:

Authors:
#1 Bratoljub Milosavljevic

Abstract Name: Focusing Undergraduate Research on Finalizing Education of Chemistry Majors

How well prepared are BS Chemistry majors for their postgraduate endeavors? How can they be more competitive on the job market or more efficient in graduate school? In order to answer these questions, I had been interviewing the recruiters who come to Penn State in the last 10 years trying to identify which improvements can be made for the development of technical and soft skills needed to complete the education of our chemistry majors. Similar questions were addressed in communications with graduate faculty and their suggestions were considered/incorporated as well.In this presentation I will describe the recent experience in my pedagogical approach which utilizes undergraduate research for achieving the aforementioned educational goals. It utilizes modified project-based learning, and it is executed in the three-course-sequence consisting of CHEM 457 (experimental physical chemistry), CHEM 459W (advanced experimental physical chemistry), and CHEM 494 (independent research). More specifically, (a) the classical exptl. phys. chem. class (CHEM 457) was modified such that the students gain most of the necessary foundational cognitive skills and knowledge, (b) the second class entitled advanced exptl. phys. chem. (CHEM 459W) was designed such that they perform authentic research projects relatively closely guided by the professor, and (c) the independent research class (CHEM 494) was designed such that the students finalize their project (finish the manuscript to be submitted in a peer-reviewed journal) under minimal supervision of the professor. The learning goals and syllabi of all three courses will be presented as well as the corresponding justifications.

Victoria Min

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Victoria Min
#2 Virginia Gray

Abstract Name: Motivations of Caffeine Use amongst College Students

Caffeine is a popular substance that is oftentimes associated with college students. While research explores caffeine consumption in college students, motivations of use and differences in use by college major are yet to be explored. The objective of the current study is to investigate motivations of caffeine use in college students and explore differences by major. A validated cross-sectional survey regarding caffeine consumption habits was modified to fit study objectives and distributed via Qualtrics. Participants were CSULB undergraduate students taking a general education class that requires students to engage in experiments for class credit from the academic semester of Fall 2023; a second run will be conducted during the Spring 2024 semester.The initial sample consists of 63 participants, 33 participants indicating the pursuit of a health major (a degree option offered under CSULB College of Health and Human Services), whereas 30 participants indicated enrollment in a non-health major. Preliminary results indicated “taste” (n=22), “caffeine usage is a pleasurable/enjoyable habit” (n=17), and “it is delicious” (n=14) as primary motivators across all majors. Taste was seen as a higher motivation for health majors compared to non health majors. Habit was more prioritized for non health majors compared to health majors. Health majors selected ”it is delicious” more often than non health majors, who were more likely to select “ritual, waking up, and increased willingness to work” as motivation for use. The highest number of respondents were freshmen (76.2%), majored in nursing (n=12), female (71.4%), 18 years old (65.1%), and Hispanic/Latinx (60.3%). These results are helpful for targeting caffeine-related guidance to align with student motivations for using the substance. Continued study may provide context for exploring the relationship between caffeine use and motivations to further caffeine-related research.

Roxanne Mina

CA - California State University - Maritime Academy

Discipline: Engineering and Architecture

Authors:
#1 Roxanne Mina
#2 Riley Tillman
#3 Julie Simons
#4 William Tsai
Riley Tillman

Abstract Name: Viscous Biolocomotion: Simulation versus Physical Models

Marine, estuarine, and coastal regions are sensitive to disastrous human-induced environmental disasters, one such being oil spill events. Current remediation efforts involve the use of surfactants, introducing additional chemicals that may create long-term environmental damage. This has encouraged research for an effective and toxin-free way to target the containment and cleaning of oil spills through bacterial mechanisms or bio-inspired microrobotics. Naturally occurring bacteria such as Alcanivorax and Marinobacteri have been shown to break down complex hydrocarbons and assist in the oil degradation process. This project aims to advance our knowledge of biolocomotion in viscous fluids, like oil, by coupling computational models for bacterial

flagellar motion with experimental lab validation. We model flagellar motion using a motor-driven helix submerged in fluid and use particle image velocimetry (PIV) to map the velocity flow near the helix. The parameters for the helix shape, motor speed, and fluid (glycerin) were determined to match Reynolds numbers as closely as possible to those associated with observed fluid motion surrounding bacteria (Re ~ 0.1). Several different sizes of helices were used to determine which length scale of a flagella, amplitude or length, would match the 0.1 Reynolds number. Comparison between the observed flow field and the computational model is used to validate our modeling assumptions and refine both our computational model and PIV. Future goals include prototyping different flagellar configurations, including flexible filaments and robotic flagella, thus allowing for a fuller exploration of parameters, waveforms, and biomechanics that govern swimming efficiency within these environments. From this framework, we hope to investigate the remediation potential for bacteria as well as microrobots that mimic bacterial motion but could be designed to navigate complex environments and navigate oil spills more efficiently.

Zakiya Minggia

VA - Norfolk State University

Discipline: Health and Human Services

Authors:
#1 Zakiya Minggia
#2 Sidne Moore
#3 Akua Akomea
Sidne Moore
Akua Akomea

Abstract Name: We Must A.R.T (Articulate, Review, and Tackle) Racism in Health Care

This is a health promotion project focusing on educating the public on the correlations between racism and obesity, stress, cardiovascular disease, and hypertension. Learning is expressed and exchanged through a community arts project. “Racism and mental health and the role of mental health professionals” by M Schouler-Ocak discusses what race is, the history of racism in the United States, and how racism can affect one’s mental health. It is explained that racism occurs on every level: structural, institutional, interpersonal, and internal. This puts people with observed racial and ethnic inequities at risk of severe mental illness. A meta-analysis and systematic review determined that racism is related to poor mental and physical health. The results of this review state that racism is related to the development of affective, psychotic, and substance use disorders. After evaluating the mental health issues in the community, depression was the most common outcome. This is all a result of the stress responses being triggered by discriminatory experiences. As such our project further affirmed the correlation between racism and stress, as well as obesity and cardiovascular disease. The quantitative and qualitative research (surveys and observations) consisted of self-identification questions, experiences, and comprehension of the topics discussed during the sessions, expressed by answering a scale of strongly disagree to strongly agree. During this project, there were six sessions—three with the African American community and three with health professionals. During the sessions, different stressors and diseases and their relationship with racism were presented to the attendees. Surveys were issued to the attendees before and after the presentation. The sessions with the African American community resulted in higher knowledge and the sessions with the healthcare professionals resulted in around the same knowledge as before.

Rachel Mingus

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Rachel Mingus
#2 Linda Niedziela

Abstract Name: Investigating the Anti-Cholinesterase Properties of Crassocephalum crepidioides in Larval Zebrafish

Acetylcholine is an essential neurotransmitter in the brain that has important functions in learning and memory. Levels of this important molecule are low in patients with dementia and Alzheimer's disease. Acetylcholine is broken down by the enzyme acetylcholinesterase. Acetylcholinesterase inhibitors such as donepezil are commonly used to treat dementia and Alzheimer's disease by increasing the levels of acetylcholine in the brain. Previous research has shown that the plant Crassocephalum crepidioides inhibits acetylcholinesterase and therefore has possible applications as a treatment for Alzheimer's. However, acetylcholinesterase may be linked to apoptosis in young individuals. This research aims to provide insight on how acetylcholine affects young, healthy brains and examines the effects of C. crepidioides as a potential dementia treatment. In this study, zebrafish embryos were treated with aqueous plant extract as they developed. After all embryos hatched, fluorescence microscopy was used to quantify apoptosis in the zebrafish larvae. Results showed that C. crepidioides does not have a significant correlation with apoptosis. However, embryos had a faster hatching rate and lower mortality, indicating possible positive effects of the plant extract on growth and development. Previous studies have demonstrated that acetylcholine has a role in embryonic development and the release of growth hormones such as IGF-1. Future experiments will investigate these mechanisms by quantifying acetylcholine and measuring the presence of growth hormone IGF-1 in larval zebrafish after treatment with C. crepidioides.

Jason Minicozzi

PA - Duquesne University

Discipline: Social Sciences

Authors:
#1 Jason Minicozzi

Abstract Name: How Gentrification Increases Food Insecurity: An Analysis of Pittsburgh's Hill District

In 2018, Pittsburgh was ranked the 8th most gentrified city in the United States. Through the process of gentrification, food insecurity can arise from restrictions on transportation, food options, and livable properties. Postulating a correlation between neighborhoods undergoing gentrification and increasing food insecurity, this research addresses the question: how does gentrification impact food insecurity?This paper focuses specifically on Pittsburgh's Hill District, a predominantly minority populated neighborhood undergoing gentrification since the 1950's. Once a prospering and lively neighborhood, the Hill has since lost its sense of community to corporate interest. Now considered a "food swamp," the Hill's food insecure status is a result of negligent corporate interference. Urban neighborhoods that feature more than 4 fast food, corner, or convince stores per .25 square miles are labeled "food swamps."In combating food insecurity, data collection processes and measures can misidentify many families and individuals as food secure. Current literature addresses issues with aggregate data, as macro level data does not accurately translate to micro level statistics. Although the City of Pittsburgh states 1 in 5 people are food insecure, this data does not account for differences in caloric intake across sex, gender, and age.This research paper employs mixed methodology to translate aggregate data more accurately. Beginning with secondary data analysis, this project will collect existing macro data. Then, town hall meetings where residents can share their stories and struggles invites community engaged learning and research. Following, this meso level data will proceed with one-time, semi-structured interviews to establish a research instrument for micro level food insecurity.

Finally, to gather longitudinal data on the impact of gentrification, annual mail-in surveys will use the established instrument to measure food insecurity and resident erosion rates in the Hill District.

Jubelqui Miramontes

OK - University of Central Oklahoma

Discipline:

Authors:
#1 Jubelqui Miramontes
#2 Kuang-Chung Hsu
#3 Zhen Zhu
Kuang-Chung Hsu

Abstract Name: Utility Company Credit Ratings and Regulatory Environment

Credit ratings serve as a crucial classification tool for categorizing companies as risk-equivalent entities. This criterion gains paramount importance when utilities, seeking higher rates in rate cases, are typically compared to companies within a so-called proxy group. The selection of this proxy group often relies on credit ratings. In this study, we delve into various issues related to utility credit ratings over the last 20 years, including the assessment of 1. How utility credit ratings have performed during this period. 2. The extent to which utility credit ratings have mirrored the underlying financial metrics of the companies and the regulatory environment. Our focus is on data from the past two decades of U.S. gas and electric utilities. Given that utilities operate as regulated businesses, their ultimate financial conditions are significantly influenced by regulatory outcomes. The study explores the impact of several regulatory variables on credit ratings. One notable variable is the commission rating, derived from a broad measure of how each state commission manages issues related to utilities, such as utility rate case requests and commission decisions on specific utility issues. Furthermore, we scrutinize a specific regulatory decision variable – the authorized return on equity set by the commission in each rate case where a rate increase is requested. This authorized return on equity stands out as the single most crucial variable determining the overall revenue requirement for a utility. Additionally, we consider the financial metrics of the utilities when examining the influence of the regulatory environment on credit ratings.

Andrea Miramontes Serrano

NY - Cornell University

Discipline: Engineering and Architecture

Authors:
#1 Andrea Miramontes Serrano
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Reid Fleishman

Abstract Name: Comparative Analysis of Building Electricity Demand

Cornell University's sustainability is recognized by the Princeton Review's Green Honoral, has ranked 4th in the Sierra Magazine for its advancements in sustainability, and has received a STARS Platinum award in the national with a score of 85.12/100, AASHE endorsed, self-reporting sustainability tracker3. In 2013, the Cornell Sustainable Council undertook the 2035 vow to Carbon Neutrality. At this time, Cornell's score on STAR's "Building Energy Consumption" category is a 1.32/8.00, and a 2.60/8.00 on "Clean and Renewable

Energy.” Later, in 2014, the SACLG published a report analyzing the “Options for Achieving Carbon Neutrality by 2035.” Nonetheless, after 7 years, Cornell’s STARS has failed to improve in both the building efficiency and clean energy categories, with scores of 4/6 and 0.81/4 respectively.In response to this stagnation, the Cornell University Carbon Neutrality ESW team has decided to conduct an exploration of the most tolling emitters on the Ithaca campus. We present the methodologies and results of a comparitive analysis identifying fume hoods, ultra low freezers, data centers and centralized HVAC systems as the main loads in the most energy consuming buildings.

Fatemah Mirza

CA - University of California - Irvine

Discipline: Mathematics and Computer Science

Authors:
#1 Fatemah Mirza

Abstract Name: AI-Driven Interview Coaching Platform: Enhancing Global Freelancing Opportunities for Pakistan's Technical Workforce

The global freelancing market offers many opportunities, but individuals from developing countries like Pakistan often face challenges. While many of these individuals have strong technical skills, they struggle during interviews that have international standards. This difficulty can prevent them from securing freelancing roles, highlighting a need for specialized interview training.This research presents a platform designed to train students and professionals for these interviews. Distinctively integrated with advanced technologies such as Natural Language Processing (NLP), machine learning, and data analytics, the platform offers a tailored training experience. By analyzing users' responses in real-time and utilizing predictive analytics, it delivers targeted feedback, enhancing users' grasp of industry knowledge, their ability to articulate accomplishments, and their comprehension of emerging industry trends.The research methods include a literature review and a survey. The literature review studies the challenges of freelancing interviews and the role of technology in interview training. The survey gathers feedback from users of the platform to understand its effectiveness. Results show that users of the platform are better prepared for interviews and have a higher chance of success in the international freelance market.This study is important because it addresses a gap in interview training for individuals in developing countries. It shows how technology can help these individuals improve their interview skills and access global freelancing opportunities. The use of NLP and machine learning in the platform also suggests how technology can shape future interview training tools. The research further underscores the benefits of AI-driven platforms, such as scalability, cost-effectiveness, personalization, and enhanced accessibility. However, it also draws attention to potential challenges, including technical hurdles, socio-cultural reservations, and ethical considerations. The exploration of initial initiatives like CareerTuners.ai offers glimpses of the concept's budding realization.

Zara Mirza

MI - Wayne State University

Discipline: Social Sciences

Authors:
#1 Zara Mirza

Abstract Name: Equal Opportunity for Invisibly Disabled Employees

The needs of employees with specifically invisible disabilities are not being met by employers. Policy makers, activists, and political scientists have long collaborated to extend civil rights for marginalized communities; one instance is the enactment of the American Disability Act (ADA). The ADA is currently insufficient, as it does not protect these employees with invisible disabilities who come to the workplace with an altogether unique set of needs. Social scientists have thoroughly documented how civil rights laws tend to be reactive measures. To argue on behalf of further protections for those with invisible disabilities, more needs to be understood about how workplace accommodations can foster the professional environment necessary to, one, protect this group and, two, set the conditions for them to flourish. This is what I intend to show. What becomes clearer is that the lack of federal regulations safeguarding invisible disability-related accommodations results in ill-prepared employers providing inadequate assistance to those who need it. To that end, I investigate patterns of cognitive disorders in working adults in their late twenties to early thirties, like depression, increased since the COVID-19 pandemic. Depression is considered a disability under the ADA but continues to remain invisible because individuals with depression are not visibly impaired. As diagnoses for the working population are on the rise, it is imperative for us to now understand why employers must also be equipped with the necessary provisions parallel to the needs of their changing workforce population. The ADA has been amended to broaden protections before, and can be again—to enforce and standardize the implementation of resources for workers whose disabilities largely remain invisible. My study can help show why it should be updated once more.

Taylor Mitchell

AR - Lyon College

Discipline: Natural and Physical Sciences

Authors:
#1 Taylor Mitchell
#2 Katherine Hunter
#3 Braden Glenn
#4 David Thomas

Abstract Name: Aeromicrobiology with High-Power Rocketry

Aeromicrobiology is the study of microorganisms living in the atmosphere. High-power rockets are capable of achieving impressive altitudes, even while carrying delicate payloads. For this series of experiments, our payload is the LADCAP (Launchable Automatic Device for Collecting Airborne Particles). LADCAP collects high-altitude microorganisms, called extremophiles, which can withstand low temperature, low pressure, desiccation, and increased UV flux. The data collected about extremophiles on Earth can potentially be extrapolated to extremophiles in other locations, including other celestial bodies. While the surface of Venus is extremely hostile, the cloud layer of the planet's atmosphere is much more hospitable to the possibility of life. This cloud layer has moderate temperatures of 0-60°C and pressures of 0.4 - 2 atmospheres. Extremophiles in Earth's own atmosphere would have adapted to live under similar conditions. Therefore, the samples we collect on Earth could provide insight into the types of extremophile life that exist in the Venusian cloud layer. With the LADCAP proprietary system, our research group has aspirated airborne microorganisms from the atmosphere. Through repeated launches, our group has collected and cultured numerous airborne microbes including rhizoid bacterial colonies and fungal colonies. In addition to the LADCAP system, we are developing an alternate method of sampling for airborne particles. This method would function without a flight computer and would be designed for amateur microbiology in classrooms without access to the same resources as our research lab.

Tiya Mitchell

OK - Southern Nazarene University

Discipline: Social Sciences

Authors:
#1 Ron Wright

Abstract Name: A Self-Love Story: Varieties of Narcissism, Attachment Dynamics, and Self-Object Needs

This study is aimed at exploring the interplay between narcissism, attachment patterns, and the formation of self-object needs, as initially interpreted by Kohut (1971). Our primary objective is to investigate the association between narcissism and attachment insecurities. Our study also seeks to shed light on how individuals develop a coherent or fragmented sense of self from infancy through adulthood, with a primary emphasis on the role of attachment figures. By dissecting the interplay between self-object needs, narcissism, and attachment, we pave the way for a deeper comprehension of these dynamic relationships. Providing newfound hope and solutions for individuals grappling with narcissistic traits and self-disorders. It is hypothesized that maladaptive covert narcissism will be predicted by positive attachment avoidance, negative attachment anxiety, positive conflicted self-efficacy, positive conflicted affiliation, and positive dismissive self-efficacy, while communal narcissism will be predicted by negative attachment avoidance, positive attachment anxiety, positive approach affiliation, positive conflicted self-efficacy, and and positive conflicted affiliation.

Monika Mitova

NY - New York University

Discipline: Humanities

Authors:
#1 Ella Shohat

Abstract Name: When the Orient and the Occident Met in Israel: The Impacts of Orientalism on Ashkenazi-Mizrahi Dynamics in Israel and Beyond

In her paper “The Invention of the Mizrahim,” New York University scholar Ella Shohat illuminates the creation and evolution of a unique “Mizrahi” identity for Jews from Arab lands, who arrived in Israel after its establishment in 1948. This identity was meant to segregate Mizrahi “Oriental” Jews from European Jews, known as Ashkenazi Jews. Erasing Mizrahi’s Arabness became a national project that attempted to create a homogeneous Israeli identity founded on the Eurocentric ideals of the Occident. Mizrahi Jews have been marginalized over the years, facing neglect, oppression, and cultural assimilation. This process continues, evident in the 2018 Nation-State Law in Israel that makes Arabic a language with a “special” but not “official” status, impacting not only Arabs but also Mizrahi Jews, many of whom are Arabic speakers. Through ethnographic observations from museums and cultural institutions in New York and Israel, archival research, and immersive literature review, this research provides insight into the prevailing Orientalism and lack of adequate representation of Mizrahi Jews in historiography both before and after 1948. My research adds a contemporary layer to the Mizrahi question by analyzing various forms of expression of contemporary Mizrahi voices, revealing that Jewish history is almost thoroughly equated to Ashkenazi history. Guided by the Orientalism framework of the Palestinian-American scholar Edward Said, and relying on the collected ethnographic evidence, this paper argues that Israel developed its own type of Orientalism – Israeli Orientalism – which excluded the Mizrahi narrative from cultural and political spaces to this day.

Masataka Mizuno

NY - Brooklyn College

Discipline:

Authors:
#1 Catherine McEntee

Abstract Name: The Cytoplasmic Fragments of M-CSF Receptor Suppresses Obesity Related Bone Phenotype

Bone health is becoming a greater area of study because of its importance in multiple disease and trauma related illnesses such as osteoporosis, rheumatoid arthritis, and revision surgeries. The drug Denosumab has successfully reversed osteoporosis in many patients, but comes with significant side effects when patients taper off the medication. Patients will see their bone mass density drop suddenly below their original baseline before taking Denosumab which causes subsequent fractures and hospitalization. In what clinicians deem the rebound phenomenon. Unfortunately, Denosumab (a lifelong drug that is not covered by insurance after ten years) must be taken twice a year and costs $3000 per dose, forcing patients to choose between osteoporosis or $6000 in yearly payments. New science shows a possible explanation for such clinical presentation. While many believe osteoclasts were terminally differentiated cells, new science shows that osteoclasts can recycle themselves by fissioning and fusioning off multinucleated bodies. This recycling allows osteoclasts to fission off and enter a dormant phase and fusion into larger osteoclasts when signaled to do so. These dormant smaller osteoclasts are named osteomorph. When osteoclasts inhibitors mimicking the effects of Denosumab were given to mice, researchers were able to see osteoclasts fission into osteomorphs. However, when inhibitors were withdrawn, osteomorphs fused with each other and osteoclasts activity increased dramatically as seen through two photon microscopy and actin filament tracking software Imaris. Such phenotype is a close comparison to the rebound phenomenon seen in clinical settings and has become the targeted area of research. The A17 TACE enzyme is shown to interact with the receptor protein c-FMS and increase osteoclastogenesis in vivo. The goal is to now find if the A17, c-FMS mechanism is solely related to osteoclastogenesis. Further questions are if blocking A17, c-FMS can prevent osteomorph fusion during inhibitor withdrawals. Thus preventing the rebound phenomenon.

Jill Mochizuki

CA - Cal Poly Humboldt

Discipline: Natural and Physical Sciences

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#1 Jill Mochizuki
#2 Cesar Fernandez

Abstract Name: Quantifying Water Uptake on Atmospheric Mineral Dusts in a DRIFTS Cell

Clouds influence the temperature of the Earth's surface by reflecting solar radiation. As such, accurate data regarding cloud formation is crucial for climate modeling. Particulate matter in the atmosphere can act as cloud condensation nuclei once enough monolayers of water have adhered to the solid particle. The number of monolayers is determined primarily by the relative humidity (RH) level above the particle's surface and the matter's chemical composition. Past explorations of this water uptake process used the diffusion reflectance infrared Fourier transform (DRIFTS) spectroscopy method. This research attempts to quantify monolayer uptake by mineral oxides and other types of particulate matter explored by past experiments to improve literature values. Ground solid samples (Fe_2O_3, TiO_2) were exposed to varying (20-84%) RH levels in a DRIFTS cell. Both absorbance and Kubelka-Munk spectra were taken of each RH and the area (less baseline) under the spectra was plotted relative to RH. The Brunauer-Emmett-Teller-III (BET) equation was used to determine the number of monolayers the sample could have picked up (at 100% RH). The TiO_2 sample was

found to have a maximum monolayer capacity of 2.5, which is less than that stated in the literature. Additionally, we found that absorbance data fits the BET model much more closely than data gathered using Kubelka-Munk analysis. This method and data analysis choice can be applied to other forms of particulate matter for further study.

Nishtaa Modi

MD - Johns Hopkins University

Discipline: Natural and Physical Sciences

Authors:
#1 Richard Lee

Abstract Name: Engineering DNA Probes Delivered Through Brain-Specific Extracellular Vesicles for Targeted DNA Methylation at the FKBP5 Gene

Epigenetic changes such as DNA methylation impact gene expression and function. Previous efforts have used microRNAs that act post-transcriptionally and tend to be a lot more transient than changes in DNA methylation. We seek induce stable increase in DNA methylation at specific genomic loci at the FKBP5 gene using engineered DNA probes to normalize gene function.The FKBP5 gene acts as the primary regulator of glutocorticoid (stress-hormone) signaling with implications in several stress related diseases like depression, PTSD, and anxiety. Chronic exposure to stress leads to persistent DNA methylation loss and transcriptional upregulation at FKBP5 which impacts psychiatric disorders, stress response, and cortisol homeostasis. Our initial data is promising as we were able to use single stranded DNA probes treated with SSSI methyltransferase to increase methylation at intended targets not just in the FKBP5 gene but also in CDH1, IL6, and MAOA genes in two mammalian cell lines which facilitated robust expression changes. We are now developing the probe as well as engineering extracellular vesicles (EVs) that have a higher affinity for brain tissue and are safe relative to viral-vector methods to deliver it. The probe will be electroporated into EVs which will then be injected retro-orbitally into stress-hormone treated mice. Genomic DNA and mRNA will be extracted from brain tissue to test for methylation and gene expression changes from one group of mice followed by tests for stress-related behaviors in a second group. Mice injected with unmethylated probes will be used as negative controls. Based on the results observed in the in-vitro stage, we expect to see molecular changes in gene expression and methylation as well as behavioral changes in stress-response in treated mice. We hope to further test the probe in other non-human primates and work towards developing this as a therapeutic tool with several applications.

Katie Moerschel

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Allisa George
#3 Arianna Rodriguez
#4 Kawsar Chowdhury
#5 Vishnu Suppiramaniam

Abstract Name: Prenatal Cannabinoid Exposure Affects Memory through Alterations in Glutamatergic Receptor Expression

As the legalization of cannabis has increased, prenatal exposure to cannabis has also increased significantly and is expected to continue rising. Currently, no therapy is available for cognitive deficits associated with prenatal cannabinoid exposure (PCE). Glutamate, a major excitatory neurotransmitter in the brain, plays a significant role in memory formation in the hippocampus. The two major glutamate receptors in the hippocampus, N-Methyl D-Aspartate Receptors (NMDARs) and alpha-amino-3-hydroxy-5-methyl-4-isoxazole Propionic Acid Receptors (AMPARs) are required for learning and memory formation. This project hypothesizes that memory deficits observed in PCE rodents are due to the upregulation of specific subunits of AMPA and NMDA receptors. To test our hypothesis, pregnant Sprague Dawley rats were orally gavaged with 5 mg/kg of pure D9-tetrahydrocannabinol (THC) from gestational day five to post-natal day nine and examined between PND 40-50. To evaluate the learning capacity and memory deficits, behavioral experiments were performed such as an elevated plus maze (EPM), trace fear conditioning (TFC), and contextual fear conditioning (CFC). Immunoblotting of hippocampal lysates revealed that PCE significantly increased the expression of GluA2, a subunit of AMPARs, and GluN2A, a subunit of NMDA receptors. In summary, our studies demonstrate, at least in part, the molecular mechanisms of hippocampal-dependent memory deficits associated with PCE.

Brandon Moffitt

WI - University of Wisconsin-Parkside

Discipline: Mathematics and Computer Science

Authors:
#1 Brandon Moffitt
#2 Christopher Mata

Abstract Name: Forecasting Fate: Analyzing Capital Punishment Trends in the US (1976-2016)

In this study, we meticulously organized and analyzed a comprehensive dataset encompassing capital punishments in the United States from 1976 to 2016. Data from the Department of Corrections in each state, as well as the NAACP Legal Defense Fund comprise the dataset. One challenge was figuring out how to extract the data for our analysis, since the majorityis categorical data rather than numerical. In addition, we measured statistics for more relevancy. Employing decision trees, we engineered a model to deduce different features of capital punishment. The model underwent severe calibration and validation phases to ascertain its predictive accuracy and reliability. Our findings unveil correlations between the data features, predict new entries, and discover hidden biases within. The predictive model crafted in this study demonstrates an exceptional ability to anticipate an offender's sex, race, and age. The insights on the criminal and the crime will show us what attributes and features lead to the death penalty most often. As a result, our model will present potential flaws in the United States Judicial process and expose needed changes.

Makayla Mofle

SD - University of South Dakota

Discipline: Natural and Physical Sciences

Authors:
#1 Makayla Mofle

Abstract Name: The Characterization of Neurotransmitters Following Acute Ethanol Exposure and Social Behavior Assay in Zebrafish with and Without Embryonic Ethanol Exposure

In the United States, 1 in 100 children will be born with birth defects associated with prenatal alcohol exposure; these birth defects are collectively labeled as fetal alcohol spectrum disorder (FASD). Impaired social behavior is often a devastating symptom of FASD that dramatically reduces the quality of life for patients with FASD. Thus, advancing our understanding of the mechanisms responsible for ethanol-induced social defects is paramount. Zebrafish have already begun playing a role in furthering our knowledge about potential mechanisms responsible for ethanol-induced social defects. Previous work in zebrafish has shown that embryonic ethanol exposure from 24 to 26 hours postfertilization (hpf) disrupts adult social behavior and that this social deficit is associated with, decreases in whole brain levels of dopamine and its metabolite 3,4-dihydroxyphenylacetic acid (DOPAC). While dopamine has been shown to have a role in ethanol-induced social defects other catecholamines such as norepinephrine and serotonin could also be critical given that these monoamines modulate numerous processes that can be involved in social responses such as motor control or stress. Since zebrafish brains can be easily dissected into anterior, middle, and posterior regions we propose to extend the previous results by using high-performance liquid chromatography (HPLC) with electrochemical detection to measure dopamine and other catecholamines in targeted brain regions instead of in the whole brain. We will expose zebrafish eggs to ethanol from 24 to 26 hpf and collect monoamine samples from the anterior and middle brain regions immediately after acute ethanol exposure and assay of social behavior in adult zebrafish. Our results will increase the resolution of the previous work and thus provide further mechanistic insights into one of the most devastating symptoms of FASD.

shahrzad Moghaddam

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Hypoxia, Platelet-Activating Factor, and Rho Kinase Inhibition in Fetal Ovine Pulmonary Vascular Smooth Muscle Cells - Insights into Signaling Pathways and Contractile Protein Expression

In fetal ovine pulmonary vascular smooth muscle cells (PVSMC), the synergy of hypoxia and Platelet-Activating Factor (PAF) induces heightened intracellular calcium flux, leading to increased pulmonary vascular tone in utero. While PAF receptor (PAFR) internalization is recognized as a method to inactivate PAF effects in PVSMC in vitro, hypoxia elevates PAFR expression. Interestingly, Rho kinase (ROCK) inhibitors decrease PAFR expression, suggesting an alternative pathway for downregulating PAFR-mediated responses. This study delves into the effects of PAF, hypoxia, and other modulators of pulmonary vascular reactivity in arterial (PA) and venous (PV) smooth muscle cells, aiming to elucidate the signaling pathways of PAFR-mediated fetal ovine pulmonary vascular reactivity. The hypothesis is that ROCK inhibitors attenuate PAFR expression in hypoxia, leading to increased expression of contractile proteins. In normoxia, PAFR density (Bmax) in PA and PV SMC was 487±37 and 624±17, respectively. This increased by 30-35% in hypoxia, higher in PV than PA in both normoxia and hypoxia. The KD for PAFR binding to PASMC was higher than for PVSMC, and hypoxia decreased the KD of PAFR binding in both cell types. ROCK inhibitors attenuated PAFR binding comparable to cycloheximide, but unlike the PAFR inhibitor CV3988, cycloheximide did not affect pre-synthesized proteins. ROCK inhibitors decreased PAFR expression but increased expression of MLCK2, Calponin, and Desmin in PASMC, especially in hypoxia, with varying effects in PVSMC. These findings highlight the intricate modulation of PAFR-mediated signaling in PVSMC by hypoxia and ROCK inhibitors, showcasing distinct effects on PA and PV cells. The increased expression of contractile proteins in hypoxia suggests their involvement in PAF-induced contractions in PVSMC. This study contributes to a deeper understanding of the complex regulatory mechanisms governing fetal ovine pulmonary vascular reactivity during the perinatal period.

Seena Mohajeran

CA - California State University - Fullerton

Discipline: Engineering and Architecture

Authors:
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#2 Brandon Avila
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Joel Lozada
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Abstract Name: Titan Providence: Self-Navigation Drone Goes Where No GPS Can

The primary objective of this project is to develop an autonomous drone platform that emphasizes lateral modularity, evolving both hardware and software components. Instead of designing a specialized drone tailored for a single function, like package delivery or hazard detection, our aim is to construct a versatile AI-driven hardware platform capable of performing various tasks without significant code or hardware modifications. We intend to leverage open-source hardware and software resources, such as the Pixhawk 4 flight controller, Raspberry Pi, ArduPilot, and Dronekit, to realize this project. Currently, we have two teams dedicated to this project. The first team, known as the Hardware Engineering Team, is responsible for creating, evaluating, and maintaining the drone's hardware components. They are also focused on equipping the drone with a versatile sensor suite to ensure safety, spatial awareness, and overall robustness. The second team, the Computer Science/Engineering team, is tasked with designing, testing, and exploring autonomous functionalities like navigation, obstacle avoidance, and object recognition. Our ultimate vision is for this drone platform, with its adaptable software and robust physical capabilities, to support the seamless integration of different modules based on specific objectives. This plug-and-play approach will enable us to spend more time conducting research in real-world scenarios.

Fadhimah Mohamed

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Fadhimah Mohamed

Abstract Name: Thermal Analysis of Lithium Ion Batteries using Computational Fluid Dynamics

Amidst the global transition towards renewable energy sources, lithium-ion batteries have emerged as the cornerstone of a sustainable future. Their high energy density and efficiency have made them indispensable components in diverse applications, ranging from electric vehicles to portable electronics. However, as renewable energy adoption intensifies, the need for effective Battery Thermal Management (BTM) becomes increasingly crucial.This research delves into a comprehensive thermal analysis of lithium-ion batteries, specifically focusing on effectively managing heat dissipation during battery operation. Utilizing Computational Fluid Dynamics (CFD), simulations were conducted to evaluate heat generation characteristics and volume-averaged temperatures of a lithium iron phosphate (LiFePO4) battery during 1C to 3C charging and discharging cycles. These simulations were then compared with experimental data obtained from a thermal camera.The simulations revealed that 3C discharging generated the highest heat, approximately 62 W, corroborating the hypothesis that shorter charge and discharge times lead to faster charging, increased current, and consequently, elevated heat generation. Notably, a discrepancy arose during 1C charging, where the solution failed to converge due to an oversized mesh that deviated from the actual

battery dimensions. The experimental results focused solely on measuring volume-averaged surface temperatures. Unfortunately, direct temperature comparisons with simulations were hindered by limitations of the cost-effective thermal camera setup.Future endeavors aim to elevate the quality of research by upgrading thermal camera experiments to facilitate equitable comparisons with CFD simulations. Additionally, exploring the application of phase change materials for passive cooling of lithium-ion batteries, refining and converging CFD simulations for higher accuracy, and furthering our knowledge of these critical energy storage components are key priorities. CFD improves BTM system design, reducing the reliance on physical prototypes. Enhanced correlation with experiments enhances safety validation and advances our understanding of lithium-ion battery thermal behavior.

Fatuma Mohamed

MN - Hamline University

Discipline: Business and Entrepreneurship

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Abstract Name: Determinants of Successful Inclusive Brand Expansions or Line Extensions

Brands today are recognizing the need to go beyond vanity tokenism to be truly inclusive and appeal to a rise in consumer consciousness and changing demographics in the USA. Brands incorporate inclusivity in all aspects of the marketing mix; from new product launches to accessible pricing and distribution, to more visibly supporting various environmental and social causes. Our focus was on the product element to determine patterns that emerge from successful inclusive brand expansions or line extensions. We chose six inclusive products by legacy brands to analyze: Lego Botanicals (for adults), Crayola Colors of the World, Ms. Monopoly, Bic for Her Pens, American Girl Doll Joss, and Bandaid Our Tone. As a starting point, we adapted some of the tools and methodology used in inclusive communications research to study inclusive products (which needs more existing literature). We conducted a case analysis on each product and then collected the relevant data (academic journals, press articles, and sentiment analysis through Amazon reviews). We then aggregated the findings from emerged patterns and developed a rubric for successful inclusive product launches. Some of our elements of success include distribution at major retailers, sales data, the product launch spawning more extensions or expansions, and imitative competitive launches. We analyzed common words and phrases by star rating using the VADER dictionary for consumer sentiment analysis, then coded Amazon reviews based on topic categories. Coding text reviews by categories such as questioning brand intent, user experience, and five others helped us better understand the rationale behind the numerical star rating. Our results suggest that the experience of interacting with the product dictates consumer sentiment more so than other topic categories. This research provides a framework for brands to represent marginalized groups authentically.

Habeeba Mohamed

EGY - The American University in Cairo

Discipline: Interdisciplinary Studies

Authors:
#1 Habeeba Mohamed

Abstract Name: Challenges and Opportunities in AI-driven financial inclusion for Arab Individuals from a

Gender perspective.

This study investigates the challenges and opportunities in AI-driven financial inclusion for Arab families, specifically examining gender dynamics. Situated within the broader context of understanding the intricate interplay between financial inclusion, economic growth, and poverty reduction, especially within regions characterized by limited access to traditional financial services, this research significantly augments our comprehension of the transformative potential of AI in addressing these socio-economic issues in the Arab world. Centering its inquiry on gender dynamics, the study keenly acknowledges and endeavors to unravel the impediments that women encounter in their quest to access financial services within the intricate fabric of Arab family structures. Through a meticulous examination of diverse AI applications within the financial sector, the research astutely accentuates the technology's capacity to augment risk detection mechanisms, alleviate information asymmetry, and furnish personalized customer support. An in-depth analysis of the prevailing state of financial inclusion in the Arab world brings to the forefront enduring challenges such as poverty and the limited adoption of electronic payment systems. Furthermore, the study delves into the nuanced gender dimensions of AI-driven financial services, delineating key determinants that influence women's participation, including income levels, age demographics, smartphone ownership, and digital literacy. These invaluable insights coalesce to advance the overarching objective of nurturing economic growth through an enriched landscape of financial inclusion in the Arab world, with a distinctive emphasis on addressing gender-specific challenges. The resultant recommendations proffered in this study are poised to serve as a roadmap for policymakers and stakeholders deeply committed to advancing both gender equality and economic development in the region.

Abdul Basith Mohamed Nasik

WI - University of Wisconsin-Superior

Discipline: Natural and Physical Sciences

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#2 Dr Shanna Nifoussi

Abstract Name: How can Personality Assessments be used to create effective and balanced groups for better learning environments in the classroom

This research explores the utilization of personality assessments, such as the Myers-Briggs Type Indicator (MBTI), to construct effective and balanced groups for enhanced learning environments in online classrooms. In this study I aim to address the importance of strategic group formation for fostering active learning and student engagement. In this research, I administered a survey which was sent to the students of 5 classes (2 online classes and 3 in- person classes). The survey had a link to the MBTI tool which was used to determine their personality types and several other questions such as group role preferences, and learning styles were also asked. Groups were then formed mainly based on MBTI profiles, with participants assigned specific roles according to literature-based guidelines. The groups engaged in various collaborative activities, such as weekly group work, discussion board assignments and a final group project for the online class. Group satisfaction and role fulfillment were then assessed through a class wrapper. The results for the summer term (online) indicate nuanced relationships between MBTI-based group composition and performance metrics. While MBTI-based groups exhibited higher satisfaction in organizer roles, they demonstrated lower performance and productivity scores in leader and communicator roles compared to non-MBTI groups. According to the results from the summer term, it suggests that while personality-based grouping enhances satisfaction in certain roles, challenges may arise in others, emphasizing the need for a balanced approach to group formation. That said, data analysis is currently in process for the fall term. This would give me a valuable insight on how the results vary for the in- person and online classroom setting. Overall, this research helps identify how MBTI personality can be used to split groups in a pedagogical setting.

Fazila Mohamed Prem Navaz

MN - University of Minnesota - Twin Cities

Discipline: Health and Human Services

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Abstract Name: Influence of AMIGO2 on CAFs/MD231 Co-clusters and Extravasation of Cancer Cells

Breast cancer (BC) is the most commonly diagnosed cancer and the primary cause of cancer mortality in women because of the tumor's metastatic features. Cancer-associated fibroblasts (CAFs) promote the BC metastasis phenotypes by secreting cytokines and chemokines, and accommodating the tumor microenvironment (TME) with suitable growth conditions. These growth factors help CAF/BC cells to form co-clusters and bind to endothelial cells for extravasation. Our lab recently discovered through Single Cell RNA sequencing that CAFs induce the expression of Amphoterin-induced gene and open reading frame 2 (AMIGO2) in triple-negative breast cancer (TNBC) cell lines that may aid in extravasation of BC/CAFs co-clusters versus mono-clusters. AMIGO2 is an adhesion transmembrane protein that has been studied to promote the attachment of liver cancer cells to endothelial cells. This study aimed to observe AMIGO2 gene expression in BC cells as they bind to endothelial cells during metastasis. Through immunofluorescence staining and RT-PCR on MDA-MB-231 TNBC cells treated with AMIGO2 siRNA led to the discovery that AMIGO1 protein compensates when AMIGO2 expression decreases. Analysis of RT-PCR of MDA-MB-231 cells treated individually with AMIGO2 siRNA, AMIGO1 siRNA, and a combination of both confirmed that this compensatory effect was statistically significant (p<0.01). The percent of MDA-MB-231 cells treated with siRNA that were bound to endothelial cells during endothelial binding assay was significantly lower (p<0.01) compared to the samples not treated with AMIGO siRNA. Future directions will be to determine if the extravasation of CAF/MDA-MB-231 co-clusters and BC models is dependent on AMIGO proteins.

Meer Mohammed

IA - Wartburg College

Discipline: Natural and Physical Sciences

Authors:
#1 Sean Coleman

Abstract Name: The Effect of Differently Treated Farm Soil on the Diversity of Soil Microbiota

The existence of a healthy microbiome in soil is essential to the health and overall growth of farm plants. However, it is still unclear what effect different soil treatments have on the microbiome of the soil. Further research is needed to determine if different treatment types cause fundamental differences on the overall soil composition and microbiome. This study aims to explore the microbiome difference between four differently treated soil types; namely prairie, grazed pasture, tilled and non-tilled soil. It was hypothesized that there would be a significant difference between the prairie, and grazed soil vs tilled and non-tilled soil. Soil samples were collected, DNA was extracted, and then sent for sequencing. The sequencing data was later analyzed through NCBI's Nephele Cloud-Based Microbiome Analysis Program. Furthermore, an analysis to determine the pH, organic, and inorganic composition was done. Alpha and beta diversity were assessed to gain insight into the different species that inhabited the soil groups. The diversity results were then statistically compared alongside the soil composition to determine whether there is a significant correlation between the microbiome and composition of farm soil. A multitude of samples of each soil category were

collected to minimize the effect of confounding variables on the results from both the sequencing and the soil composition tests. Moreover, differing treatment groups were processed to analyze the individual and group differences of our samples. The results indicated a higher alpha diversity in the prairie soil group compared to the rest, while both the till and no till groups had similar beta diversity. This study showed that treatment styles do affect soil diversity. Further research into this topic could give us more insight into how to utilize soil treatment to improve farm cultivation.

Rahisa Mohammed

VT - Norwich University

Discipline: Natural and Physical Sciences

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Abstract Name: A Colorimetric Assay for the Quantification of Uranium in Drinking Water

Uranium (U) is a naturally occurring radioactive metal found in small amounts in soil, rocks, and water. In the context of water quality, elevated levels of uranium can pose health concerns when present in drinking water. Chronic exposure to uranium may have adverse effects on the kidneys and other organs. Monitoring uranium levels in water sources is essential to ensure compliance with safety standards and to protect public health. This study presents a newly developed colorimetric method for the determination of uranium concentrations in drinking water. By synthesizing and employing a novel ligand that generates a measurable color change proportional to uranium concentration, we quantified uranium levels through spectrophotometric analysis. The experiment involves sample collection, preparation, and analysis, with a focus on optimizing detection limits. Calibration curves are generated using standard uranium solutions to establish a quantitative relationship between absorbance and uranium concentration. The colorimetric approach offers a user-friendly and cost-effective alternative for routine monitoring, providing valuable insights into uranium exposure in drinking water sources. This research introduces a practical tool for uranium monitoring in drinking water and contributes to the broader field of water quality analysis methodologies.

Sundus Mohamoud

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Discipline: Natural and Physical Sciences

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Abstract Name: Examining diversity and representations of the human body in A&P textbooks

Images are essential for anatomy and physiology textbooks because they help students better understand the structure and functions of the human body. By including diverse and representational images in STEM

textbooks, we not only broaden knowledge and create awareness of many viewpoints and experiences but also foster a more inclusive environment within STEM education. In this study, we conducted a content analysis on images from three recent editions of anatomy and physiology (A&P) textbooks, including Martini 12th ed, Patton 11th ed, and Saladin 10th ed. Our objective was to assess the progress in diversity representation compared to earlier editions. We used a blinded multi-coder approach to analyze the frequency of racial identity, sex, body size, and disability in each textbook. Our analysis revealed that all three new editions have increased the number of non-white images, particularly in Black representation. Additionally, we observed an increase in images depicting disability. Representation of male bodies and average-sized bodies was significantly more frequent than in past editions. The findings of this research emphasize the importance of making A&P textbooks more diverse. This data will be used to inform changes to future A&P textbooks to increase representation across all identities.

Katryna Moland

PA - Shippensburg University

Discipline: Health and Human Services

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Abstract Name: The Impact of Setting on Student Peer Evaluations in Social Work Practice with Groups

The purpose of this project is to assess the impact of setting in a social work with groups class. The settings being compared are 1) a class in the pre-Covid19 era versus a class in the post-Covid19 timeframe; and 2) a class held on the main campus class at a university versus a class held as a part of a social work degree completion program.The relevance to our research is the significantly different approach some students had to take during the pandemic. Students that could not role play group simulations had less practice before entering the field. Therefore, there is a whole group of social workers who did not get the same hands-on curriculum that provides important skills for the field. We plan to look at the effect of setting from cohort to main campus on the student-peer evaluation process.In a Group Skills class the students are required to simulate a group where the students act as facilitators. Students are required to evaluate one another on how well each person facilitated their group. While their peers are facilitating, the rest of the students are completing the evaluation forms.For this research project specifically, we are comparing the scores pre-covid students gave to each other versus post-covid students. We are also comparing the scores cohort students gave to one another versus the scores main campus students gave to each other.Students in the cohort complete their general education requirements at a community college. The cohort takes their remaining social work classes as a group over a two and a half year program.We believe the pre-covid students likely evaluated their peers harder than the post-covid students did. We have mixed opinions on how we believe the main campus students and the cohort students evaluated one another.

Melissa Molano

FL - Jacksonville University

Discipline: Visual and Performing Arts

Authors:
#1 Melissa Molano

Abstract Name: The Influence of Art Music on Modern Composer Alan Menken

Alan Menken is a living film composer whose music is recognized by people of all ages throughout the world. In his writing for films and musicals, he takes into account many important factors, especially the accuracy of the music for the time period and location of the story being told. One noticeable example of this is in his music for the animated film Beauty and the Beast, where Classical and Romantic era influence can clearly be heard in the title song. Influence from pieces such as Frederic Chopin's Ballades pour Piano can be heard in the unique modulation technique that brings the music into a new key for the final verse by repurposing the tonic chord as the leading tone chord in another key. Influence from Romantic composer Johannes Brahms can be seen through the use of consistent motives, such as a subtle half-step interval being the base of his Clavierstücke. Menken uses this technique in the bridge that leads into the final verse of the song "Beauty and the Beast." These are examples of how he used music of the past to influence his composing and thus create extremely effective storytelling in his music that will be listened to for years to come.

Amanda Molloy

NY - Siena College

Discipline: Health and Human Services

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Abstract Name: Trauma- Informed Care and Restorative Practices with Discipline- Involved Students

The school systems throughout the United States have relied on zero-tolerance discipline policies and punitive reactions toward maladaptive student behaviors. However, trauma-informed and restorative justice practices are starting to become normalized in place of current zero-tolerance programs. The purpose of this study is to explain why the implementation of trauma-informed care and restorative justice practices will benefit students. The researcher pays special attention to practices considering past traumas, including situational, systemic, and generational, that may impact a student's behaviors. The researcher reviewed the literature examining restorative justice practices, trauma-informed care, and Adverse Childhood Experiences. With the findings from this review, a trauma-informed afterschool support group curriculum will be created for middle school students, to teach them about the manifestations of their maladaptive behaviors and how these can be traced back to their identities, past experiences, and trauma. The implementation of programs such as these is imperative because harsh punishments in schools currently are the root of many deeper issues including the school-to-prison pipeline and can affect students throughout adulthood. Although trauma-informed care is a step in the right direction, it still does not fix the corrupt roots of the education system which is why an abolition framework is needed. The researcher hopes that by educating students and school personnel about trauma-informed and restorative practices, the likelihood of future issues as a result of maladaptive behaviors in early school years will be mitigated.

Chloe Moltzen

OH - University of Findlay

Discipline: Natural and Physical Sciences

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Abstract Name: Monitoring Frog Virus 3 Homology and Virulence Across the United States

Ranaviruses are large double-stranded DNA viruses (family Iridoviridae) that parasitize three taxonomic classes of poikilothermic vertebrates. They are significant wildlife pathogens, posing a substantial threat to amphibian biodiversity. Some previous phylogenetic analyses have focused on highly conserved regions which can lead to non-informative topologies at a regional scale, ultimately leading to an unclear evolutionary history and geographic distribution. Here, we report a phylogenetic analysis of the FV3-like subgroup of Ranavirus obtained from poikilothermic vertebrates throughout North America based on four genes suitable for phylogeographic construction. Phylogenetic analysis was conducted using the Markov Chain Monte Carlo simulation implemented by Bayesian evolutionary method by sampling trees. Individual analysis of the four primary gene sequences results in similar topologies suggesting well-supported relationships amongst and between members of the subgroup. Preliminary data also indicate the existence of at least two major distinct FV3 lineages circulating throughout North America. Analysis of representatives from each proposed lineage suggests the possibility of recombination events and reveals differences in coding sequences that may have implications for virulence, species designation, and phylogeographic history.

Gabriella Montemayor

TX - The University of Texas at Austin

Discipline: Natural and Physical Sciences

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Abstract Name: Metabolomic Profiling of Texas Grapevines via Liquid Chromatography-Mass Spectrometry: An Untargeted Approach

Vitis vinifera, known as the wine grape, plays a crucial role in the global agricultural sector. The United States ranks fourth in wine production worldwide, with 87% of Vitis vinifera grapes being utilized for wine-making. According to WineAmerica, the Texas wine industry made a significant economic contribution of $13.1B to the state of Texas in 2017. Leading wine-producing nations have conducted extensive analyses of metabolites and biomarkers, aiming to reveal unique signatures associated with their respective growing regions. In contrast to other areas, Central Texas faces challenging environmental conditions, including heatwaves and drought, throughout the growing season. Despite these challenges, the wine produced in this area is recognized for its exceptional quality, experiencing a significant surge in production over the past decade. Consequently, it is crucial to investigate and pinpoint potential grapevine biomarkers specific to Central Texas.The composition and quality of wine in Texas are significantly impacted by the state's environmental conditions. There is no current research that explores the connections between physiology and metabolism in Texas grapevines throughout the growing season. This project seeks to address this gap by documenting the metabolome of seventeen grapevine varieties cultivated in five vineyards across Central Texas using liquid-chromatography mass-spectrometry based untargeted analysis. About 400+ samples,

including leaf and grape tissue, were harvested during the growing season in June, July, and August. The samples were homogenized and the metabolites were extracted using two-phase liquid-liquid extraction. An Orbitrap LC-MS/MS System was utilized for analysis and data acquisition. A comprehensive library of putative compounds was obtained based on their molecular weight and retention time given by the mass spectrometer, in addition to their characteristic ion fragmentation. The metabolomic data was analyzed using Compound Discoverer and MetaboAnalyst. These results provide insight about the correlations between grapevine varieties and metabolites, and similarities within vineyards.

David Montenegro

MA - Babson College

Discipline: Business and Entrepreneurship

Authors:
#1 Caroline Daniels

Abstract Name: Staying Relevant: The Response to the Shifting Tastes and Quality of Brooks Brothers

Brooks Brothers is the oldest apparel brand in the United States, and several internal and external factors led to its bankruptcy in 2020. Being in operation for over 200 years, the brand was influential in defining and innovating American style through its luxury offerings of business and traditional wear. However, the bankruptcy signaled its failure to adapt to evolving consumer and retail trends. The brand is now working to make a comeback.The case study analyzes four key areas relating to Brooks Brothers' issues since the 1980s: its history, the changing fashion landscape, customer experiences, and potential missteps in internal strategy. Qualitative data is collected from online fashion forums to understand customer sentiment on the brand's offerings, its perceived decline, and potential solutions. It also incorporates interviews with current Brooks Brothers management for an insider perspective. The case study tries to assess these insights alongside scholarly context on fashion, marketing, and branding.Preliminary findings show the primary issues identified by customers are quality deficiencies in their apparel, fashion irrelevance from both contemporaries and traditionalists, higher prices unmatched to value, and overexpansion. However, hope remains for a turnaround by refocusing on quality, scaling back operations, reconnecting with its Americana heritage roots, and also appealing to Gen Z customers. The conclusions discusses recommendations to Brooks Brothers management on reviving the brand.The case study will help better understand how iconic brands can lose their relevance without careful stewardship and offer some observations and insights on reviving it. It will be informative for fashion brand leaders who are trying to deal with shifting consumer segments, balancing heritage with innovation, and revitalizing declining yet prestigious brands.

jimena Montes

WI - Alverno College

Discipline: Natural and Physical Sciences

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Abstract Name: Identifying Species of Unknown Bacteria With Antimicrobial Properties Using 16s rRNA Sequencing

The world currently faces not only a shortage of effective antibiotics to treat human pathogens, but also a rise in bacterial resistance to existing antibiotics. Most current antibiotics in use have come from antibiotic-producing bacteria in our soil. This research project aimed to identify unknown bacteria with antimicrobial properties from local compost samples, with an ultimate goal of finding novel antibiotics to help combat bacterial infections. Unknown bacteria samples were collected, cultured, and screened for antibiotic activity. Bacterial DNA was then isolated using a IBI MINI gBAC Genomic DNA Kit and amplified using a polymerase chain reaction (PCR) at the 16s rRNA gene. A DNA clean up kit was used to remove any contamination and Qubit was used to ensure concentration of DNA met sequencing guidelines before DNA samples were sequenced. Resulting sample sequences were compared to DNA sequences of known bacteria, using online databases to generate possible matches. Results suggested bacteria were most likely Bacillus

safensis. Our next steps include determining which antibiotic these bacteria are producing and searching for additional bacteria with antimicrobial properties in our compost samples.

Jordan D. Moody

VA - Norfolk State University

Discipline: Education

Authors:
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Gabrielle D. Parker

Abstract Name: Harmonizing Horizons: Cultivating Inclusive Pedagogies for Tomorrow's Minds through the Prism of Diversity in Education

This oral presentation explores the synergistic relationship between diversity in education, culturally responsive teaching (CRT), and the multifaceted outcomes for students. Employing qualitative research and data-driven methodologies, our study elucidates the positive impact of embracing diversity in curriculum and literature. Our findings not only underscore the academic advantages linked to culturally responsive teaching but extend into the realms of professional and personal growth. Through analysis, we showcase compelling data highlighting the enhanced performance of students who have experienced culturally responsive teaching, revealing marked improvements in academic achievement. Moreover, we delve into the broader spectrum of outcomes, shedding light on the professional trajectories of these students, demonstrating increased readiness for diverse workplaces and career success. Beyond the professional domain, our research examines the personal development of students, emphasizing the acquisition of crucial life skills such as empathy, cultural competence, and effective communication. By weaving together these strands, our presentation positions diversity and culturally responsive teaching as pivotal components for fostering a holistic and inclusive educational experience. Our presentation is a nuanced narrative supported by data and research, emphasizing the imperative role of diversity and culturally responsive teaching in shaping a well-rounded, successful, and empowered student body, as they contribute to our society.

Natalie Moon

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Exploring Differences in Health Behaviors Between Black and White Patients with MS in the Deep South

Introduction: Multiple Sclerosis (MS) was always believed to be a disease that primarily impacted White females. Recently, there has been an increase in diagnoses in Black adults with MS. These patients often have

high comorbidities including type 2 diabetes and hypertension. Although the reason for these disparities is not yet understood, we hypothesize that they may be due, in part, to higher levels of behavioral risk factors including poor diet quality and low levels of physical activity. The purposes of the study are: 1. to explore differences in health behaviors between Black and White patients with MS in the Deep South, and 2. to determine if these behavioral differences impact health outcome disparities between Black and White patients.Methods: We will invite 300 patients from the UAB MS clinics to participate. Participants will complete a phone interview that will include questionnaires on dietary intake, physical activity, smoking, and sleep. Questionnaire responses will be matched with the participants' medical records to determine health outcomes. Differences in health outcomes will be explored based on self-reported behavior, race, and biological sex. We will then conduct multivariate regression to determine if health behaviors significantly impact the differences in health outcomes between black and white participants.Discussion: As of December 2023, twenty-seven participants have been recruited to the study. By April 2024, we anticipate having one hundred or greater participant responses. If our hypotheses are supported, this would add to our understanding of the differences seen in disease presentation and progression in black adults. These results could indicate that different racial groups could benefit from tailored lifestyle interventions to increase adherence to health behaviors.

Anjali Moore

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

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Abstract Name: Improving Exoplanet Detection by Predicting Stellar Variability in Low-Mass M Dwarfs

Identifying small, potentially habitable exoplanets orbiting low-mass M dwarfs is a critical step in pursuing the exploration of life beyond our solar system. We employ the Radial Velocity (RV) technique to search for exoplanets. Despite the precision of our spectrographs, the presence of stellar surface variability introduces noise that obscures the expected planet signals. It is imperative for us to address this obstacle in our data analysis.The Transiting Exoplanet Survey Satellite (TESS) provides a valuable asset of high-precision photometry, capturing brightness measurements and providing us with an abundance of photometric data for our target stars. Previous studies illustrated the efficacy of photometry for predicting activity-induced RV noise in Sunlike stars, enabling enhanced data modeling and extraction of small planetary signals. However, it remains uncertain whether this method extends to low-mass M dwarfs, which is the focus of our investigation.Our study harnesses the RV measurements obtained from the Habitable-zone Planet Finder (HPF) instrument alongside TESS photometry data for a curated sample of M dwarfs. By examining the correlation between TESS photometry and RV noise, we validate whether TESS data can reliably predict noise levels in HPF observationsThrough our research, we pave the way for enhanced data analysis methods that utilize TESS satellite's photometry to mitigate stellar variability-induced noise, thus improving the detection of small exoplanets orbiting low-mass M dwarfs. Our findings make significant strides toward a more comprehensive understanding of exoplanets and their potential habitability.

Brenna Moore

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Abstract Name: Examining Differential Effects of Sugar Diets on Hepatic Gene Expression in Female Mice

Obesity is a significant risk factor in the development of nonalcoholic fatty liver disease (NAFLD). The increased liver adiposity is often linked to high sugar consumption. This study examined the correlation between the consumption of various sugars and the development of NAFLD. Female C57Bl/6 mice were given ad libitum access to 30% sucrose (SUC), glucose (GLC), or fructose (FRT) solutions in place of water (CTR) for 27 weeks. At the termination of the study, liver triglyceride levels were significantly elevated in all groups in comparison to (CTR) groups. Oil Red O staining confirmed these results, showing observable lipid droplet accumulation in the livers of all experimental groups. This lipid accumulation was most pronounced in SUC and GLC groups while the FRT mice had a more limited increase. Two-step RT-qPCR on liver tissue indicated changes in the regulation of genes in glycolysis, fructolysis, and fatty acid synthesis pathways. Genes involved in fatty acid synthesis were upregulated in all three sugar groups. GLC mice showed upregulation in both glycolysis and fructolysis. FRT mice showed upregulation in fructolysis. While the SUC mice did not show upregulation in either glycolysis or fructolysis, there was an upregulation in GAPDH, an enzyme that is utilized after glycolysis and fructolysis converge, which may indicate a possible utilization of both pathways for the dimer SUC. The results highlight glucose as the main contributor to upregulation in metabolic pathways, with a synergistic effect in sucrose on mouse physiology and gene expression.

Ellie Moore

SD - Black Hills State University

Discipline: Natural and Physical Sciences

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Abstract Name: The Biotoxin BMAA Promotes Mesenchymal-Like Phenotype and Chemotherapy Resistance In Neuroblastoma Cells

Neruoblastoma is the most frequently occurring extracranial childhood tumor. This cancer is difficult to treat due to its high metastasis rate and 40-50% of children that enter remission after initial diagnosis will suffer relapse within their lifetime. Mesenchymal-like cancer cells are an indicator of malignant tumors as they exhibit several tumorigenic properties including downregulation of differentiation markers, and increased colony-forming potential, motility, and chemoresistance. Evidence suggests that environmental factors may play a role in cancer cell mesenchymal transition and relapse. We have previously demonstrated that the cyanobacterial biotoxin beta-methylamino-L-alanine (BMAA), often found in algae blooms, is capable of influencing neural cell differentiation state through mechanisms involving the Wnt signaling pathway suggesting the possibility that BMAA may play a role in influencing other differentiation processes involving Wnt including mesenchymal transition in neuroblastoma. In this study we present evidence that BMAA promotes mesenchymal transition in a human neuroblastoma cell line and provide support for the hypothesis that the biotoxin can promote this process in these cells resulting in changes in gene expression and cellular function in manners consistent with cellular mesenchymal transition. We also present evidence that effects

induced by BMAA can be mitigated using small molecule inhibitors of Wnt/Myc signaling. Overall, our results support a mechanism by which BMAA promotes mesenchymal transition in neuroblastoma and may drive relapse. Importantly we also provide evidence of the efficacy of Wnt pathway inhibitors in reverting this process, potentially leading to more favorable clinical outcomes in neuroblastoma patients.

Gavin Moore

MO - Missouri State University

Discipline: Mathematics and Computer Science

Authors:
#1 Gavin Moore

Abstract Name: Applying the StarCraft Multi-Agent Challenge to Adversarial Training of Neural Networks

In Multi-Agent Reinforcement Learning (MARL) the use of training environments such as the StarCraft Multi Agent Challenge (SMAC) have shown great promise in training effective proximal policy networks to approach the optimal policy. This training environment offers some limitations, however, in the very restricted training space of predefined scenarios and opposing agent behavior. We propose modifying SMAC to allow multiple teams, called M-SMAC our new environment allows for a more dynamic training space. This new environment expands the previous training space be more dynamic, by replacing predefined opponent behavior with actively learning opposing agents. Such a training environment allows for simultaneous adversarial training of proximal policy networks, as well as a near infinite training space through the use of modular model deployment. Preliminary results and other research suggest that our proposed modified environment M-SMAC does show promise for the use of both adversarial training of proximal policies, as well as use in generating a population of policies to be trained similar to a genetic model.

CJ Moore

MO - Missouri State University

Discipline: Mathematics and Computer Science

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Abstract Name: Abstract

*This submission is for a course*The Arc-CI Sea Ice dataset can train classifiers with up to 5 classes and a variety of detection tasks as well as providing a baseline for model evaluation. Data is created using a proprietary GUI image annotation software written in python and is serialized in standard JSON format using one-hot encoded segment partitions. We find that this dataset is capable of effectively training many different classifiers and provides a proof of concept for deployment with more robust learning architecture.

Grace Moore

UT - Utah State University

Discipline: Natural and Physical Sciences

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Abstract Name: Using Technician Statistics For Productive Animal Care

Animal care technicians for research labs have many responsibilities in order to maintain the integrity of a research project. However, it is difficult to determine what tasks will require most of a technician's time and effort. Thus, it is proposed that tracking what each individual does during a given shift can allow supervisors and technicians to create an efficient schedule of how they will work and provide a standard for individuals to meet every day. This project consists of tracking in detail what an animal care technician does in a given "shift", including observation hours, handling and restraining, working in different biosafety levels, cleaning and prepping caging, and changing the caging. This data collection, over several months of work, finds relationships between tasks, the frequencies of being completed, and the time they take. The key tasks of an animal care technician are observing, providing nourishment, maintaining clean environments for both the researchers and the subjects, and maintaining supplies and accurate records. Additionally, many hours are dedicated solely to observing the animals to ensure their health and safety. Moreover, cleaning and prepping of caging or supplies are completed more than half of the time during a given shift. Finally, working with a given species may require more time to complete a task (such as cage changing or cage preparation) compared to another species despite the task being the same. If each technician were to track their tasks and create a profile of personal statistics, they would be able to easily determine how long a task should take. Moreover, a supervisor would be able to determine if a technician is working more efficiently or even falling behind during daily tasks. Overall, these findings could be used to incorporate better time management and help maintain a safe environment for the subjects.

Narciso Moquete

GA - Georgia State University

Discipline: Social Sciences

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Abstract Name: Neuroanatomical Differences in Developmental versus Acquired Reading Impairment

Reading is an important part of communication that allows us to share ideas with one another daily. Structures like the supramarginal gyrus (SMG) and the middle temporal gyrus (MTG), support phonological decoding and word recognition, respectively. Impairment of the primary left hemisphere reading network, either reduced activation in developmental dyslexia (DD) or structural damage in pure alexia (PA), often causes reading mechanisms to rely more heavily on the right hemisphere (Murphy et al., 2013). Little research has been done to examine the structural characteristics of the right hemisphere in people with DD versus PA. Although not much is known anatomically about PA, research on the anatomical differences in children with DD has shown reduced gray matter volume in brain regions like the left SMG and MTG, correlating with the reading disability (Raschley et al., 2010). The current study aims to examine anatomical differences in the right SMG and MTG between different reader groups. Data are from an ongoing study of adults with DD and PA. Data was extracted using FreeSurfer which allows for anatomical analysis based on brain structure volume and thickness (McCarthy et al., 2015). Participants (mean age =51.2) were divided

into three groups: typical readers (n=14), DD (n=18), and PA (n=7). A one-way ANOVA for each region of interest was conducted using SPSS. It was hypothesized that individuals with DD and PA would show greater gray matter volume in the right SMG and MTG compared to typical readers. There was a statistically significant difference, F (2) =5.115, p<0.01, for the cortical thickness of the right SMG. Tukey's HSD found DD to have a significantly lower SMG cortical thickness compared to controls and PA. Our results suggest that DD and PA may have different neuroanatomical adaptions related to reading disability.

Manuel Morales

TX - The University of Texas at El Paso

Discipline: Health and Human Services

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Abstract Name: Gender Differences in Central Pain Mechanisms and Sociocultural Factors Between Older Adults from the U.S.- Mexican Border Region

Chronic pain is a complex facet of the human experience, that extends beyond its physiological manifestations and remains prevalent among the elderly. Research indicates that men and women perceive and process pain differently, women often showing greater sensitivity to pain. Evidence has also considered the influence of sociocultural factors on pain perception. However, research is lacking examining differences in central pain mechanisms and sociocultural factors between genders in older adults from the border region.Preliminary analysis included 24 participants (58.3% females), 15 Hispanic, 9 Non-Hispanic Whites (Mean age = 68.12 years, SD=6.469). Validated questionnaires provided at the beginning of the sessions assessed demographic, and sociocultural factors among participants. Participants underwent quantitative sensory testing that included thermal pain threshold and tolerance, Temporal Summation (TS), and Conditioned Pain Modulation (CPM). T-tests were performed to assess differences in pain sensitivity, central pain mechanisms, and sociocultural factors between genders. Independent t-tests revealed there was not a significant difference in the level of inhibitory process [t(21)=0.09; p=0.92] between males and females. However, there was a significant difference in pain tolerance [t(14.64)=-2.47, p=.026] where males (Mean pain rating=82.69, SD=9.95) had a significantly lower pain tolerance than females (Mean pain rating =52.82, SD=37.03). Additionally, there was a significant difference in pain catastrophizing [t(15.76)=2.862, p=0.011] where females (Mean=13.46, SD=12.11) had significantly higher levels of pain catastrophizing than males (Mean=4.7, SD=3.59). Preliminary results have demonstrated that gender does not play a significant role in central pain mechanisms; however, males have a lower pain tolerance than females. Additionally, females have higher levels of pain catastrophizing.While a larger sample size is needed to draw stronger conclusions, considering gender could better assist clinicians in a patient-centered approach to pain management in the border region.

Cambly Morales

MD - Bowie State University

Discipline: Natural and Physical Sciences

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Abstract Name: Comparative Analysis of the Power Outputs of Microbial Fuel Cells under Various Cathode Treatments

In 2022, Fossil fuels produced 60% of the electricity used in the USA. A total of 422 billion metric tons of carbon dioxide has been emitted by the US since 1800 because of fossil fuel burning, hastening global warming, and climate change. With increasing demand for energy and the alarming environmental concerns of burning fossil fuels, a clean alternative energy source is critical. Microbial fuel cells (MFCs) are a clean renewable source of energy that harnesses electrons released by certain species of soil bacteria (e.g. Shewanelle and Geobacter) that are electrogenic in nature. In this project, the mud was collected from the Lake across the Loop Road West and poured into each of the fuel cells. The anode was put at the bottom of the fuel cell under anaerobic condition while the cathode was put on the surface under aerobic condition. While same anode treatment i.e. glucose plus potassium acetate was given to all microbial fuel cells, three different cathode treatments i.e. Ammonium persulfate (APS), Potassium periodate (KIO4) and Potassium permanganate KMnO4 were given in triplicates. Bioelectricity generation was monitored posttreatment of anode treatment, cathode treatment, and controls with no treatment were set up. The experiment was conducted for a total of 30 days yielding a total power output of 343W/m^3. A cumulative power output of 1102W/m^3 was produced in two semesters. Further tests need to be conducted to optimize the cathode and anode treatments.

Melany Morales-Ghinaglia

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Abstract Name: Investigating the Effects of GABA Agonist Drug Exposure on Sensitive Period Timing and Language Development in Infants

In the first year of life, infants undergo perceptual tuning during experience-expectant mechanisms known as sensitive periods. The onset of sensitive periods involves a coordinated symphony of biological mechanisms that operate jointly to establish a balanced excitatory-inhibitory (E-I) neural circuitry, with maturation of gamma-amino butyric acid (GABA) circuits assuming a pivotal role. Recent literature using animal models suggests that GABA agonist drugs accelerate sensitive period timing. While it is well-known that the developmental milestones achieved during these periods have cascading effects on subsequent behavioral and cognitive abilities, there is a paucity of research regarding the possible modulatory effects of precocious GABA agonist inhibition on sensitive period timing and language development in humans. The present study compares infants who underwent general anesthesia (GA) prior to 2 months with a control group unexposed to GA, examining the effects of precocious maturation on auditory sensitive period timing and language outcomes. To do so, we propose a novel method for assessing early brain maturation, utilizing resting-state and task-evoked electroencephalographic (EEG) data collected at 2-, 4-, and 10-months to derive a spontaneous/evoked (S-E) ratio that is representative of the E-I circuitry. Preliminary results indicate that the S-E ratio at 4 months is predictive of language skills at 10 months, with no across-group differences. This 4-month ratio occurs during the window of transition during the sensitive period for perceptual narrowing. Thus, while GA exposure has no significant effect on auditory sensitive period timing, the S-E ratio offers a promising avenue for mapping the trajectory of sensitive periods in developing populations.

Alia Moran

IL - Northern Illinois University

Discipline: Humanities

Authors:
#1 Kanjana Thepboriruk

Abstract Name: Thais in Illinois Oral History

My research project is with Dr. Thepboriruk exploring and documenting Thai people in Chicagoland's history in a project entitled Thais in Illinois Oral History. My role is to document the early history of various Thai institutions in Chicagoland through pictures and documents by doing the following steps; identifying Thai institutions/organizations, contacting members/founders of said institutions/organizations, collecting, documenting, and digitizing cultural ephemera on the founding of the institutions/organizations, and curating a small exhibit on their founding/history using ephemera. My current goal is to collect, digitize, categorize, and understand artifacts to understand why there is such a disconnection of historical culture in younger Thai generations compared to the older generation that immigrated to America.

Arlette Morcelo

FL - University of Central Florida

Discipline: Natural and Physical Sciences

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Abstract Name: Advancing the Precise Mapping of Dendritic mRNA Localization Patterns through Neuron Linearization

mRNA localization is a process by which messenger RNA (mRNA) molecules are selectively transported and localized within a cell to allow specific protein synthesis and function. In neurons, its polarized structure utilizes RNA localization to modify synaptic features, therefore affecting synaptic plasticity, the cellular basis of learning and memory. However, wrongful localization can cause cognitive impairments. Prior studies aimed to investigate dendritic mRNA localization patterns in mouse neurons using standard neuron growth culture. Nevertheless, the visualization of mRNA localization using this method lacked the precision required for a detailed examination of dendritically-based RNA. To address this limitation and gain more insights, we sought to investigate the impact of patterned growth neurons on mRNA localization patterns. By employing hybridization chain reaction fluorescence in situ hybridization (HCR FISH), we were able to detect and visualize Shank1, a dendrite-based gene involved in the organization and function of synaptic stability, within photolithographically linearized mouse neurons. We observed that by cultivating neurons in a linear orientation, we successfully attained high-resolution capture of Shank1 localization within the dendrites of linear neurons. This study demonstrates that culturing neurons in linearized patterned coverslips allows unprecedented capture resolution for subcellular sequencing experiments and effectively details spatial measurements utilizing single molecule RNA FISH (smFISH) technologies. Based on this information, automated quantification software will be used to compare mRNA abundance between linearized and control neurons to further investigate any differences introduced by patterned culture conditions.

Julianna Moreland

NC - William Peace University

Discipline: Humanities

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#1 Julianna Moreland

Abstract Name: Navigating Selfhood Through Chess: A Lacanian Analysis of The Queen’s Gambit

In the game of chess calculated moves and strategic precision define success. In The Queen's Gambit by Walter Tevis, the game helps unravel the impact of childhood trauma on talented, yet emotionally wounded, protagonist Beth Harmon. Published in 1983 and set in the 1960s, The Queen's Gambit follows the life of Beth, an orphaned child prodigy who, after discovering her chess skills in the basement of her orphanage, Methuen, goes on to conquer the male-dominated world of competitive chess.Before both of her parents passed away, Beth endured a neglectful upbringing, which continues as she navigates the challenges of abuse and adolescence within the confines of Methuen. Even after Beth is adopted, and later rises through the competitive world of chess, she struggles to cope with the lingering traumas of her past, often resorting to substance abuse as a crutch. Chess becomes Beth's source of control, providing a pathway for healing from the wounds of her childhood. In Lacanian theory, most individuals are anchored by linguistic systems in their attempt to control the chaos of the unconscious. In her childhood, however, Beth does not successfully navigate Lacan’s developmental trajectory—the Real, the Imaginary, and the Symbolic. This necessitates her unconventional use of chess as an anchor, revealing alternate pathways to stability and selfhood as she heals from childhood trauma.

nicoll moreno

COL - EAFIT University

Discipline: Interdisciplinary Studies

Authors:

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Abstract Name: Holography: A Tool for Preserving Heritage in Colombia

Colombia, a distinguished member of the world's 17 megadiverse nations, stands as a repository of unparalleled biodiversity and cultural wealth. Despite this, inadequate outreach strategies have hindered the preservation of its historical and biological treasures. Ongoing archaeological discoveries continually augment our understanding of pre-Columbian art pieces, revealing the rich history left by indigenous cultures like the Muisca, Tayrona, and Sinú. Sites such as San Agustín, Tierradentro, and Ciudad Perdida offer glimpses into sculptures, pottery, and other artifacts. Additionally, researchers actively study Colombia's fauna to understand their ecological roles and behaviors, contributing to various fields. Unfortunetly, much of this knowledge is concentrated in Bogotá's museums, neglecting cultural information in other regions. This raises a critical question: How can tools be developed to facilitate cultural outreach while enhancing preservation?Holography, an interferometric technique enabling realistic three-dimensional imaging without affecting originals, emerges as a promising solution. The holography research group at Universidad EAFIT focuses on optical holographic techniques to capture the essence of Colombia’s cultural objects, such as pre-Columbian gold pieces, botanical fossils and arthropods. These holographic records aim to improve public engagement and cultural appropriation.The research methodology centers on holographic techniques, particularly reflection and transmission photosensitive recordings. Years of development within this domain are comprehensively analyzed, with student-led investigations contributing new findings. This approach considers inherent challenges posed by different subjects, ensuring a nuanced understanding of the holographic process.A notable accomplishment is the creation of holograms of sculptures, culminating in a dedicated art exposition. This project serves as an exemplary integration of holographic techniques into cultural preservation efforts, showcasing the impact on both scientific research and public engagement. It emphasizes the significance of combining technological prowess with cultural and biological preservation, fostering societal appreciation for Colombia's rich heritage.

Mia Moreno

TX - The University of Texas at Arlington

Discipline: Health and Human Services

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Abstract Name: Does Providing Short Context Information Meet Communication Needs Among Neuro ICU Nurses?

Nurses want to remain up to date, although this has become increasingly difficult for many reasons. In 2022, over > 6,000 medical journals were publishing new content that is relevant yet may be long or repetitive. This can include information on new medications, new indications, new assessment tools, and new procedures that are discovered every week. Governing bodies may generate new laws, rules, and education requirements. Hospitals are also constantly changing policies and procedures and requiring nurses to complete online education modules. The problem is that nurses have limited time to spend resolving this information overload. This study seeks to explore the acceptability and efficacy of implementing a new

information dissemination method. The study team developed a communication tool “The NKD ICU” which is shared as an email (not an email attachment) sent out every week. The NKD ICU uses limited text. It relies on hyperlinks to allow nurses to see all the information immediately and then select a hyperlink for content that they want to examine more deeply. The outcome will align with implementation research outcomes and use the Intervention Appropriateness Measure (IAM) and Feasibility of Intervention Measure (FIM). The NKD ICU was first distributed in August 2023 and is being continually refined through the reader's feedback. The number of nurses responding is increasing and helping to keep nurses actively engaged in wanting to learn and be involved in research. Currently at NKD ICU #12, with about 83 recipients, and 58% opening the email on average. The NKD ICU has the potential to supplement nursing huddles and promote active change within the neuro unit through increased awareness. Based on AIM and FIM scores collected after the data collection phase, the project will roll out to additional areas of the hospital or undergo further refinement for future use.

Sara Moreno

TX - St. Edward's University

Discipline: Social Sciences

Authors:
#1 Sara Moreno

Abstract Name: Impostorism and Family Achievement Guilt in College Students

Previous research shows how psychological barriers such as impostorism increase the likelihood of First-Generation College students (FGCs) leaving college before finishing their degree (Jury et al., 2017). Since studies have also seen a proneness of this phenomenon in students who feel a sense of guilt towards their role as a student (Stone-Sabali et al., 2023), the goal of this study was to examine relationships between impostorism and family achievement guilt and how these relate to a student’s sense of belonging and well-being. It was hypothesized that feelings of impostorism and family achievement guilt would be stronger in FGCs than in Continuing-Generation College Students (CGCs). The study sample consisted of 47 college students, with 20 (42.6%) FGCs and 27 (57.4%) CGCs. Participants completed online questionnaires to assess Family Achievement Guilt, Impostorism, Sense of Belonging, and Well-Being. Independent t-tests show FGCs experience more guilt (t (47) = 2.060, p=0.045), especially about having more privileges than other family members, than CGCs (t (47) = 3.965, p=<.001). Correlations showed that impostorism was positively related to guilt and negatively related to belonging and well-being. Also, guilt, particularly due to leaving family and experiencing pressures, negatively relates to well-being. These findings provide further evidence to institutions that FGCs experience various psychological struggles in higher education and that protective factors must be implemented to increase college retention and graduation rates in this population.

Daniela Moreno Granados

COL - EAFIT University

Discipline: Business and Entrepreneurship

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Abstract Name: A connection beyond mountains: Tourism as a bond between the Antioquia and Yamanashi regions.

Despite being approximately 14,000 kilometers apart, the Japanese prefecture of Yamanashi and the Colombian department of Antioquia can behold astonishing similarities. Two communities separated by a great geographical and cultural distance, with barriers such as language, customs, prejudice and misinformation, prevent the two regions, with great potential for collaboration, to interact with each other. So then, what makes these far-flung communities suitable for a beneficial, bilateral link? From the geography of both being regions surrounded by mountains, to its economic activities, there is a list of similarities between the two, that showed the immense possibilities of understanding and possible innovative cooperations. Through this comparative study, it was possible to break down the intangible barriers in order to generate a connection between these two communities through the systematic collection and analysis of qualitative data focused on tourism elements of each region. This way not only new opportunities for cooperation, promotion, and creation. of strategic alliances not previously imagined are created, but also the exchange of knowledge between both cultures allows to expands the horizons and break with biases so ingrained in Western culture towards Asian communities, and viceversa, that sometimes limit the development and effective cooperation between the two. The result of this extensive research is a multilingual website, available in spanish, english and japanese, where both regions can benefit from getting to know each other, working together,and form strategic alliances that increase the flow of tourism and knowledge exchange between the two. The webpage created serves also as a as a platform for companies and organizations to show their activities there and gain contacts. Ignorance is the greatest poison, and this study has shown that biases based on ignorance limit exponencially the horizon of unimaginable possibilities of growth, cooperation, innovation and development between two communities.

Allie Morgan

NC - Appalachian State University

Discipline: Humanities

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#1 Allie Morgan

Abstract Name: By Invitation Only: Anti-Americanism in Stoker's "Dracula"

In this paper, I focus and build upon the work of scholars Stephen Arata, Carol Senf, and James Simmons to explore xenophobia within Bram Stoker’s Dracula. More specifically, this paper explores Stoker’s othering treatment of his characters of various nationalities who speak non-standard English dialects. Characters focused upon include Van Helsing, Dracula, and Quincy Morris, with a primary focus on Quincy Morris. This paper analyzes Stoker’s treatment of Quincy Morris, an American Southerner, in comparison to the novel’s other non-English characters. Looking particularly at Stoker’s introduction of Quincy to the novel; Quincy’s use of a broadly stereotypical southern dialect; Quincy’s behavior; and Stoker’s choice to kill Quincy at the end of the novel, I establish Stoker’s xenophobia towards Americans by building upon arguments presented by Arata, Senf, and Simmons about Stoker’s treatment of his American characters across his works. Furthermore, through analysis of Stoker’s treatment of Quincy in comparison to his treatment of other non-English characters in Dracula, I surface the discovery that within Dracula, it is not non-English characters who receive Stoker’s harshest treatment, but rather international characters who enter England without invitation. Building particularly upon Arata’s work, I posit that Stoker’s choice to kill-off Quincy at the end of the novel is not mere coincidence, but a manifestation of Stoker’s anxieties about potential reverse-colonization of England by Americans. I conclude that “the real fight of Dracula is not over vampire invasion, but rather imaginary reverse colonization.”

William Morgan

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

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Abstract Name: Analyzing the interaction between proteins Bma-AGE-1 and Bma-AAP-1 in the parasitic nematode Brugia malayi

Brugia malayi is a parasitic nematode that causes lymphatic filariasis in humans. It is hypothesized that the iL3 infective stage in B. malayi is similar to the dauer stage in the well studied model organism Caenorhabditis elegans. The insulin/IGF-1 signaling (IIS) pathway is important in regulating the dauer stage. We are studying the proteins AGE-1 and AAP-1, which are essential in the IIS pathway. We hypothesize that Bma-AGE-1 and Bma-AAP-1 work similarly in B. malayi during the iL3 stage. We have confirmed the predicted gene structure of Bma-aap-1 and Bma-age-1 using Reverse Transcription Polymerase Chain Reaction (RT-PCR). We are currently constructing an expression plasmid for Bma-age-1 and will follow with Bma-aap-1. We plan to express the proteins in cultured cells and use pulldown assays to determine whether they are able to interact with each other. In the future, if we can successfully show this works in cell culture, we can then use that system to test other aspects of their function (like kinase activity). Understanding the function of the IIS pathway in B. malayi may lead to ideas for drug or vaccine targets.

Elizabeth Morris

IL - North Central College

Discipline: Humanities

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#1 Elizabeth Morris

Abstract Name: The Unethical Representation of Native Americans in Twilight

The Twilight series by Stephenie Meyer was a massive pop culture phenomenon in the early 2000s. The question of who Bella should end up with became a passionate, even comical, debate between fans who were ‘team Edward’ and ‘team Jacob’, although Jacob never had a chance with Bella when in competition with his counterpart. Jacob and, more broadly, the representation of Native American culture in the series has been heavily scrutinized for misrepresenting the Quileute tribe. Reflecting on the process of writing the first book of the Twilight series, Meyer reveals that the inclusion of Natives into the narrative came as an almost accidental result of the setting. The desired setting of Forks, Washington, just so happened to be situated by the La Push reservation, where the Quileute live, and so Native characters and themes were included into the narrative. The Native American men in Twilight have been turned into hyper-sexualized, animalistic, beasts, whereas the vampires have been represented as wealthy, sophisticated, and very white. Meyer also revealed that she had included aspects of her Mormon beliefs into the narrative, a religion with a historically discriminative relationship with Natives. When examining the representation that Meyer had cultivated, my paper will show how the novels are riddled with stereotypes and common discriminatory tropes of Native American culture and how those stereotypes mirror problematic Mormon views of Native Americans, or as they are called in the Book of Mormon, Lamanites. Furthermore, this paper will then look at how the

Twilight series' controversial representation has impacted the Quileute tribe and examine the ethical complications of Meyer, a white Mormon, writing about Native Americans and their culture in a discriminatory way.

Virginia Morrison

NC - Elon University

Discipline: Humanities

Authors:
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Abstract Name: (Eco)llage: From Modernist Medium to Contemporary Ecocritical Methodology

In modern and contemporary art history, collage has been discussed in terms of how its formal and visual qualities make the medium political. This is apparent from analyses of the satirical feminist collages of Dadaist Hannah Höch to the contemporary ecofeminist and postcolonial collages of Wangechi Mutu. What these artists and others demonstrate is that the material and discursive nature of collage can overlap, layer, expose and obscure dominant ideologies. This active power of collage transforms it from merely a medium into a methodology. A shift is happening where some scholars are turning away from the visual analysis of collage as a fine art towards understanding how collage operates as a political methodology. Feminist researchers like Blanca Ortiga and Saara Sarma reinterpret collage as a generative method of reimagination that sidesteps traditional ways of accessing and sharing knowledge. Similarly, Katie Hamill and David Lubin advocate for using the juxtaposing, narrative, and playful elements of collage making as a model for redefining academic standards and practices. Building on these arguments, my research explores a relationship between the act of collaging as resistance and the emergence of ecocritical art history. A community-based ecocritical collage methodology uses the conscious act of cutting, layering, pasting, and attention to materiality to resist normative ways of representing human and nature relationships. Collage as a community-based method can be used as a political ecocritical practice, and simultaneously offers the opportunity to expand art historical analyses of how ecocriticism functions in visual art.

Catarina Morrissette

MA - Bridgewater State University

Discipline: Education

Authors:
#1 Catarina Morrissette

Abstract Name: Left out: Chronic Absenteeism in Elementary Schools

In Massachusetts in 2022, approximately 33,000 students were chronically absent (missing ten percent of the 180-day school year) students (Buyinza, 2022). The purpose of this research project was to learn what strategies and programs work to support elementary students who are chronically absent, and why students are missing school. Chronic absenteeism impacts all academics but particularly reading levels; social skills and future career opportunities are also negatively impacted (DESE, 2022). Having resources to support educators and their students during these trying times is important for the success of a child's educational future. As part of this project, teachers, administrators, school counselors, and attendance officers were

interviewed to understand how they ensure chronically absent children receive academic and social-emotional support. It was discovered during this research that communication is a key task, between families and teachers and between teachers and administrators. Attendance should be a number one priority to schools because without children in the classrooms, who are educators going to prepare for the future?

Karen Morse

CA - National University

Discipline: Natural and Physical Sciences

Authors:
#1 Karen Morse
#2 Shayna Chance
#3 Allison Leask
#4 Juliann Downing
Shayna Chance

Abstract Name: Microbes, It's Their Word We Just Live in It

Currently, we are experiencing a rapid emergence of antibiotic-resistant bacteria, a crisis attributed to the abuse of antimicrobial medications, and a lack of new drug development. Since their introduction, antimicrobials have been inappropriately dispensed and over-prescribed. We are now seeing the consequences of these actions, resulting in bacteria that have mutated to be resistant to most available antibiotics. Pharmaceutical companies are not working to research and develop new antibiotics due to reduced economic incentives and challenging regulatory requirements. Tiny Earth is an organization focused on tackling antimicrobial resistance while also diversifying the scientific community by enlisting the help of undergraduate students who can take research courses that focus on soil health and antibiotic discovery. Thanks to this organization, we could focus on developing our skills in our microbiology lab while also searching for new antimicrobial drugs. We collected soil samples and plated them to determine the potential antibiotic-producing isolates. The initial approach involved employing colony morphology to assess the various colonies' characteristics, including their edge, elevation, shape, and surface on the plate. Each colony was plated as a patch on a lawn of E.coli, B.subtilis, and S. epidermidis to detect potential inhibition zones and study its antimicrobial efficacy. Four colonies showed promising results. Subsequently, DNA extraction from these colonies was conducted, and the 16srRNA gene was amplified by PCR and sent to sequencing. The results from our sequencing showed that the bacteria belonged to genera from Serratia, Glutamicibacter, Bacillus, and Pseudomonas. TheBacillus sample identified as Bacillus toyonensis originated from Easting Park in San Diego. It may be unique given its large zone of inhibition against E.coli and warrants future testing to characterize its antimicrobial properties.

Jennifer Mortensen

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Tatiana Leroy

Abstract Name: Navigating the tenure track: The relationship between stress, anxiety, and retention in university professors

The tenure process in higher education is a complex and multifaceted process. While offering job security, prestige, and academic freedom in research and teaching (Batterbury, 2008), it can also be a source of stress and anxiety due to its competitive nature and demanding evaluation process (Jacobs & Winslow, 2004). Competition can be intense due to a high number of qualified candidates for a limited number of tenure-track positions. Once such a position is secured, tenure-track candidates experience sustained scrutiny of their performance during their probationary period. This stress can impact work-life balance and overall job satisfaction (Hellsten et al., 2011), potentially leading to the loss of high-quality faculty. Our proposed longitudinal study aims to address this issue by identifying factors that increase anxiety and stress during the probationary period of tenure-track faculty. We aim to provide a comprehensive analysis of these trends, with a particular emphasis on gender-based differences. By understanding and addressing the sources of stress during the tenure process, we hope to offer solutions for fostering supportive environments that encourage the retention of a diverse body of high-quality faculty through the award of tenure. This study, as the first of its kind, endeavors to bridge a significant gap in existing research by focusing on the identifying challenges faculty face on their journey toward tenure and generating effective solutions to help retain them.

Jennifer Mortensen

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Jennifer Mortensen
#2 Melissa Lee
#3 Jessica C. Hill
Melissa Lee

Abstract Name: Adapting to Change: An Examination of Centers for Teaching Excellence Programming in Response to Evolving Educational Needs in Utah

The prevailing assumption in academia has been that outstanding researchers would naturally be outstanding teachers. However, this notion began to face scrutiny in the late 1950s and early 1960s (Cruz et al., 2023). The societal upheavals of the 1960s had a profound impact on American colleges and universities, leading to students demanding and obtaining a more significant role in campus life. One notable change was the introduction of student evaluations of teaching, which were virtually non-existent before the 1960s but became standard practice by the late 1970s. In response to these shifts and faculty requests for support to enhance teaching, Centers for Teaching Excellence (CTEs) were born, with the inaugural centers established at the University of Michigan and Michigan State University (Bakutes, 1998; Miller, 2002). This marked the beginning of a nationwide initiative to strengthen teaching in higher education, culminating in the formation of over 1,000 such centers by the mid-1970s and general coverage across the United States by 2020 (Wright, 2023).Today, CTEs play an instrumental, mission-driven role in enhancing learning and teaching. The primary mission of most CTEs is to improve student learning, support faculty, encourage innovation, and support scholarly and creative work (Wright, 2023). While there is a wealth of literature on CTE organization, function, and impact, there is a noticeable gap in knowledge regarding the most frequently utilized programming and services offered by CTEs. Post-pandemic, the educational landscape has undergone significant changes, necessitating a shift in the learning and teaching needs of students and faculty. This research seeks to address this evolving dynamic within Utah by examining the prevalent programming and services provided by CTEs across the state. The findings from this research will provide valuable insights into these changing needs and will inform future programming and strategic directions for CTEs in Utah.

Kalissa Moseley

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Kalissa Moseley
#2 Tony Gonzalez

Abstract Name: Investigating the Roles of the SAC1 Gene in the TTG2-Dependent Epidermal Traits in Arabidopsis

Basic research, like studying the epidermal traits in Arabidopsis, increases our biological knowledge and paves the way for applied research approaches. Some of the epidermal traits that our laboratory studies in Arabidopsis are trichome development, development of outer seed coat epidermal cells, and the inner seed coat Proanthocyanidin-Accumulating cells. In applied research settings, these epidermal traits can have a major impact on the development of crops as well as the ability of a crop species to protect against predators. In previously conducted research, our laboratory researched the role of AtPLC1 in the PI Lipid Signaling pathway using a process of creating a promoter-reporter gene construct and a gene overexpression construct, and subsequently plant lines containing these constructs. A similar process was used to work with the SAC1 gene that was being studied for its role in the epidermal traits of Arabidopsis. To gain a full picture of the role of the SAC1 gene, a promoter- reporter gene construct with plant lines needs to be created along with a hyperactive promoter and gene construct with plant lines. These constructs are important to potentially provide a clear picture of where the gene is active in the plant and how important the individual gene's role is in the development of the various epidermal traits in A. thaliana.

Ryan Moser

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Ryan Moser
#2 Jordan Belisle
#3 Dana Paliliunas

Abstract Name: Relational Density and Willingness to Engage with International Students in a United States Sample

Universities in America are some of the most diverse areas in the country, offering ample opportunities for intercultural interaction. Positive cross-cultural interaction provides students with invaluable skill development and being culturally literate that will benefit them in school and their future career, but also benefit the building of a more inclusive society (Fozdar 2016). Relational Density Theory (RDT; Belisle & Dixon, 2020) may allow for modeling of relational perspectives of US college students towards international students from countries that frequently send students to study in the US. In the present study, participants completed a multidimensional scaling procedure relating individuals from those countries with positive and negative approachability characteristics. Participants then completed a willingness scale, rating their willingness to engage in interaction with individuals from each of the countries. Results showed strong preference to engage with other domestic students than international students. Amongst the countries that frequently send international students to the US, countries geographically close to the US rated higher on willingness and closest to positive approachability characteristics. Furthermore, countries that send the most international students to the US are amongst the lowest rated in terms of willingness and approachability. Results suggest higher density towards countries geographically located in North America, and higher density among countries located outside of North America. These findings show a good baseline for future research on relational networks involving intercultural interaction. Results also provide insight to how individuals

relate different countries to positive and negative approachability characteristics, showing up potential risk groups amongst international students for non-interaction.

Ryan Moser

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Ryan Moser
#2 Jordan Belisle

Abstract Name: Relational Volume and Resistance to Change within Complex Networks

Relational Density Theory (Belisle & Dixon, 2020) provides a quantitative extension of Relational Frame Theory that attempts to model or describe higher-order interactions within relational behavior. RDT has been used in multiple studies to the examine complex relational networks involved with gender stereotyping (Sickman et al, 2023), consumer behavior and climate (Hutchenson et al, 2023), and racial prejudice (Belile et al, 2023). RDT describes these higher-order interactions by using terms such as density (strength of relationship) and volume (size of relational class, or nodal distance). The current study extended upon results reported by Belisle and Dixon (2020) and Cotter and Stewart (2023) by training 3- and 6-member coordinated classes differing in nodal distance. The relative strength of relations in the network was measured using a metric multidimensional scaling procedure that included time-based responding. Results showed that class size and nodal distance differentially influenced the response strength of multiple network relations and allowed for the prediction of resistance to change following counterconditioning. These results have implications for understanding the concept of volume within an RDT extension of Relational Frame Theory.

Iemoni Moses

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Iemoni Moses

Abstract Name: "For My People:" A Mirror of The Great Migration

The Great Migration changed the landscape of both the American North and South, and the lives of millions. It brought culture and presence through poetry, dance, and song. The life of Black people is told through our experiences and the experiences of the people closest to us. By exploring the migration of Black people, I am learning about myself and my family. My project focuses on the migration of Margaret Walker from Alabama to Chicago, my grandmother’s migration from Mississippi to Wisconsin, and my migration from Wisconsin to New York. Our experiences weave stories that interrogate themes of community, racism, class, and revolution. My goal is to explore the violence of white supremacy in even our mundanities. I am sharing a deeper dive into the impact of the Chicago Black Renaissance. Understudied in the literature on the Great Migration, the Chicago Black Renaissance produced figures such as Margaret Walker, Gwendolyn Brooks, and Richard Wright. It was an explosion of art, literature, community organizing, and social activity within the African American community from the 1930s through the 1950s.This period is exceptionally fascinating because of global turmoil created by the Great Depression, World War II, and Jim Crow. Amid these

developments, Margaret Walker wrote the 1942 poem, “For My People.” Though over seventy years old, the poem’s commentary remains fresh and pertinent. It grabbed my attention because it symbolized a longing for freedom and prospects of a new and better world—a world Black people imagined. My project explores how “For My People” anthologized the figurative and literal movement of African American people, mirroring the movement of The Great Migration.

Kiara Mosley

AL - University of Alabama at Birmingham

Discipline: Social Sciences

Authors:
#1 Kiara Mosley
#2 Janae Mitchell
#3 Devonte Ward
#4 Taylor Colvin

Abstract Name: Emotional Suppression Correlation Between Ethnicities

Objectives: Racial discrimination is a shared experience for many minority groups. Previous research has supported the idea that many Black adults and students have felt that they were treated unfairly based on race. The present study aimed to investigate the relationship between emotional suppression and perception of discrimination among Black and non-Hispanic White participants. The objectives of this study were to measure the perception and expression of emotional suppression between racial and ethnic groups.Methods: This study included 80 participants in total. Participants self-identified their race as Black (n=35), non-Hispanic White (n=40), and other race or ethnicity (n=5). Participants of this study completed one questionnaire comprised of five sections. Questions included a mixture of created scenarios, thoughts on attitudes and perception of emotion and perception, and the Emotional Regulation Questionnaire (EQR).Results: Cronbach's Alpha was used to determine the reliability of questions (α= .820), and independent t-tests were used to calculate results of emotional suppression. Higher numerical values indicated higher levels of suppression. Black participants reported that they were more likely to suppress emotions ($\mu = 4.17, SD = .98$) than non-Hispanic White participants ($\mu = 3.11, SD = .81$), $t(73) = 5.16, p < .001$, 95% CI [.656, 1.48]. A t-test was used for discrimination perception. Higher numerical values increase as perception of discrimination increases. Black participants had higher levels of discrimination perception ($\mu = 3.41, SD = .53$) than non-Hispanic White participants ($\mu = 2.92, SD = .73$), $t(73) = 3.318, p < 0.001$, 95% CI [.197, .791].Conclusions: Results supported in this study are consistent with previous research. To conclude, Black students are more likely to suppress emotions compared to non-Hispanic White counterparts, as well as perceive that other Black individuals experience emotional suppression at higher rates than non-Hispanic White participants perceived.

Lakshmi Mosquera Herrera

DC - Trinity Washington University

Discipline: Interdisciplinary Studies

Authors:
#1 Lakshmi Mosquera Herrera

Abstract Name: Extractive Economic Activities and Displacement Dynamics: A Deep Dive into the Afro-Colombian Communities of Chocó

Late capitalism and forced displacement in Colombia represent a complex and enduring crisis, particularly affecting Afro-Colombian communities. This study examines the relationship between extractive economic activities, their impact on the environment, and forced displacement, with a focus on the exacerbating effects of illegal mining, logging, and contentious land ownership in Colombia's Chocó region. Historically, Afro-Colombian communities have faced systemic challenges due to lack of political representation, lack of state presence in the region, and internal armed conflict in the area. These adversities have been magnified by extractive economic activities and land disputes, resulting in a forced displacement of Afro-Colombian households. The central research question asks: What are the effects of extractive economic activities, and land ownership disputes on the displacement of Afro- Colombian communities? By using information from the Consultoría para los Derechos Humanos y el Desplazamiento (CODHES), United Nations High Commissioner for Refugees (UNHCR) and El Departamento Administrativo Nacional de Estadistica (DANE), this study explores the roots of forced displacement in the Colombian region of Chocó for the last two decades (from 2000 to 2023). This research also uses an extensive literature review, official government sources, and descriptive statistics, to provide an analysis of the role of late capitalism in creating forced displacement and dispossession of the Afro-Colombian rural population from their lands. Understanding the factors contributing to forced displacement is a crucial step toward developing effective policies to prevent future displacement and promote economic and social justice for the prosperity of the rural communities in Colombia.

Angelica Moss

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Angelica Moss

Abstract Name: The Economic Importance of Early American Mills

This paper explores the role played by early American mills, with a specific focus on the Marietta Paper Company and Concord Woolen Mill, in shaping the economic landscape of their respective localities during the 19th century. The research delves into three key aspects that underscore the economic importance of these mills: the robust construction of the mills, their strategic proximity to transportation networks, and their adaptability in usage. The study begins by examining the substantial construction of these mills, highlighting the meticulous engineering and durable materials employed in their design. The structural integrity of these industrial complexes not only facilitated efficient production processes but also contributed to their longevity, ensuring sustained economic impact over the years. Furthermore, the paper scrutinizes the strategic location of these mills in relation to transportation infrastructure. This geographical proximity not only streams the transportation of raw materials and finished goods but also amplified the mills' accessibility to wider markets, fostering economic growth in the surrounding areas. An essential aspect of the mills' economic significance lies in their versatility of use. The Marietta Paper Company and Concord Woolen Mill exemplify how adaptability became a hallmark of successful industrial establishments. Their ability to diversify production based on market demands or technological advancements ensured continued relevance and economic contribution to their communities. In conclusion, this paper asserts that the Marietta Paper Company and Concord Woolen Mill serve as compelling case studies in understanding the economic importance of early American mills. By examining their robust construction, strategic locations, and adaptability, the research sheds light on the enduring impact these industrial entities had on the economic development of their local areas, underscoring their role as economic pillars in the growth of 19th-century America.

Logan Mossor

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Logan Mossor

Abstract Name: Making Abstract Philosophy Concrete Through Collaborative Art

Philosophy and art overlap and entwine throughout history. Existentialist philosopher Albert Camus suggests artistic creation as an answer to existing in an absurd world. Chicana feminist philosopher Gloria Anzaldúa used hand drawn illustrations called "glifos" during her lectures to aid attendees in better understanding her philosophy. The late thirteenth century ink painting "The Pleasures of Fishes" by Zhou Dongqing depicts a passage from the book "Zhuangzi," an important Daoist text. In each of these examples, art is a means to better understand philosophy. I am a visual artist, and I intend to use one of my own chosen artforms, collaborative art, to accomplish the same end. As a collaborative artist, I gather many people together to realize one artistic vision. I have staged over twenty collaborative art events over the past three years, and have used research methods from Rita Irwin’s essay “Communities of A/r/tographic Practice” and concepts from Allan Kaprow’s essay “Manifesto” to better understand how participants are impacted by collaborative art. My research has led me to believe that collaborative art will excel at making abstract philosophical concepts accessible to a larger audience. To explore this belief, I intend to stage three collaborative art events, each one designed to introduce a philosophical movement in a concrete and accessible way. The first event will be inspired by Albert Camus' "The Myth of Sisyphus," and will demonstrate existentialist philosophy. The second event will be inspired by Gloria E. Anzaldúa's "Light in the Dark/Luz en Lo Oscuro: Rewriting Identity, Spirituality, Reality," and will demonstrate Chicana feminist philosophy. The third event will be inspired by Laozi's "Daodejing" and Zhuangzi's "Zhuangzi," and will demonstrate Daoist philosophy. My presentation of these three events will demonstrate the value of using collaborative art as a means of teaching difficult philosophical concepts.

Logan Mossor

GA - Kennesaw State University

Discipline: Visual and Performing Arts

Authors:
#1 Logan Mossor

Abstract Name: Making Abstract Philosophy Concrete Through Collaborative Art

Philosophy and art overlap and entwine throughout history. Existentialist philosopher Albert Camus suggests artistic creation as an answer to existing in an absurd world. Chicana feminist philosopher Gloria Anzaldúa used hand drawn illustrations called "glifos" during her lectures to aid attendees in better understanding her philosophy. The late thirteenth century ink painting "The Pleasures of Fishes" by Zhou Dongqing depicts a passage from the book "Zhuangzi," an important Daoist text. In each of these examples, art is a means to better understand philosophy. I am a visual artist, and I intend to use one of my own chosen artforms, collaborative art, to accomplish the same end. As a collaborative artist, I gather many people together to realize one artistic vision. I have staged over twenty collaborative art events over the past three years, and have used research methods from Rita Irwin’s essay “Communities of A/r/tographic Practice” and concepts from Allan Kaprow’s essay “Manifesto” to better understand how participants are impacted by collaborative art. My research has led me to believe that collaborative art will excel at making abstract philosophical concepts accessible to a larger audience. To explore this belief, I intend to stage three collaborative art events, each one designed to introduce a philosophical movement in a concrete and accessible way. The first event will be inspired by Albert Camus' "The Myth of Sisyphus," and will demonstrate existentialist philosophy.

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Adam Moszczynski

NJ - Stevens Institute of Technology

Discipline: Mathematics and Computer Science

Authors:
#1 Adam Moszczynski
#2 Tejas Appana
#3 Drew Carranti
#4 Matthew Thomas
#5 Arjun Koshal
Tejas Appana
Arjun Koshal

Abstract Name: Temporal Gaussian Processes for Dynamic Modeling of Implied Volatility

The accurate modeling of the implied volatility surface holds great significance in option pricing, trading, and hedging. Significant research has been devoted to this task, ranging from mathematical models to machine-learning solutions. However, these approaches generate point estimates based on imperfect market data, which can lead to inaccurate and misleading models. Gaussian Processes, which are a a Bayesian nonparametric method, have addressed this challenge. They generate posterior distributions of implied volatility functions, producing confidence intervals and quantifiable measures of model uncertainty. We improve upon this approach by incorporating temporal dynamics into a Gaussian Process to capture trends in changing implied volatility surfaces over time. Our model is then applied to end-of-day option quotes, showing high accuracy that can outperform traditional parametric models in implied volatility estimation and option pricing. Our findings could significantly impact hedging strategies, as the distribution that our model derives accounts for a spectrum of scenarios, enabling a more nuanced assessment of risk. Using our model's output, we will further validate this application by conducting empirical tests and simulating hedging strategies under various market conditions. We expect this to demonstrate the effectiveness of our approach in reducing risk exposure compared to traditional methods, thereby providing a tangible measure of the practical benefits of incorporating our Gaussian Process method in the real world.

April Motalebi

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 April Motalebi

Abstract Name: Using Congruent Communication Skills at the Beside: A Guide for Student and Graduate Nurses

The aim is to modify Haim Ginott’s congruent communication techniques to be used by nursing students and

graduate nurses to increase ease of communication at the beside. Haim Ginott taught his principles of congruent communication to parents and teachers as a means of interaction with children, resulting in children who feel seen, heard, and empowered. The relationship between nurse and patient is also one of power inequality, and many studies posit that good communication is the nurse's responsibility. From a patient perspective, lack of communication, lack of empathy and authoritarian attitudes are points of dissatisfaction. Nurses attending communication training report that patient self-management and compliance with treatment are improved. Congruent communication provides a blueprint for nurses to handle not only patient's strong emotions but their own as well. This in turn fosters a relationship in which the power differential is more balanced, and the client is much more likely to receive education and implement change in behavior. A poster and a handout will be created that will be distributed to student nurses in a nursing program. It will describe three techniques from Haim Ginott's method that can be understood and implemented immediately. A link to a survey will be provided and data from the survey will be collected and analyzed to determine effectiveness and ease of implementation of the skills outlined in the poster. Insight will be used for creation of a comprehensive program in the future. Nurses inherently want the best for their clients and are unsatisfied, stressed, and self-doubting when unable to communicate in ways that have positive outcomes and protect the dignity of both parties. Giving nurses tools to create authentic, powerful connections with clients is a way to create lasting impact.

Katie Mouganis

MI - Hope College

Discipline: Education

Authors:
#1 Katherine Mouganis

Abstract Name: Shifting Perspectives: Exploring Translanguaging and Teacher Education

ithin the U.S. education system, a historical inclination towards English-only ideologies have marginalized the voices, cultures, and languages of bilingual students. Students labeled as English Language Learners Students labeled as English Language Learners confront a significant achievement gap, scoring approximately 15% lower on standardized tests than their non-ELL counterparts, underscoring the shortcomings of the English-only classroom approach for bilingual students. Consequently, the educational field endorses bilingual education with translanguaging pedagogy as a more efficacious alternative to redress this discrepancy.This research advocates for a transformative shift from a monoglossic view of language learning to a heteroglossic paradigm, emphasizing the crucial role of translanguaging pedagogy in supporting bilingual learners in the education setting. Translanguaging, as an inclusive approach, enables bilingual students to bring their authentic selves and languages into the classroom, utilizing their entire language repertoires in the classroom learning environment. This poster presentation delves into the bilingual way of knowing and learning, highlighting the necessity for heteroglossic ideologies and creativity within educational frameworks. This study employs an autobiographical narrative inquiry approach involving a pre-service teacher at a U.S. midwestern University, showcasing the successful implementation of translanguaging pedagogy in teacher education programs. The findings underscore the pivotal role of teacher education in driving the integration of translanguaging pedagogy, positioning it as a transformative force to empower bilingual learners in the U.S. schooling environment. This presentation argues for the need to restructure teacher education programs to incorporate translanguaging as a fundamental and transformative pedagogy in the education of all pre-service teachers for fostering inclusivity and maximizing the potential of bilingual learners in contemporary educational settings.

Eden Moyal

CA - University of California - Los Angeles

Discipline: Interdisciplinary Studies

Authors:
#1 Eden Moyal

Abstract Name: Doing Being Nonbinary: The Sociophonetics of Coming Out

This paper functions as one of the first examinations of the sociophonetic characteristics of non-binary speakers as measured across their gender journey and coming out. As widely recorded as gender differences in speech patterns (e.g. pitch, intonation, g-dropping) are among binary (and most often, cisgender) speakers, there is little research on how people who identify as neither woman nor man fit into this model. In this paper, I examine twelve public figures who have come out as nonbinary in the past decade. Through variables of g-dropping, pitch, and segment duration, I establish the differences in each speaker's voice from before and since their identification as nonbinary. A preliminary hypothesis poses that each speaker will exhibit a departure from their "before" way of speaking and towards an overall "after" voice outside a male-female binary. Preliminary results of ten speakers for their average segment durations and g-dropping suggest that changes in gendered speech patterns do indeed shift away from what they were before. For example, speakers assigned male at birth significantly decreased their use of g-dropping. Additionally, a variety of speakers across sex assigned at birth significantly altered the duration of aspiration following a word-initial or stressed syllable-initial voiceless velar plosive. The understanding that speakers' gendered linguistic features do change as they explore and come to identify with a gender identity separate from the one assigned to them at birth supports the intuitive hypothesis that a group of people whose gender identity falls outside a binary would also exhibit speech patterns that fall outside the binary. Ongoing analyses include fundamental frequency and pitch range, further features that are highly gendered and may vary across stages of gender expression.

Dahana Moz Ruiz

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
#1 Dahana Moz Ruiz
#2 Daehan Kwak

Abstract Name: Using Deep Learning Models to Detect Brain Tumors from MRI Images

In the medical diagnostics field, a major challenge is accurately and promptly detecting brain tumors in MRI images. Integrating image classification models has the potential to enhance diagnostic practices, reduce errors, and expedite tumor identification. This research utilized deep learning algorithms to create an automated system for reliable brain tumor identification from MRI scans aligning with the broader goal of advancing medical technology. Additionally, investigating various classification model types contributes to improved healthcare diagnostics, aiding early detection for better patient care.The research utilized a dataset comprising two folders of brain MRI images—one with tumor-free images and the other with images featuring tumors—gathered from Kaggle. Four pre-trained models were applied, and the same dataset was used for testing different image classification models and frameworks. Data preprocessing steps, such as resizing, augmentations, segmentation, normalization, and contrast enhancement, were standardized across models to authenticate accuracies.Validation tests assessed the accuracy and precision of the models, involving the saving of models in H5 format for seamless reuse and evaluation. A graphical user interface (GUI) was developed using the 'ipywidgets' library, offering an interactive platform for testing model performance. Testing involved four distinct brain images from outside the dataset to evaluate the model's generalization capabilities. Results indicated accuracy rates ranging from 75% to 90%, reflecting the model's

ability to identify brain tumors. Variability in accuracy was attributed to factors like image diversity, dataset size, model complexity, and sensitivity to different tumor types and sizes.The research's short-term goal was to develop a deep learning model for accurate brain tumor detection, while the long-term objective involves refining detection algorithms for broader medical applications. Future work includes incorporating diverse datasets to assess how accuracy percentages evolve in detecting brain tumors and experimenting with popular continuous learning algorithms.

Vishwas Mruthyunjaya

PA - Carnegie Mellon University

Discipline:

Authors:
#1 Vishwas Mruthyunjaya
#2 Rachel Burcin
Rachel Burcin

Abstract Name: Unveiling the Blueprint: Mentor-Student Co-Creation of Journal Guidelines for Undergraduate Research

Participatory design and reflections on co-creating a journal Our work delves into the pivotal role of journal guidelines within the context of Research Experience for Undergraduates (REU) programs in STEM education, with a specific focus on the collaborative creation process between mentors and students. The establishment of comprehensive journal guidelines is crucial to the success of undergraduate research endeavors, offering a structured framework for scholars to articulate and disseminate their findings effectively. The central research question for the write-up is: How does the collaborative co-creation of journal guidelines between mentors and undergraduate students within the Research Experience for Undergraduates (REU) programs impact the quality, publication success, and overall trajectory of STEM research conducted by participating scholars? The research methodology involved a comprehensive exploration of collaborative processes in creating journal guidelines within STEM-focused Research Experience for Undergraduates (REU) programs. Qualitative research methods, including in-depth discussions and observations, captured mentor-student dynamics. Participants were purposefully selected for expertise, and a systematic review of IEEE standards informed guideline criteria. Analysis of published REU research offered insights into guideline impact. This multifaceted approach aimed to unravel mentor-student collaboration intricacies, providing a holistic understanding of co-creation and its implications for undergraduate STEM research. These guidelines serve various purposes, equipping participants with tools for effective publication navigation, fostering scholar-led peer feedback, and facilitating successful research dissemination. Moreover, adherence to these guidelines is shown to influence participants' career trajectories, providing a transformative experience in the broader STEM education landscape. In essence, the collaborative creation of journal guidelines emerges as a cornerstone, optimizing the impact and quality of undergraduate research within the REU framework.

Hope Msengi

TX - The University of Texas at San Antonio

Discipline: Interdisciplinary Studies

Authors:
#1 Hope Msengi
#2 Ada Felix-Ortiz
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#4 Maria Diehl
#5 Anthony Burgos-Robles

Abstract Name: New insights on the mechanisms of active avoidance behavior during signaled threat: Prefrontal contributions and behavioral differences across sex and age groups.

Flexible adaptation of behavior during imminent threat is critical for safety and survival. A type of behavioral adaptation that is typically implemented during environmental threat is active avoidance in which specific actions or behavioral sequences are dynamically engaged to prevent harm from threat. While previous studies suggest that the medial prefrontal cortex (mPFC) is implicated in the learning of active avoidance responses, the role of discrete subregions of the mPFC – known in rodents as the prelimbic (PL-PFC) and infralimbic (IL-PFC) cortices – still remain unclear. In this project, we are implementing a novel behavioral paradigm in which mice are capable of developing flexible avoidance responses during a tone cue that predicts electric shock punishment, by stepping onto a small non-electrified platform that is dynamically presented into the behavioral chamber during tone-shock trials. Our results have so far revealed that over the course of five daily training sessions (20 trials/day), a large proportion of young-adult mice can develop robust active avoidance responses to avoid incoming shocks. However, optogenetic-mediated silencing of principal glutamatergic neurons in the IL-PFC subregion led to a significant impairment in the development of active avoidance responses, whereas neuronal silencing in the PL-PFC subregion produced no significant effects. In addition, our results suggest that female mice can learn active avoidance in more optimal manners than male mice, however there were no significant differences between aged groups (16 months old). Although potential differences in IL-PFC signaling across sexes and ages still remain to be elucidated, we hypothesize that IL-PFC signaling could be an important factor that promotes better avoidance learning in certain groups and/or individuals.

Deannery Muankaew

TX - San Jacinto College

Discipline: Natural and Physical Sciences

Authors:
#1 Deannery Muankaew
#2 Haotian Wang
#3 Chang Qiu

Abstract Name: Low-Iridium Catalyst for Proton Exchange Membrane Water Electrolysis (PEMWE)

As the energy sector transitions from fossil fuels to hydrogen for a clean fuel alternative in order to preserve our environment, research into green hydrogen production has become of growing interest. Proton exchange membrane water electrolysis (PEMWE) can be used to produce hydrogen, but its dependence on the scarce element iridium poses a challenge. Therefore, for this study, a minimal amount of iridium was determined to facilitate effective PEM water electrolysis in conjunction with ruthenium. Research, configuration, and synthesis of ruthenium-iridium oxide at different ratios revealed a degree of stability/instability that could potentially be used in PEM water electrolysis. The results indicate that the ratio of 90% ruthenium and 10% iridium were considered stable. By discovering and developing a new material for lower iridium loading for PEM water electrolysis, we can uncover novel results that contribute to the metamorphosis of the energy sector and a cleaner environment.

Oltjona Muca

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Oltjona Muca
#2 Omar Ghandour
#3 Ryan Druce
#4 Analía Dall'Asén
Omar Ghandour
Ryan Druce

Abstract Name: Exploring meteoritic fragments with microscopy and spectroscopy techniques

Carbonaceous chondritic meteorites are ancient materials from the earliest times of our Solar System, and thus, these objects can provide valuable information about how planets formed. These meteorites are composed of micro/millimeter-sized inclusions surrounded by a matrix of microparticles. The study of the physical properties (e.g., structure, composition and morphology) of these constituents can give evidence of the conditions (e.g., thermal, temporal and barometric) in which the materials found in the meteoritic samples developed in our Solar System. These physical properties can be studied using different experimental and analytical methods. In this work, we use microscopy and spectroscopy techniques, such as Raman spectroscopy, optical microscopy and atomic force microscopy, to study several properties of carbonaceous meteorites (e.g., mineralogical composition and topography at the micro and nanoscale). In particular, we analyze two meteoritic fragments: Northwest Africa (NWA) 7184 and Aguas Zarcas. We explore numerous regions of individual inclusions, surrounding matrix and inclusion-matrix interface. We correlate our results to look for clues about the origin of these extraterrestrial materials.

Rachel Mullenix

NC - Elon University

Discipline: Health and Human Services

Authors:
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#2 Jess Navarro

Abstract Name: Sociocultural Influences on Digital Parenting Strategies: A Statistical Analysis of the Effects of Familism, Latinidad, and Income on Active and Restrictive Mediation

This study explores how parents' beliefs and attitudes about mediating their child's digital technology usage (referred to as digital parenting) are influenced by three sociocultural factors: Latino identity, family income, and familism. Familism is a value that encompasses a sense of duty to support, respect, lean on, and prioritize family members and family cohesion. The concept originated from research with Latin American families, but the values of familism are also commonly found in low-income families of all ethnicities in the United States. Although familism is an important cultural value that has complex interrelations with childrearing values (e.g., autonomy-supporting vs. controlling), little research has yet been published that addresses the intersection of ethnicity, income, and familism as specfically related to digital parenting. In addition, the influences of Latino identitiy and family income (used as a proxy for socioeconomic status in the current study) on parenting are difficult to disentangle due to sociohistorical systems of oppression and marginalization that have limited the accumulation of wealth and capital in Latino communities in the United States. Existing research has either depended on qualitative studies with small sample sizes or statistically controlled for income or ethnicity (or both) in larger quantitative studies. Rather than controlling for income or ethnicity, the current study "controls in" these important variables through multiple linear regression in a multi-group model to examine how they synergistically influence digital parenting strategies among Latino

and non-Latino parents in the U.S. Preliminary results show that familism accounts for a large portion of the variance in digital parenting, and that Latino parents with high familism scores tend to rely more upon restrictive mediation strategies (e.g., content filtering, screen time limits, etc.). These results will be discussed in terms of the emergent "protective parenting" style among Latino families in the U.S. and the need for culturally-responsive social services.

Devon Mullins

DC - American University

Discipline: Social Sciences

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#1 Devon Mullins

Abstract Name: The Romance and Destruction of Monsoons: An Analysis of Monsoon Portrayal Over Time in Indian Films

Globally, popular notions of Indian films such as Monsoon Wedding and Lagaan include elaborate songs and dances, rollercoasters of emotion and plot, and, most importantly, rain. Are these stereotypes, or does the Indian film industry repeatedly use rain, and specifically monsoons, in films across time and genre? If so, how does this symbolic pattern in which intimacy and emotion are frequently tied to the presence of monsoon rains relate to broader contexts? Using a discourse analysis of 27 films selected for their cultural relevance or box office success from the 1930s-2010s, this paper asks how monsoons are written into Indian film across time and genre and how that is related to Indian culture including the impacts of colonialism, globalization, and climate change in India. This analysis finds that monsoons and rain are overwhelmingly present in important romantic scenes or sad and emotional scenes–especially in the 90s romance genre. Additionally, because the analysis is focused on films across time and genre, relations between global politics, genre of film, and manner of monsoon portrayal are highlighted. As India is impacted by globalization, monsoon portrayal becomes more monolithic in films. English also is spoken increasingly, plot structure and character arcs shifted from underdog stories to more high-class characters, and in the 2000s a shift towards social commentary–feminism, religious conflict, caste system, climate change–emerge as a theme in the larger plots of films. Indian film is a commonly studied area for its cultural influence, but analysis tends to focus on individual films, rather than systematically analyze trends. The cross-genre and chronological approach of this paper identifies trends in India which showcase both the continuing importance of monsoons as a cultural keystone in India and how their representation is evolving as India becomes ever more important in global economies and cultures.

Sophia Mun

CA - California Baptist University

Discipline:

Authors:
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Abstract Name: Character Building in Undergraduate Researchers

A substantial body of empirical research has confirmed the positive impact of Undergraduate Research (UR) on students. However, there is a noticeable gap in our understanding regarding the developmental trajectories of character-building outcomes stemming from UR experiences. The aim of this presentation is to share

insights into the character-building outcomes observed among undergraduate researchers, which I have both researched and encountered in my role as a research mentor. Existing literature highlights the favorable influence of Undergraduate Research Experiences (URE) on self-efficacy (Martin et al., 2021). This led me to wonder about the potential for additional character development resulting from engagement in research activities. To address this inquiry, I collected quantitative data through a survey specifically designed to gauge students' perceptions of character development. Undergraduate students were asked to report the extent to which their UR experiences contributed to their personal growth in various character dimensions, including Humility, Courage, Industriousness, Responsibility, Creativity, Honesty, Tolerance for obstacles, Patience, and Caring. In addition to the survey, qualitative data was gathered through four open-ended questions to capture students' perspectives on character development. The findings from this comprehensive study, coupled with personal observations and reflective insights, will be presented in this discussion. It is anticipated that this research will enrich the existing literature on the benefits of undergraduate research and offer valuable insights to mentors and undergraduate researchers keen on fostering character development through research endeavors.

Carlos Munguia Galvez

TX - Northeast Texas Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Carlos Munguia Galvez

Abstract Name: Space Rocket

Star Base was a youth science program that was related to spaceships and space travel. This is a department of science where little kids from elementary school could learn about the solar system and the galaxy, we live in. To learn how to build a rocket and visited the cockpit of a space shuttle. To see the different types of meteoroids and learn how they burn on the earth's atmosphere. This study helps gain a new perspective to study the earth and the solar system. To find out if there is life in other worlds and seek ways of improving a new generation. For a new generation to be better than us in all the aspects and to build a greater society. Methodology is a particular area of study. The materials are needed to build a rocket where cardboard and a plastic bottle just modify and cut pieces and give them an aerodynamic shape. Paper to used has a small parachute once you launch it will make sure the rocket lands safely. The weight, lift, drag, and thrust need to be checked once you finish building so that the force of the launch can make the rocket fly. Findings will indicate how this rocket will have an impact on future generations and could increase their potential of making their own experiments. This is because this is just a model of a rocket, and we want to understand and determine how spaceships work and how they are launch. This is important to know because it opens a reality to whole new different worlds. To the possibility that one day we could travel to another world and be up in space and see our own planet.

Jessica Muñoz

TX - The University of Texas at El Paso

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Abstract Name: Stimulating Kids with Autism through the Sensory Room Experience- Under The Sea

Sensory rooms are used for kids with autism in school because they are often overstimulated. A sensory room is an area that gives the students the sensory materials they need to self-regulate and be ready to learn and socialize. Students need a space where they can decompress, have different sensory stimuli, and a better learning environment. Varying amounts of equipment and materials need to be used for a sensory room to be effective. Different textures, toys or fidgets will allow them to choose the activity they want to engage with. Our goal for this service-learning project was to improve the atmosphere of a sensory room for children with autism in an elementary school from El Paso, Tx. The participants of this service-learning project consisted of two aides and 9 teachers who constantly used the sensory room for their students. Participants were

assessed about the needs of the sensory room. The improvement of the sensory room took two months to finish. During this time equipment and material such as; Christmas lights, a trampoline, a sensory swing, a balance beam, a crawl tunnel, and a board with fish drawings were added. Teachers and aids were given a pre/post survey to assess the sensory room and the impact it had on the students. T-test was performed to assess the pre and post-survey. Results from the t-test revealed statistically significant improvements in questions #2 [t(9)=5.308;p<0.001], question #3 [t(9)=-38.895=<0.001], and question #4 [t(9)=4.946;p<0.001]. No significant differences on question # 5. The sensory room improvements not only led to immediate positive changes in the students behavior, but also established a foundation for sustained, long-term benefits. These findings highlight the effectiveness of implementing more activities and visual decorations in the sensory room for students' with sensory needs.

Ana Muñoz

COL - EAFIT University

Discipline: Health and Human Services

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Abstract Name: Maintenance Plan for Solar Energy Technologies and its Implementation in Rural Communities

In Colombia, there are still numerous communities that do not have access to electricity (non-interconnected zones, NIZ). The government and other entities are making efforts to provide this resource to those communities, nowadays they are implementing Photovoltaic solar systems. This research contributes to the eradication of energy poverty making the communities able to sustain the energy projects over time. We are working with Amazon Conservation Team, conducting research to study the implemented photovoltaic technologies in the NIZ, specifically in the region of “Amazonas” to study their culture, and life styling, help them understand the way that solar photovoltaic systems work, and build a closer relationship between the community and the photovoltaic systems. We realized that the success of the energy projects in the NIZ relies on the need of the communities to be part of the project. We noticed that these communities do not have the essential knowledge to sustain these systems and there is a lack of investment and management in Operation and Maintenance (O&M). If we can offer them a maintenance plan and help them take ownership of the technology, with a methodology to share the knowledge, energy poverty will be reduced. The initial results we have had are the construction of a children's story, as a teaching and learning tool for the transfer of knowledge to indigenous communities. This is how this research will help the energy projects to be more sustainable over time, because we are providing a replicable methodology that integrates the communities with the project, bringing solutions to the O&M problem. Engaging the community as part of the project will provide them new opportunities in education and allow them to improve their living conditions.

Isis Murillo Bravo

CA - Pomona College

Discipline: Humanities

Authors:
#1 Isis Murillo Bravo

Abstract Name: Is sexual pleasure a human right? An important gap in the sexual and reproductive rights of Peruvian women

Historically, policies on women's sexual health in Perú have ignored the element of pleasure, focusing almost exclusively on reproduction. Perú's sexual health policy has been shaped by strong Catholic ideas focused on the patriarchal control over women's bodies. A clear indication of this is the fact that abortion is only legal in cases of extreme danger to the life of the pregnant woman. Given the importance of the Peruvian Society of Obstetrics and Gynecology (SPOG by its name in Spanish) in the development of sexual health policies and sexual education guidelines in Perú, this paper analyzes the content of 16 articles published by the SPOG from 1975 to 2023 to understand how recent medical discourse elides pleasure and perpetuates the attitudes that sexuality should be limited to reproduction. Only the articles that included "sexual and reproductive rights," "sexual and reproductive health" or "sexuality" in their titles were included in this study. Findings included that only 31% and 12.5% of the articles mentioned sexual pleasure or "well-being" as part of sexual health, respectively. Nonetheless, only one article maintained a sex-positive position in its entirety while the rest maintained a reproductive focus through most of its content. However, as it was shown in sexual education campaigns in other countries like Senegal, a sexual pleasure focus can lead to a higher rate of condom use. Thus, the purpose of this study is to pursue further avenues of research on sexual pleasure considering Perú's specific historical and sociocultural conditions. As the SPOG stated, between 25% to 40% of maternal mortality could be eliminated if unwanted pregnancies are prevented so a focus on sexual pleasure could be beneficial as it could increase the rate of contraceptive use. Ultimately, a focus on sexual pleasure could open new paths to improve women's sexual health in Perú.

Lauren Murkar

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Abstract Name: Hyflex Modality: Comparison of Engineering and Social Sciences Student and Professor Perspectives

The challenges brought on by the COVID-19 pandemic have led universities to introduce technology-rich pedagogies that support students facing barriers to in-person attendance. Hyflex is one approach that may benefit students and allows students three options for attending class which are in-person, synchronously, and asynchronously. However, a small body of literature on its efficacy creates the need for additional research to determine the overall benefits of Hyflex. Our current study implements a mixed methods approach using survey data and focus groups to examine the perceived impact of Hyflex on students and faculty in social science courses compared to STEM courses. Analysis of the surveys and focus groups revealed that both STEM and social science students appreciated the flexibility that Hyflex offered. Some faculty were also noted appreciating the flexibility for students and grade similarities or improvement in STEM courses, but were discouraged by the lack of attendance and discussion in person. Discussions were prominent within the chat box feature on Zoom, during office hours, and in group settings outside of class. An implication of our

research is that Faculty teaching a Hyflex course should not expect students to attend class-wide discussion in person without incentive and structure. Future research should include quantitative data concerning student grades for STEM and social science classes to discern if certain courses may be better suited than others for the Hyflex modality.

Grace Murphy

CA - California Polytechnic State University

Discipline: Engineering and Architecture

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Abstract Name: Exoskeletons - Designing for Social Justice

Many engineering professionals believe that discussions surrounding diversity, equity, and inclusion (DEI), and social justice do not belong in engineering because engineering is supposed to be a neutral or objective field. Through an extensive review of literature and a survey sent out to potential users, the need for DEI in engineering was examined, specifically within a project aimed to equitably design an upper limb tensegrity-based exoskeleton. Many current engineering projects do not take into consideration social justice principles which leaves certain groups further marginalized and disempowered while empowering a select few. Engineering has the opportunity to be a field of service, but first risks and benefits must be weighed and the outcome of enhancing human capacities must be valued over monetary gain. In order to equitably design our exoskeleton we considered user needs from the very beginning through empathy mapping and surveying potential users. The results that we have gathered thus far suggest that potential users care foremost about cost and secondly about the comfort and fit of the device. Moving forward it is crucial that we implement design choices that reflect the value so the potential users to ensure that the device we create is usable and offers a sustainable solution to users.

Victoria Murray

OK - University of Central Oklahoma

Discipline:

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#1 Victoria Murray

Abstract Name: Unveiling Celtic Women: How Ancient Tales Shaped Gender Roles and Power Dynamics in 5th Century Ireland

This study examines the impact of legendary Celtic women on the views and treatment of women in Celtic pagan society after its Christianization in the fifth century. By exploring the lives of Queen Medb, Saint Christine, and Brigid of Kildare, we seek to understand how these tales, filled with miracles, magic, war, and desire, altered or enforced societal perspectives on gender roles. The research begins by providing a synopsis of Celtic life and gender roles before and during the first decades after the official Christianization of Irish Celts around 431 CE, followed by an exploration of Catholic and pagan religious beliefs and practices, thus introducing these legendary women. The central question of this study has a dual focus: How and when were the tales about these women constructed, and how were these tales used to enforce power dynamics and societal gender roles around 500 CE before and after the Christianization of pagan Celts? This study analyzes ancient documentation, legends, and varying interpretations of the lives of these women. There is little to no

documentation of ancient Celtic pagans that is not written by Catholics, meaning that this research must examine these written sources critically. By considering power dynamics and how men utilized legendary tales to maintain control over women, we aim to shed light on the role of influential female figures and their impact on societal norms. The expected results of this study are multifaceted: the tales surrounding these women reveal how men used these stories to promote silent obedience among women and how women were uplifted or punished based on archetypes of female people and spaces. These conclusions will be discussed within the context of Celtic society during pagan and Christian periods, offering insights into the treatment and perception of Celtic women, building upon minimal research on the topic.

Yasmin Musa

TN - University of Tennessee at Chattanooga

Discipline: Natural and Physical Sciences

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Abstract Name: Using Intelligent Industrial Robots for Formation of Lipid Bilayer Membrane

Medium to small-sized Industrial robots have the ability to carry payloads that can be as high as several kilograms at Tool Center Point (TCP) speeds that can reach 11,000 mm/s with an astonishing precision repeatability of as low as 10 micrometers. Recent advances in industrial robots have enabled them to be collaborative, compact, and equipped with vision systems at continuousely reduced costs. In this work, we present the use of intelligent industrial robotics for the deposition of black lipid bilayer membrane across an aperture. The Montel-Mueller method is employed, in which a two-chamber apparatus with a 0.1 mm aperture is used for the deposition. A monolayer of a combination of phosopholipids is first deposited on a surface of 10 mM NaCl solution in both compartments of the apparatus using the intelligent robot, then the solution level is raised gradually, as the level approaches and passes the aperture level, a lipid bilayer is formed across the aperture. Electrochemical Impednce Spectroscopy is then used to investigate the electrochemical properties of different lipids. The robot with its vision system is then used to deposit a lipid bilyer membrane on a silicon slide using the Langmuir-Blodgett and Langmuir-Shaeffer techniques. Preliminary results show a significant improvement in the deposition compared to manual techniques.

Kaley Muse

OK - Cameron University

Discipline: Humanities

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#1 Kaley Muse

Abstract Name: The Role of Trauma and Love in Beloved by Toni Morrison

This paper frames a close reading of Toni Morrison's Beloved through the lens of trauma and love being prevailing forces among every character, but most importantly, in the main character Sethe. Even though every character in this novel suffers from some kind of trauma, Sethe is the character that actually confronts and somewhat overcomes her trauma. She does this through the immense love that she feels for her four children. Specifically, this paper uses three very important secondary sources to illustrate this idea of love

prevailing over the badas well using direct quotes from teh novel. The frist being Dimitrij Jelovcan-Bulatovic's "Love as a Leading Force in Beloved by Toni Morrison" in whihc Jelovcan-Bulatovic discusses this love phenomenon. The secnes in whihc Morrison depicts in her novel help readers to discern that Sethe is one of the sole charcters that worked through their trauma throughout the entirety of the novel. THe second being Janeen Selfridge's "Beloved: The Physical Embodiment of Psychological Trauma" where she examins the role of slavery and the psychological trauam that is a direct result of slavery and how it affects the characters of the novel. The last being "Slavery and American Gothic: The Ghost of the Future" by Jason Haslam in which Haslam analyzes the connection between themes of slavery in novels like Beloved and the gothic genre as a whole. Reading novels like Beloved that do not shy away from themes of slavery and psychological trauma allow readers to gain a new perspective on teh long term effects of slavery on those who were enslaved.

Katelyn Mushkin

KY - University of Kentucky

Discipline: Interdisciplinary Studies

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Abstract Name: Aesthetic Attachments for Infant Cranial Orthotics

Parents all over the world take care when dressing their babies. When infants between five and twelve months old have developmental issues with their skull and head shape, also known as plagiocephaly, pediatricians recommend cranial remolding orthosis to assist with painlessly reshaping the skull for both medical and aesthetic purposes. While parents are motivated to purchase these medically valuable orthotics, they are expensive, have little aesthetic appeal, and only come in limited colors and styles. While helmets can be printed with a color or pattern, the fabricated design is permanent. Further, the helmet must be worn 23 hours of the day in order to be effective. This means that any choice of dress for an infant – either day-to-day or for the regular photo shoots that come along with the period of infancy – must either match the helmet's specific color scheme or clash, further making the orthotic stand out. By developing a way that could make the aesthetic of the helmet temporarily customizable, it will encourage parents to get the orthotic for their child, make it more aesthetic, and accommodate the changing interests of a family. Through a process of shadowing at clinics, connecting with patients and fabrication manufacturers, and designing prototypes, a product was developed with the intended goal of being marketable to families impacted by infant plagiocephaly. Through research, it was determined that parents are primarily concerned with discretion, ease of use, interchangeability, and safety, all of which were considered in the iterations of the final form. Ultimately, the product developed is a customized hat, designed specifically to cover the cranial orthosis, keeping in mind the safety of the infant, breathability, and aesthetics. Further, product branding – including name, logo, tag, color scheme, and photography – was designed for marketing and patenting purposes.

Katherine Musser

MN - St. Olaf College

Discipline: Interdisciplinary Studies

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Abstract Name: Student Pathways, Barriers and Outcomes in Environmental Studies

Spurred by a desire to improve undergraduate retention and performance, student data from St. Olaf College was used to answer department-level questions about students' decisions to major or concentrate—minor—in Environmental Studies. These decisions were explored through trajectories in student coursework. Students majoring in Environmental Studies must also declare one of three areas of emphasis—Natural Science, Social Science, or Arts & Humanities—which modifies their major requirements. An exploration of major, emphasis, and concentration pathways identified barrier courses (challenging or hidden prerequisite courses) both inside and outside the department. Of particular interest were instances where student demographics and academic performance impact these trajectories. Institutional data from 2013 to 2022 included seven four-year cohorts of majors, a total of 7,602 students. Raw data from yearly transcripts was joined with records of student demographics, major and concentration declarations and withdrawals, and degrees awarded. This comprehensive dataset was then used to identify trends and create visualizations to communicate information to stakeholders. For example, 76% of students who graduate with an Environmental Studies major took their first Environmental Studies course in their first year. Of those, over half participated in the Environmental Conservation program, a first-year program that partners with Environmental Studies. Results are used to inform the Environmental Studies department about student progression through the major and concentration, and areas where improvements might support student success. These strategies for visualizing student pathways in Environmental Studies and other disciplines are generalizable to programs at similar residential liberal arts colleges.

Yasmeen Mustafa

CO - University of Northern Colorado

Discipline: Health and Human Services

Authors:
#1 Yasmeen Mustafa

Abstract Name: Emergency Room Nurses' Perceptions of Medication Errors in the Emergency Department

Medication errors (MEs) remain a pervasive issue in United States emergency departments, where emergency room (ER) nurses play a central role in the medication process. The medication process involves a series of steps, including transcribing, prescribing, dispensing, administering, and monitoring. Proper adherence to the process ensures that the right medication is given to the right patient in the correct dose, route, and time. It also allows consideration of potential interactions, contraindications, and side effects, with the goal of achieving safe and efficacious therapeutic outcomes. The most prevalent types of MEs encountered during the various stages of the medication process include wrong dose, wrong drug, wrong time, wrong rate or technique, and omission. Given the potential life-altering consequences of MEs, it is imperative to harness the unique insights and experiences of ER nurses who are on the frontlines of patient care. ER nurses witness firsthand the intricacies and challenges of the medication process, making their perspective invaluable in identifying the root causes and contributing factors of MEs. Recognizing the paramount importance of comprehending MEs from the perspective of nurses, this study aims to tackle prevailing constraints that often marginalize their insights and are plagued by underreporting issues. Utilizing convenience sampling, willing participants from Colorado completed an online survey. The study utilized open-ended questions to gather insights into the factors that either impede or facilitate successful practices within the medication process, as perceived by ER nurses. The subsequent application of thematic analysis to this dataset aims to unravel key themes and patterns that can inform target interventions. By integrating these perspectives into the ongoing

improvement process, this study hopes to pinpoint actionable steps that can be taken in the field to mitigate MEs; these could include better documentation, enhanced training, or the implementation of more fail-safe measures.

Mohammad Mustafa

NY - Brooklyn College

Discipline: Humanities

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Abstract Name: Echoes of Innovation: Black Jazz Musicians and the Contemporary Musical Landscape

The struggle for recognition of African-American intellectual property has been fraught with discrimination and limited artistic expression. This issue is particularly evident in the context of early 20th-century New York City, where Black jazz musicians faced significant obstacles in gaining credit for innovations that are still used today. Despite their immense influence on diverse musical traditions, icons such as Ella Fitzgerald, Thelonius Monk, and Miles Davis are often overlooked in our modern consumption of music. My project aims to explore how the legacy of these jazz musicians continues to impact contemporary music globally, including in popular American musical pieces, and visualize these connections through a concept web--a new rendition of the musical timeline that allows me to expand on existing literature by influence of these icons across several genres. By examining broader musical identities, including backbeat and polyrhythm, my study aims to provide a comprehensive understanding of the profound impact of Black jazz musicians on the global musical landscape. It will delve into the historical background of African-Americans, drawing connections between the music of the West African coast and the syncopation found in innovative Black music like jazz and reggae. This will be supplemented by contributions of the Harlem Renaissance, a pivotal cultural movement that celebrated Black artistry and identity in the early 20th century. It will emphasize the inclusive nature of jazz with the discrimination that fostered it, and how its elements such as fusion, call and response, and improvisation have shaped contemporary Black music, including the evolution of hip-hop and international pop. All this occurred against the acknowledged limitations of analyzing these contributions, highlighting the loss of potential musical innovation due to the lack of recognition and appreciation of these artists during their lifetimes.

Vedaant Mutha

FL - Florida Atlantic University

Discipline: Health and Human Services

Authors:
#1 Vedaant Mutha

Abstract Name: Healthcare Accessibility: Bridging the Gaps Towards Better Health

Despite significant advancements, healthcare accessibility remains a critical issue in the United States, with disparities that persist across socioeconomic, demographic, and geographic lines. My study delves into the experiences of individuals who are facing barriers to healthcare access while identifying potential solutions for enhancing equity in the healthcare system, drawing inspiration from the works of prominent researchers like Dr. Camara Phyllis Jones and Dr. David Satcher, who have dedicated their careers to understanding and

addressing health inequities. Utilizing the Amazon Mechanical Turk Platform, a 17-question survey was conducted sampling 198 adults across the United States. The study explores the perceived barriers to care and the impact that socioeconomic factors and gender play in healthcare access. Findings reveal that transportation, affordability, and lack of insurance emerged as the most prevalent barriers, with lower-income individuals disproportionately affected by transportation limitations. In addition, women viewed health disparities and prioritized affordability as a barrier, while men highlighted the lack of public health insurance programs. These findings highlight the need for a versatile approach that addresses the gap in access to health care. Policy interventions should focus on expanding access to affordable health care, improving public transportation systems, and implementing gender-sensitive strategies to address the unique challenges of women and men alike. By addressing these disparities through multilateral policy interventions, the United States can strive to provide equitable and accessible health care for all its citizens, regardless of what they cannot control. This study provides valuable insights for policymakers and healthcare providers to work towards a more inclusive and equitable healthcare system for all.

Michael Myer

CAN - Mount Royal University

Discipline: Mathematics and Computer Science

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Abstract Name: CougarStats: An R Shiny App for Statistical Data Analysis

CougarStats is a free, and open-source R Shiny application designed to conduct statistical data analysis. CougarStats aims to simplify statistical concepts and foster learning with a user-friendly browser-based interface. In the context of statistical education, there is a need for intuitive and comprehensive tools that are accessible to a wide range of users, from students to instructors. CougarStats is designed to address this need, providing a platform to conduct statistical data analysis across a growing list of topics while presenting detailed calculations. Current pedagogical topics include Descriptive Statistics, Probability Distributions, Statistical Inference, Simple Linear Regression, and Correlation Analysis. CougarStats is developed as a web application in the R programming language using the Shiny framework, and is currently hosted at https://www.cougarstats.ca. The application is designed using education principles to balance simplicity with analytical depth, and uses an Agile approach in its development to consistently refine functionality and incorporate user feedback. The current stage of its development involves incorporating advanced statistical concepts, such as Analysis of Variance (ANOVA), Nonparametric Statistics, Time-Series Analysis, Multiple Linear Regression and Logistic Regression. In addition, the goal is to start distributing the application to a wider audience to gather feedback on future functionality as well as ways of optimizing the current suite of tools. As a result of these continued efforts, CougarStats will be presented to the educational community as the preeminent open-source statistical analysis tool in Statistics and Data Science courses. In conclusion, CougarStats represents a significant step towards empowering students in understanding and critically evaluating statistical results.

Alyce Myers

GBR - Durham University

Discipline:

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Abstract Name: Why the UK? Undergraduate Research Students Pursuing Graduate Studies Abroad

Students pursuing undergraduate research are high-achieving and academically advanced individuals who are excellent candidates for postgraduate study in the UK. So, why study in the UK? Throughout the presentation, research advisors and students will learn about the differences in the US vs. UK higher education system as well as graduate research opportunities at UK institutions. Additionally, attendees will gain an understanding of multiple funding opportunities for graduate studies, student life in the UK, and professional options after graduation from their program.

Anastasia Myers

KY - University of Kentucky

Discipline: Engineering and Architecture

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Abstract Name: Investigating the effect of biodegradable and non-biodegradable solvents on fabricating polylactic acid (PLA) membranes via nonsolvent induced phase separation (NIPS) for air filtration application

Global industrialization has led to declining air quality, resulting in an increased need for effective air purification solutions. For critical applications such as healthcare, high efficiency particulate air (HEPA) filters capable of capturing over 99% of particulate matter 0.3 μm or smaller (PM0.3) are recommended by the Centers for Disease Control and Prevention (CDC). While conventional HEPA filters are effective at trapping fine particulate matter, they have some limitations including decreased filtration efficiency over time due to charge depletion and non-biodegradability leading to environmental concerns. Recent studies have focused on developing biodegradable HEPA flat sheet polymeric membranes via electrospinning using polylactic acid (PLA), a biodegradable polymer. However, the solvents used in the fabrication process are usually toxic. In addition, membranes fabricated by electrospinning also have the limitation of compromised filtration efficiency post cleaning due to their reliance on electrostatic charges for high particle filtration efficiency of PM0.3. This study investigated the effect of substituting commonly used hazardous solvents, n-methylpyrrolidone (NMP) and dimethylacetamide (DMAc), with more sustainable alternatives, and ethyl acetate (ETAc), for fabricating biodegradable flat sheet PLA membranes via non-solvent induced phase separation (NIPS). All fabricated membranes showed high particle filtration for PM0.3 ($\geq$ 99%) which meets the performance criteria for HEPA filters. Fourier transform infrared spectroscopy (FTIR) showed similar surface chemical compositions for all fabricated membranes and pristine PLA, indicating an insignificant effect on the membranes' chemical compositions by the different solvents. Additionally, contact angle measurements showed that the membrane fabricated using ETAc was the most hydrophobic (125 ± 3o), an important feature for air filters which prevents colonization of microorganism due to water accumulation. The results of this study suggest that high-performing flat sheet PLA membranes can be fabricated via NIPS using more sustainable solvents without compromising performance and chemical properties.

Tyler Myers

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Discipline: Natural and Physical Sciences

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#1 Tyler Myers
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Abstract Name: Reducing Chemotherapeutic Resistance in Leukemic Cells Exposed to Asparaginase by Limiting Glutamine Concentrations

Acute lymphoblastic leukemia (ALL) is a cancer with a 5-year survival rate of 85% when treated with chemotherapy. However, in patients who develop resistance to chemotherapy, the survival rate drops to approximately 20%. Asparaginase (ASNase) is a commonly used chemotherapeutic for patients with ALL. It functions by breaking down asparagine, an amino acid that is essential for cancer cell division, resulting in increased rates of cell death. Asparagine is typically present in an individual's diet, but it can also be synthesized by cells through the enzyme asparagine synthetase (ASNS) converting glutamine into asparagine. HL60 (acute myelogenous leukemia) and Jurkat (acute T-cell leukemia) lines were separated into six different treatment groups and exposed to various concentrations of asparaginase for 24 hours (0, 1, 5, 10, 20, and 50IU/mL). To test the influence of glutamine, an asparagine precursor, upon asparagine availability and subsequent ASNase efficacy, HL60 cells were maintained in media with various concentrations of glutamine (0, .2, .8, 2, 4, and 8mM). The cells with lower concentrations of glutamine had a fourfold increase in mortality when exposed to 10IU/mL ASNase (60% compared to 15%). These results suggest that glutamine concentrations modulate ASNase efficacy and therefore could be targeted to raise mortality in resistant cell lines. A protocol to induce chemotherapeutic resistance will be developed through increased ASNS upregulation and production, which other studies have shown is a significant indicator of resistance. In the resistant cells, new EC50s will be calculated with additional treatments (such as enzyme inhibitors) to reduce resistance and heighten mortality rates. These preliminary experiments provide the baseline for future investigation into ASNase resistance and suggest that glutamine concentration is an important factor in ASNase sensitivity in leukemic cells.

Amylisha Mykyta

CA - Occidental College

Discipline: Social Sciences

Authors:
#1 Amylisha Mykyta

Abstract Name: Physical Acts and Perceived Romance Across Mixed- and Same-Gender Pairs

We examine whether physical acts differ in terms of perceived romantic intimacy depending on the gender of the couple. Gendered friendship intimacy expectations show that same-gender women friendships tend to be more physically intimate than same-gender men friendships (Monsour, 1992). We predict that this tendency combined with heterosexist bias (i.e. belief that heterosexuality is normal or superior) will lead to acts by women-women couples to be rated as less romantic compared to men-women and men-men couples. Participants (n = 225) will be recruited online and randomly assigned to one of three conditions where they will rate different physical acts (e.g., holding hands, kissing on the cheek) performed by two men, two women, or a man/woman in terms of how romantic, sexual and flirtatious they are. We hypothesize that physical acts between two women will be rated less romantic than acts done by two men or a man and woman. Future research will examine the effects of these assumptions, the reasons people have these assumptions, and how to alter them.

Amylisha Mykyta

CA - Occidental College

Discipline: Social Sciences

Authors:
#1 Amylisha Mykyta

Abstract Name: The Sesame Street Project

Educators are always looking for ways of optimizing classroom learning, and themed classes have been slowly gaining popularity as an option. One barrier to incorporating themes (or testing their effectiveness) is the time and energy it takes to develop a themed course. The Thematic Instruction Consortium has developed 21 Sesame Street themed course modules (centered around psychology) in an effort to reduce this barrier. The use of Sesame Street was intentional as it covers a broad range of topics and has been shown to reduce the learning gap between low and high income children. This project focused on creating two additional modules- Depression and Anxiety and Substance Use Disorders. Each module is made up of articles, videos, and activities. Articles and videos related to the module topics were found primarily using Google Scholar and YouTube. Both modules separate articles into categories- risk/protective factors, attitudes, and treatment (the Substance Use Disorders module also has a 'family impact' category). Activities utilize articles and videos to help students better understand the topics. For example, an activity in the Substance Use Disorders Module has students watch two Sesame Street videos that discuss parental substance use, and then write a script of a possible conversation between an adult and a child whose parent(s) have substance use disorders. The project provided opportunities to build skills in article comprehension and creating course curriculum. Future steps include further research on the impact of themed classes on student learning and engagement, and developing additional modules.

Matthew Mynk

KY - Morehead State University

Discipline: Education

Authors:
#1 Matthew Mynk
#2 Louis Cascino
#3 Nathaniel George
#4 Daniel O'Keefe
#5 Kimberly de La Harpe
#6 Wilson Gonzalez-Espada

Abstract Name: Identifying the Weather Misconceptions of USAF Academy Cadets: Implications for Curricular Reform

Misconceptions are inaccurate conceptual understandings rooted in students' thinking that deviate from the conceptions described by experts in a discipline. These misconceptions are born from a combination of folk "knowledge," personal misperceptions, family interactions, and teachers who are not scientifically literate themselves.Weather-related crashes continue to account for a considerable proportion of aircraft accidents. Due to the nature of their service, it is important for Air Force pilots to have as few meteorology misconceptions as possible and an enhanced weather literacy. Consequently, correcting weather misconceptions must begin at the cadet level in military postsecondary institutions.The purpose of this study was to use the Survey of Meteorology Concepts (SMC) to identify weather misconceptions among forty-one cadets enrolled in an Aviation Weather class at the US Air Force Academy. Psychometrics and cadets'

responses supported the SMC's validation. The research questions were (a) Which questions in the SMC are, statistically, the best suited to measure weather-related misconceptions among Air Force cadets? (b) What were the topics in which cadets showed limited content knowledge? and (c) What were the topics in which cadets showed significant misconceptions?Participants completed the SMC as a pre-survey in August 2023 and as a post-survey in December 2023. A second group will complete the SMC in the Spring 2024 semester. Preliminary data suggests that, on average, 40% of the questions were answered correctly, but half were guesses. Of the 60% of the questions answered incorrectly, about one-third of the cadets showed actual misconceptions. By far, two of the most common misconceptions were (a) that water vapor makes clouds, fog, and dew and (b) that 0° C is always the freezing/melting point of water, regardless of other atmospheric conditions.

Nezamoddin N. Kachouie

FL - Florida Institute of Technology

Discipline:

Authors:
#1 Nezamoddin N. Kachouie
#2 Thu Thu Hlaing
#3 Dominic Scarpignato
#4 Gates Browne

Abstract Name: A Machine Learning Approach to Identify Impactful Research Areas in Near Future

There has been an immense number of papers published per year. Currently, it is difficult to sort through all published works to find the most impactful works. There have been various metrics defined to identify and quantify impactful research including Journal Impact Factor, h index, and even just the number of citations. However, each of these have drawbacks including the fact that they are all citation-based metrics. The goal of this study is to identify the relationship between a research paper's metrics and the potential impact it could have in the advancements of science/engineering. Once this is understood, it would greatly benefit both academia and industries. It would significantly optimize and reduce the time and resources needed to find the most innovative, impactful, and profitable research areas. Furthermore, it would allow effective allocation of time and resources towards the research areas that are more likely to be impactful.The proposed method utilizes a normalized citation-based metric compiled using publications of impactful researchers with significant breakthroughs. A multinomial model is implemented to analyze the relationship between a publication's impact and its numeric characteristics, such as the number of authors, citation count, and age. The relation is explored through the analysis of the model's coefficients, odds ratio, and p-values. Additionally, the study demonstrates the effectiveness of holdout validation in assessing the performance on unseen data, achieving a classification accuracy above 75%. The proposed method demonstrates that the process of identifying high-impact research could be automated using machine learning techniques, thus facilitating progression of society through utilization of the most impactful research.Our ongoing research is focused on extending the proposed method by implementing a deep learning algorithm, more specifically a graph neural network, to add a new analytical dimension and provide deeper insights to discover latent criteria for identifying impactful research.

Zainab Nabi

GA - Georgia State University

Discipline: Natural and Physical Sciences

Authors:

#1 Heather Pathak
#2 Mukesh Kumar

Abstract Name: Characterization of Usutu Virus Replication, Immune Response, and Blood Brain Barrier Integrity in Vitro

Flaviviruses are a global health threat causing diseases varying from mild flu like symptoms to hemorrhagic diseases and severe neurological defects. These viruses are spread by ticks or mosquito bites. Usutu virus (USUV) is a flavivirus currently circulating in Europe and has the potential to enter the central nervous system in humans. Even though USUV rarely causes neuroinvasive disease, when it does, it can lead to encephalitis, meningitis, encephalomeningitis. There is very little understanding about USUV replication, neuropathogenesis and innate and adaptive immune response. The primary host of USUV are migratory black birds, humans, are an incidental dead-end host. The goal of this study is to characterize USUV replication from the peripheries through the central nervous system in vitro. We used primary cells derived from our in vivo mouse model C57BL/6, as well as human cells lines to evaluate viral replication kinetics and the proinflammatory immune response. Viral burden was measured through plaque assay. Immune response was evaluated through qRT-PCR as well as Luminex to observe transcriptional and translation changes following USUV infection. To further understand the events leading to neuroinvasion we implemented an in vitro blood brain barrier (BBB) model using human brain microvascular endothelial cells seeded on a fibronectin insert. We measured trans endothelial electrical resistance to detect any changes in BBB integrity. We also implemented qRT-PCR to detect any changes in tight-junction proteins. The data obtained from this study will help shed light on viral replication kinetics and immune response following USUV infection in vitro.

Emma Nadeau

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Emma Nadeau

Abstract Name: Menstruation vs. Mental Health: Validating the Experiences of Adolescents with Periods

In adolescence, girls begin to navigate the effects of womanhood but are not informed on how to differentiate menstrual health from mental health to properly validate both experiences. The hormonal shifts that occur in women’s lives, transgender included, voice a need for psychological practice that acknowledges all factors that impact mental wellbeing, including intersectionality. Menstruation is easily dismissed when assessing possible mental health issues. Mental health refers to the broad set of diagnoses offered in psychological assessments; menstruation is not factored in as a potential indicator of these mental health issues. Established research in the field of psychology is limited in understanding these connections, lacking reliability between measurements and generalization to different age and cultural groups. This literature review seeks to compile the necessary research to understand the link between mental health issues and menstruation by examining the historical context, cultural variation, and depictions of menstrual health in media that can call for future research projects.

Mage Naef

NC - Western Carolina University

Discipline: Natural and Physical Sciences

Authors:
#1 Mage Naef

Abstract Name: Ahead of the Field: Biochemical Alternatives to Opium Poppy Farming

Natural opiates are refined from the flowering opium poppy plant Papaver somniferum, which is grown across several countries, primarily in South Asia. To keep up with the growing need for pharmaceutical opiates, the production of compounds such as morphine, codeine, heroin, and oxycodone have become increasingly difficult to control. Opium fields are difficult to secure, with natural factors such as droughts, blights, and irregular temperature endangering an entire year's supply of these highly effective painkillers. Current methods of opium poppy harvesting can lead to unknown concentrations of additives, impure APIs, and difficulty regulating the product as it is refined. One way to combat these issues is to find methods of opiate creation that do not involve poppy fields.Scientists have managed to develop a form of opiate synthesis that is viable for large-scale production utilizing yeast-based cloning. Research into opiate biosynthesis has been ongoing for over a decade after structural studies of opium alkaloids proved chemical synthesis unachievable due to the natural complexity of the molecular structure. The three-dimensional ring structure, constructed with an alkaloid known as tetrahydroisoquinoline, is technically feasible to clone in bacteria but requires four engineered pathways which make synthesis incredibly difficult to reproduce. Yeast cell biosynthesis operates with mechanisms much closer to the poppy plant that opiate alkaloids develop in, which allows for a single-step synthesis. This makes yeast cell cloning a more viable option than the traditionally cheaper bacterial cloning methods. Funding this biosynthesis process and shifting to a hybrid model of opiate production will allow for more control over production and a reduced demand on opiate farmers.

Aarthika Nagarajan

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Aarthika Nagarajan
#2 Brian Pipes
#3 Michele Nishiguchi

Abstract Name: CRISPRi enhanced t-fox mediated natural transformation in Vibrio fischeri

Natural transformation (NT) is a form of horizontal gene transfer, in which extracellular DNA is taken up in chromosomes by induced bacterial competence and homologous recombination. For many marine bacteria, environmental chitin induces the expression of the tfox protein to begin natural transformation. Interestingly, little is known about the frequency or efficiency this occurs in environmental bacteria, particularly those affiliated with a eukaryotic host. In this project, we examined the response of tfoX transformation under several treatments using two different tfoX-Kan expression vectors: (1) solely tfoX and (2) tfoX plus CRISPRi repression of the DNS exonuclease gene. Specific combinations of natural and artificial environmental conditions, such as low media pH and artificial tfoX protein expression were used to induce NT of exogenously added fluorescently labeled extracellular DNA in Vibrio fischeri strains ES114 (from the Hawaiian bobtail squid Euprymna scolopes) and ETBB1-C from the Australian dumpling squid E.tasmanica. Lowered media pH, high levels of cell culture density, and the expression of tfoX/CRISPRi significantly increased the frequency or efficiency of NT in V. fischeri. Determining the mechanisms of natural transformation in the environment with respect to symbiosis provides insight as to whether beneficial associations and horizontal gene transfer are impacted by abiotic changes in the surrounding seawater.

Mihiika Naheta

MA - Babson College

Discipline: Business and Entrepreneurship

Authors:
#1 Krista Hill Cummings

Abstract Name: Financial Websites: Made for One Gender?

Only about 46% of employees in the finance sector are women; however, only 15% occupy executive roles (D'Souza et al 2021). There's a clear disconnect between women entering the industry, and the cause of this consists of several deep-rooted factors that deter women from this field. Obstacles ranging from inaccessible mentors and role models to gender expectations result in this industry being largely male-dominated. Another obstacle in the way may be financial websites that cater to males, leaving females to feel unwelcome, which is the focus of this study. Past research has shown that males and females have preferences when it comes to visual aesthetics, and therefore many articles have been published around the well-known topics of font, images, layout, and color preferences in several different fields. When importing these design preferences into a digital context, other design features come into play like symmetry, button placement, and logos. While existing research points out engaging patterns of websites, no articles describe the relationship between the design elements on financial websites and gender. Thus, this paper examines this research gap. Using a multi-method design including a content analysis, survey, and focus group, I find that financial websites use design elements (like San-serif fonts and blue shades of color) that cater to males. By adding masculine design elements, these websites do not create a good fit for females and leave them feeling unwelcome on the homepage.

Narisa Naidoo

TN - University of Tennessee at Knoxville

Discipline: Natural and Physical Sciences

Authors:
#1 Narisa Naidoo
#2 Alyssa Gonneville
#3 Daniel Roberts
#4 Rajan Lamichhane

Abstract Name: Probing Interactions Between A2AAR and CaM using Fluorescence Resonance Energy Transfer

G-protein-coupled receptors (GPCRs) are membrane proteins that regulate physiological processes from extracellular signals to cause an intracellular response. The A2A Adenosine Receptor (A2AAR) is a class A GPCR that has a role in many human diseases, including cardiovascular diseases, neurological disorders, and cancer. It has been proposed that Calmodulin (CaM), a calcium-binding protein, binds to A2AAR on the intracellular side, causing changes to the receptor structure that affect the interactions of downstream signaling processes. This project aims to determine how the interactions between CaM and A2AAR affect the activation of the receptor. To study the interactions between A2AAR and CaM, we use the Förster Resonance Energy Transfer (FRET) technique in combination with single-molecule microscopy. We purified both proteins, labeling A2AAR with a donor fluorophore, Alexa 555, and CaM with an acceptor fluorophore, Cy5. Upon excitation of the donor fluorophore, emissions should be transferred from the donor to the acceptor depending upon the molecular proximity between the two labeled proteins. The emissions from the donor and acceptor can then be used to calculate the FRET efficiency or the binding interactions between A2AAR and

CaM. Once evidence of binding is established, we can determine how the interactions of these proteins affect the activation of A2AAR.

Uma Nair

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Uma Nair
#2 Advika Arya
Advika Arya

Abstract Name: Optimizing Heart Failure Prediction Through AI Machine Learning

According to WHO, cardiovascular issues are the leading cause of death around the world, and in recent years, more people have been afflicted with heart issues, leading to many more cases of heart failure. However, it is hard to know what exactly led to a person's heart collapsing. We hypothesize that by incorporating AI/Machine Learning techniques, heart failure predictions can be made to improve healthcare by detecting a person's chances of heart failure earlier so that it can be prevented. In this work, data from Kaggle was used to develop machine learning models. The data includes 12 features: age, anemia, diabetes, ejection fraction, high blood pressure, platelets, sex, serum sodium, serum creatinine, smoking, follow-up period, and creatinine phosphokinase. 299 patients from several hospitals were analyzed, and the availability of the IBM platform made it possible to use multiple algorithms to develop predictive models. In this work, Random Forest Classifier, LGBM classifier, and XGB classifier with and without enhancements were employed. The accuracy of various models was found at high levels, all above 80 percent. In each algorithm, significant features' percentage contribution to model predictions were noted. For instance, time (100%) and platelets (76%) were identified to be features with the most correlation to the LGBM classifier. The significance of these features from the medical perspective is also included. Similar results from the other two algorithms were obtained with slight deviation. ROC curves, F1 score, and confusions matrices were obtained for a comparative discussion. A full discussion on machine learning results including methods to improve the accuracies will be included in the presentation. This model in future will be applied to a larger dataset from various sources to investigate the significance of applying machine learning to develop predictive models that can conduct early diagnosis to save patients lives.

Anupama Nair

VA - Virginia Commonwealth University

Discipline: Mathematics and Computer Science

Authors:
#1 Anupama Nair

Abstract Name: Artificial Intelligence in the Diagnosis and Prevention of Multi-Stage Colorectal Cancer: Potential Algorithmic Bias and Systematic Mitigation

In the United States, colorectal cancer (CRC) rates reported from 2015-2019 revealed that CRC was the 3rd most commonly diagnosed cancer among men and women and 2nd highest in terms of cancer-related deaths among men 50 years of age or younger. Artificial intelligence (AI), through the mode of machine learning (ML) models, is a novel approach for screening and diagnosis of CRC that requires further study to determine

its appropriate mode of application. This study implemented a meta-analytic review of: (1) the role of etiological factors in disproportionate incidence of CRC across racial lines in the United States population, (2) the use of race and ethnicity as predictors in CRC ML models, (3) the use of glandular segmentation and manipulation of prediction thresholds in CRC ML models, in order to understand the potential consequences of biases in artificial intelligence implementation in the United States. It was found that the Black and African American (BAA) population had a higher incidence of CRC due to etiological factors including higher rates of non-insulin dependent diabetes (NIDDM), obesity, smoking, and a limitation of resources. Such etiological factors negatively impacted ML models, where inconsistencies in data acquisition led to poor model performance for this population. Modifications to ML models in the form of the usage of race and ethnicity as predictors increased model viability. Glandular segmentation and manipulation of prediction thresholds of CRC histopathological or whole slide imaging (WSI) in region and subsite-specific identification allowed for more accurate diagnosis of CRC imaging among the BAA population, revealing that such modifications may improve diagnostic ML model outputs across racial lines. Further research should continue to explore the implementation of race-based prediction for ML models diagnosing for CRC due to its novel nature, demonstrated biases, and improvement given technical modifications.

Dayanara Najera

TX - San Jacinto College

Discipline: Engineering and Architecture

Authors:
#1 Dayanara Najera
#2 Elise Gibney
#3 Behnaam Aazhang

Abstract Name: Minimally Invasive Deep Brain Stimulation through Temporal Interference

Past research has proposed that non-invasive treatments for neurological disorders can be developed by incorporating temporal interference deep brain stimulation (TI DBS). This method involves offsetting two high frequencies by a low frequency. High frequencies trigger minimal firing in the cortical layer, whereas stimulation in deeper tissue is triggered by the lower frequency at the overlapping point of the EM waves. An important preliminary step to achieving TI DBS is running experiments with a phantom model of the human brain. The phantom model consists of an 18 cm Petri dish that is filled with head tissue simulating liquid. Along with this, custom-designed patch antenna arrays generate electric fields, which are then measured at points throughout the phantom model. The initial tests concluded that the areas of overlap achieved higher focality and field strength with arrays of four antennas versus two. Additionally, the requirement for destructive interference was determined because the magnitude of the EM field coming from one array has a sufficient amount of strength in specific non-target areas to potentially cause stimulation.

Jorge Najera Lopez

TX - San Jacinto College

Discipline: Social Sciences

Authors:
#1 Jorge Najera

Abstract Name: The Tragedy of Chapecoense

In 2016, the soccer club of Chapecoense F.C was participating in the South American soccer tournament named “Copa Sudamericana” one of the most prestigious international tournaments of the continent. Chapecoense is a soccer club founded in 1973 in the city of Chapecó, Brazil. Chapecoense was considered a “little” team due their economic situation and because most of their time existing as a soccer club they played in the 3rd and 4th categories of Brazilian soccer. In 2015 they were admitted into the Copa Sudamericana of 2016. Against all odds, Chapecoense made their way through the cup defeating international champions and making it into the final round of the tournament against Atletico Nacional from Colombia. In order to attend the first game of the final, the team took a flight from Brazil to Bolivia and from Bolivia to Colombia. The plane which transported the team ran out of fuel 10 miles away from the airport crashing against a little hill killing 71 out 77 people who were on board. The world of soccer put aside their differences and joined together paying tribute to the small team with big dreams who gained the hearts of all soccer fans. Atletico Nacional requested CONMEBOL, the organizers of the championship, to name Chapecoense as the winners of the tournament. The organizers unanimously agreed to declare them the winners. The legacy and memory of Chapecoense is still alive in South American soccer and this event reminds us that no matter our skin color, team loyalty, nationality, or language, we all have the potential to speak the language of love and empathy.

Kledion Naksi

MA - Boston University

Discipline: Health and Human Services

Authors:
#1 Kledion Naksi
#2 Lindsey Locks

Abstract Name: Creating and Analyzing Dietary Baseline Data to Measure Nutritional Adequacy of Indian Household Contacts of Diagnosed Tuberculosis Patients

Tuberculosis (TB) is a severe bacteria-caused illness with India contributing to nearly a quarter of the prevalence. Although malnutrition has been shown to impact diagnosed TB, there is a lack of research on the diets of TB-exposed adults. The Tuberculosis: Learning the Impact of Nutrition study investigates nutritional supplementation and parasitic infections' effects on TB immune response among household contacts (HHCs) of TB cases in Tamil Nadu, India. We created and analyzed a dataset with "baseline recalls," (dietary intake surveys of the last 24 hours) conducted before intervention from January, 2019, to October, 2023 where 153 HHCs completed at least 2 recalls. Food groups based on the Minimum Dietary Diversity for Women (MDD-W), an international indicator of dietary diversity, were created using SAS and Excel and compared to recommended dietary intake (RDI) levels in India. We analyzed macronutrient intake, and zinc, iron, calcium, vitamin A, vitamin D and vitamin E as some micronutrients essential to the immune system. Our analysis found, on average, the MDD-W food group “Grains, Roots and Tubers” contributed the majority of kilocalories to participant dietary recalls. This food group features foods such as most breads and potatoes. Vitamin A rich fruits and vegetables, such as mangos, contributed the least kilocalories. All micronutrients were on average under-consumed compared to the RDI and vitamin E was the most ingested vitamin at 2.16 milligrams with vitamin A the least at 189.03 micrograms. We found adult HHCs of TB patients are deficient in several key nutrients while meeting caloric expectations through consuming a disproportionate amount of the Grains, Roots and Tubers food group among all MDD-W food groups. As this longitudinal study continues, the data from this study will enable us to assess how diets of participants in 4 enrollment groups change as recalls with supplementation are completed.

Puneet Nalluru

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Puneet Nalluru
#2 Akshat Gupta
Akshat Gupta

Abstract Name: Companies Financial Risk Predictions using Multiple Machine Learning Algorithms

The information on financial risks associated with companies is vital for their survival and is equally required for investors who are trying to maximize their financial gains by investing in these companies. The enormous amount of financial risk data accessible by the public, needs AI/machine learning techniques to develop predictive models that can be used for future assessments. In this work, IBM machine learning Cloud-based platform called IBM Watson was employed to develop algorithm-based predictive models by incorporating data from Kaggle, an open source available for AI/machine learning-based analysis. The algorithms used were the LGBM Classifier and Snap Boosting Machine Classifier with and without enhancements. The LGBM classifier with HPO-1, FE, and HPO-2 appeared as the best model with a prediction accuracy of about 85% with a processing time as small as 21 seconds. Our model accuracies varied between 82 to 85% for all possible combinations of enhancements for both classifiers. In all cases, the ROC curve with a larger area under its graph is seen as having a higher true positive to false positive ratio. The features that played a significant role in making predictions include, but are not limited to, external audit scores, the Fin scores, and internal audit scores. Overall, a higher score on all of the factors resulted in a lower probability of financial risk and may help prevent future risks. Surprisingly, the factor “past results” appeared to be negligible as it did not affect the predictions of our models. In the proposed presentation, a detailed discussion on the confusion matrix and the overall summary based on two algorithms will be included. Statistical analysis of the data will be presented and the overall findings especially the model accuracies and the identified significant features will be compared with the research available in the current literature.

Francesca Namala

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Francesca Namala
#2 Courtney Ahrens

Abstract Name: College Students’ Perceptions of Sexual Consent

Sexual assault is oftentimes justified as a miscommunication, typically entailing a man's over-interpretation of a woman’s sexual interests. Despite a plethora of research having debunked this myth, the miscommunication hypothesis continues to be applied in the court of law and lingers among the public, perpetrators and victims themselves. The “miscommunication” label imposes a level of victim responsibility and is more frequently used to excuse sexual assault that falls outside of the stereotypical rape script (i.e., violent assault committed by a stranger, in a secluded area). Considering that college students are most vulnerable to sexual assault victimization perpetrated by an acquaintance; they are more likely to assume victim responsibility for inadequately communicating sexual interest. The current study tests the validity of the miscommunication hypothesis by analyzing how college students conceptualize and apply sexual consent in hypothetical sexual scenarios. Data was collected from a sample of 200 undergraduate students taking PSY 100 at the California State University of Long Beach. Participants read through 13 sexual vignettes differentiating in communication modality, consent cues and type of consent (consent, acquiescence and non-consent). Findings revealed that students were most likely to correctly identify non-consent (98.75%)

followed by consent (89%). Acquiescence was least likely to be correctly identified as consent (8.13%) and most likely to be conflated with non-consent (67%). These findings suggest that, for the most part, college students do have a comprehensive and accurate understanding of consent. Interestingly, acquiescence, the act of giving in to consent, may not be considered an acceptable form of consent amongst college students. Acquiescence typically involves consensual but unwanted sexual activity and therefore may elicit similar trauma responses to sexual assault. Researchers should examine the impact of unwanted sexual activity among consenting versus non-consenting individuals and consider developing a more inclusive label to validate all unwanted sexual experiences.

Ronnit Nandu

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Ronnit Nandu

Abstract Name: Monitoring Metabolic Correlation in the Gut-Brain Axis During Ulcerative Colitis with Raman Spectroscopy and Metabolomics

Ulcerative colitis is a chronic disease in which abnormal reactions of the immune system cause inflammation and ulcers on the inner lining of your large intestine. The study aims to explore the complex relationship between the gut and the brain through metabolomic analysis using Raman Spectroscopy. Raman Spectroscopy is highlighted as a fast non-invasive diagnostic tool for detecting and identifying metabolites in both control and DSS-induced groups. The gut, often referred to as the "Second brain," is noted for its significant correlation with the brain, indicating disruptions in gut homeostasis may impact brain metabolites. The primary objective is to identify metabolites and pathways involved in gut-brain communication in colitis-induced mice. Colitis is induced in C57BL/6 mice by mixing dextran sulfate sodium (DSS) in their drinking water. Comprehensive Raman Spectroscopy scans are conducted on serum, brain, and caecum samples from both colitis-induced and healthy (control) groups. Peak identification in Raman spectra is performed to detect key metabolites related to the gut-brain axis and colitis. The study addresses a gap in knowledge by elucidating the correlation between colitis-induced disruptions in the gut and changes in brain metabolites. Previous studies have suggested a connection between gut and brain health during disease states, but the specific relationship with colitis-induced disruptions remains insufficiently explored. These experiments that are being conducted in murine models can be used as a reference to get a better understanding of the gut-brain axis in humans during colitis. By validating the hypothesis that colitis induces changes in the brain activity of mice, the study offers insights for potential extrapolation to the human context. In summary, the research contributes valuable insights into the intricate interplay between gut and brain function, which has been studied by taking multiple Raman scans of the serum, brain, and caecum samples providing implications for human health.

Shivek Narang

PA - University of Pennsylvania

Discipline: Health and Human Services

Authors:
#1 Shivek Narang

Abstract Name: Remote Network Effects of Post-Traumatic Lesions and Risk of Post-Traumatic Epilepsy

Title: Remote Network Effects of Post-Traumatic Lesions and Risk of Post-Traumatic Epilepsy Shivek Narang, Carly Zhao, Meghana Vasireddy, Ipek Obek, Alfredo Lucas, James J Gugger Department of Neurology, University of Pennsylvania, Philadelphia, PA Objective To assess epilepsy risk in a cohort of patients with post-traumatic contusions identified on MRI two-weeks post-injury using functional MRI to map the remote network effects of lesions. Background Traumatic brain injury (TBI) is one of the leading causes of acquired epilepsy. Neuroimaging acquired after neurotrauma and prior to the onset of seizures may be used to develop predictive models of epilepsy risk. Prior studies offer mixed results on post-traumatic lesion localization and epilepsy risk; however, no study has evaluated the effect of post-traumatic lesions on remote neural networks on post-traumatic epilepsy risk. Design/Methods We performed manual lesion (contusion) segmentation on two-week post-injury MRI of participants enrolled in phase one of the Transforming Research and Clinical Knowledge in TBI (TRACK-TBI) study. Lesion core and edema were segmented using coregistered T1 and FLAIR contrasts. Each participant's T1 image and lesion masks were then normalized to standard space where the lesion will be used as a seed in a seed-based connectivity analysis. For this analysis, we will use normative functional connectomes from the Human Connectome Project and compare lesion network maps of participants who later develop seizures to those with TBI who do not develop seizures. Group analysis will be carried out using the generalized linear model and threshold free cluster enhancement as implemented in FSL. Results: Of 606 TBI participants enrolled in phase one of TRACK-TBI, we identified 100 with at least one contusion identified on two-week post-injury MRI. Average core lesion volume was 2.2 mL and average edema volume was 128 mLs. Further results of the connectivity analyses are forthcoming

Veronica Naranjo

CA - California State Polytechnic University - Pomona

Discipline: Social Sciences

Authors:
#1 Veronica Naranjo
#2 Marie Brigitt Lamothe-François

Abstract Name: Intergenerational Effects of Mental Health Stigma in Latinx College Students: An Exploration of Familial Influence

It is well known that mental health difficulties in minority communities, including the Latino community, are quite prevalent. However, research has demonstrated that few seek the mental health assistance they need. Latinos overall have lower regard for mental health services. For those that do use mental health services, families are usually viewed as the "gatekeepers" to seeking professional help, since their opinions and suggestions are a big influence on the chances that students seek help. The main purpose for this research project is to find out whether family's perceptions of mental health and treatment influences Latino students' regard for mental health and the stigma that exists in the community. This study will also find out if gender plays a role in college students' approach to mental health and help seeking behaviors. The number of participants for this study will be about 65-70 undergraduate college students that come from a Latinx background. This study will utilize a mixed methods approach, using the Familial Perspective Questionnaire and Demographics Questionnaire to obtain qualitative information from participants about their family of origin's behavior regarding mental health, while the Stigma Consciousness Scale and the Mental Health Seeking Attitudes Scale will be used to obtain quantitative assessments. Although this study has not yet been conducted and the data collection process is currently in progress, findings will likely show that Latinx college students' perception of mental health, mental health related stigmas, and help seeking behaviors will be heavily influenced by their family of origin's perceptions.

Divya Narayan

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Divya Narayan
#2 Geraldine Maurer
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#4 Katherine Endres

Abstract Name: Student Self Assessment of Clinical Judgement Model Through Simulation

Clinical judgment is the cognitive framework that encompasses critical thinking, decision making, and knowledge application, making it an essential domain of nursing, Lassiter (2007). Lasater's Clinical Judgment Rubric (LCJR) (2007) is a tool used by faculty for measuring students' clinical judgment and for creating educational interventions, in order to teach this vital skill. Evidence shows new nurses lack clinical judgment and the ability to effectively prioritize cases in the clinical setting, Kavanagh (2017). A new simulation educational experience was developed for undergraduate nursing students that taught clinical judgment in accordance with AACN Essentials (2021) and NCSBN Clinical Judgement Measurement Model (2019). An obstetric simulation experience was developed, in order to teach clinical judgment using INACSL 2016 guidelines. Based on the Lasater Clinical Judgment Rubric (2007), we developed a self-assessment tool to measure clinical judgment among students participating in the project. The simulation experience was tested for efficacy and effectiveness in improving clinical judgment competency among undergraduate nursing students in their obstetric course. T-tests were used for analysis. The project is designed to evaluate the efficacy of a specific educational intervention by using simulation as an evidence-based teaching method to develop competency in clinical judgment skills. This pilot study has a convenience sample of junior level students in one school of nursing located in the northeastern region of the U.S. and the results may not be generalizable. The goal of this simulation experience is to improve the development of clinical judgment skills among undergraduate obstetric nursing students and to provide educators with an evidence-based educational tool that ensures graduate nursing students have competent clinical judgment skills and are able to implement them through nursing care.

Adhav Narayanan

NY - SUNY University at Buffalo

Discipline:

Authors:
#1 Adhav Narayanan
#2 Mahmud Amin
#3 Anya Wansha
#4 Victoria Oliveira
#5 Praveen Arany

Abstract Name: Matrix Mechanics Dictate Odontoblast Responsiveness to Photobiomodulation Treatments

Objectives: Regenerative dentistry promotes the directed differentiation of stem cells. While the predominant focus of these efforts has been genetic manipulations, the critical epigenetic role of extracellular matrix (ECM) mechanics has been poorly investigated. This project aims to dissect the cellular responses of odontoblasts to matrix mechanics by replicating a wound-like environment. Methods: Polydimethylsiloxane (SYLGARD 184) matrices, composed of a 10:1 ratio (base: curing agent) were poured into 12-well polystyrene plates. Mechanical stiffness was then assessed using a Shore A Durometer (Insize). Following

sterilization with 70% ethanol, UV treatments, and serum coating, odontoblasts (MDPC-23) were seeded (100,000 cells/well) in hypoxic (1µg/mL CoCl2 + DMEM 10% FBS) and serum-deficient (0.2% FBS DMEM) to simulate wound-like environment. Alamar blue assay was performed at 24 hours to assess cell viability, and fluorescence was assessed with a Spectrophotometer (i3Max, Molecular Devices). An adhesion assay was performed to observe cell-substrate interaction 5 hours after cell seeding. Signaling pathways for TGF- β1 and FAK were investigated using small molecule inhibitors and recombinant protein. Results: The shore stiffness assessment noted the ratio 10:1 had a stiffness of 1.14 ± 1.65 MPa, 2:1 of 1.16 ± 0.48 MPa, and 40:1 of 0.57 ± 0.27 MPa. These stiffnesses were significantly (n = 3, p < 0.05) lower compared to the polystyrene culture dish control of 5.41 ± 0.96 MPa. Statistically significant changes were observed in cell proliferation with varying matrix stiffness. TGF-β1 and FAK1 signaling was noted to modulate these responses. Ongoing studies are examining the role of PBM activation of these discrete pathways in mediating odontoblast adhesion and survival. Further, direct activation of these molecular pathways is being assessed with Western Blotting for pSmad2/3, pFAK, pAKT, and pPI3K.

Joshua Narisma

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Joshua Narisma

Abstract Name: How has the rise of African women artists impacted gender complementarity and depictions of the Black female form in West African art?

The West African art canon remains largely overshadowed by its European/American counterpart, despite being lush with centuries' worth of cross-cultural contact and ethnolinguistic diversity. My project seeks to illuminate the rich history of art in this region, emphasizing depictions of the Black female form, which remains a popular subject of art in West Africa. Drawing from anthropological resources and ethnographic case studies, I intend to analyze artistic representations of African women in both historical and contemporary contexts. Portrayals of the Black female form will be compared between colonial and indigenous artworks, with the latter divided between male and female artists. African men traditionally portray Black women in a more celebratory fashion than 19th century Europeans and Americans, who viewed Black womanhood through an anthropometric lens. But there are distinct differences in how African women portray themselves. This is reflected in the genderization of specific mediums such as sculpture and pottery (Thompson, 2008). This project will argue that the rising prominence of African women artists, particularly in male-dominated fields, disrupts gender complementarity in West African art, and grants women greater personal autonomy. This is supported by the fact that, after achieving economic independence in the mid-1970s to 1980s, African women began pursuing art full-time, and explored controversial topics such as female submission, the male gaze, war, and rape (Fall, 2007). Although monumental, this is not the first instance of female self-representation in African art. Through a synthesis of art-based research, I aim to uncover how this burgeoning feminist movement is rooted in historical examples of women-centered art, such as Bambara pottery and the Mende Sowo masquerade. My current research focuses mainly on Ghana, Nigeria, and Sierra Leone, but will be juxtaposed with literature surrounding women artists from elsewhere in Africa.

Haley Narita

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
#1 Jayden Ramirez De Arellano
#2 Cesar Sandoval
#3 Dominique Davis
#4 Conrad Liszka

Abstract Name: Relationship Between Financial Stress and Loneliness

As discussed in Elbogen et al. (2021), financial stress is negatively linked to loneliness. The relationship between loneliness and financial stress has grown in recent years, specifically after the Covid-19 pandemic, and has been a contributing factor to suicidal ideation (Stevenson & Stevenson, 2021). As further research demonstrates, financial stress has negative consequences on one's mental and physical health and can contribute to the feelings of loneliness (Refaeli & Achdut, 2021). Understanding the relationship between these factors is important because both can impair an individual's life through things such as; their physical health, an increase in depression, energy levels, self-esteem, and sleep issues. Not much research has been conducted on these factors outside their relationship to Covid-19. The purpose of this study is to determine how loneliness and financial stress relate to one another. In the current study we hypothesize that loneliness and financial stress have a negative relationship. The data is being collected from participants across the United States. The Financial Worry and Rumination Questionnaire (de Bruijn & Antonides, 2020) was used to measure financial stress and includes four subscales: financial rumination-related emotions, financial rumination-related cognitions, financial worry-related emotions, and financial worry-related cognitions. The Loneliness Deprivation Scale (de Jong-Gierveld, 1987) was used to measure loneliness, consisting of three subscales: longing for a very close friend or confidant, emptiness feelings, and feelings of abandonment. Multiple regression analyses will be performed to investigate what aspects of financial stress impact loneliness. Some factors such as type of job and gender will be included in this analysis. Findings will be presented in terms of practical implications these relationships could have on an individual. Findings from this research will be important for individuals experiencing financial distress to understand how it impacts other important aspects of their life.

Nikki Nasseri

CA - University of California - Irvine

Discipline: Social Sciences

Authors:
#1 Nikki Nasseri

Abstract Name: Unlocking Success: Examination of Relationship Between Mindset and Academic Success

The purpose of the study was to examine the relationships among growth mindset and various outcomes in college, including grit, psychological hardiness, overall college grade point average, perception of success in college, and perception of success in general. The research delves into how these mindsets influence academic performance, shedding light on the protective mechanisms characteristic of the fixed mindset, such as self-handicapping. This avoidance of challenges proves detrimental, hindering the ability to learn from mistakes and obstructing the realization of goals.Five hypotheses were posed. First it was expected that a growth mindset is positively related to grit. Second, it was expected that a growth mindset is positively related to psychological hardiness. Third, it was expected that the growth mindset is positively related to the overall college grade point average, students perception of success in college, and students perception of success in general. Eighteen college students from southern California completed an online study that took 20 minutes to complete. Results showed support for two hypotheses only- that is, there were strong positive relationships among growth mindset and grit, and growth mindset and college grade point average. These findings underscore the advantages of nurturing a growth mindset, advocating for resilience, persistence, and

academic triumph. However, the study acknowledges limitations tied to its location-specific context and reliance on self-report measures. In conclusion, this research accentuates the transformative capacity of a growth mindset, not only in the realm of academics but also in fostering resilience and a commitment to lifelong learning.

Sreekiran Nataraj

AL - University of Alabama at Birmingham

Discipline: Engineering and Architecture

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Abstract Name: Optimizing NO and Sirolimus-Releasing Drug Coated Balloons

Cardiovascular disease is the leading cause of death worldwide. In femoropopliteal peripheral artery disease (PAD), balloon angioplasty is the most common medical intervention. In medical practice, balloon angioplasty is conducted with uncoated balloons or drug-coated balloons (DCB). Uncoated balloons frequently lead to restenosis and neointimal hyperplasia. Paclitaxel, the clinical standard for DCB, faces efficacy concerns because of the possible increased risk of death. Therefore, sirolimus has been explored as a replacement drug for its effectiveness in drug-eluting stents and overall safety compared to paclitaxel. However, while Sirolimus may suppress neointimal hyperplasia, it damages the endothelium, possibly leading to late restenosis. We propose the dual-action DCB coating with sustained release of liposome-encapsulated sirolimus to prevent neointimal hyperplasia and sustained release of NO from the bionanomatrix to promote re-endothelialization. This study aims to optimize the DCB to improve drug transfer and retention of the drugs in the artery walls. Our preliminary study aimed to measure the transfer of NO-releasing bionanomatrix and sirolimus by deploying the balloon within an agarose gel vessel mimicking model to model an actual balloon angioplasty. The bionanomatrix was conjugated with IR dye to allow for quantification. Our preliminary transfer study indicates ~30% of the bionanomatrix can be transferred to the vessel walls. Future studies will include IR-dye conjugated bionanomatrix along with fluorescently labeled sirolimus encapsulated into liposomes coated onto balloons and transferred into pig coronary arteries. Then the arteries will be mounted into a bioreactor system subjected to physiological flow conditions for up to 14 days. These studies will be critical to assess drug transfer and retention in the artery wall over time. Our dual-action DCB shows promising drug transfer to artery walls. With more aggressive in-vivo study, this novel dual-action DCB coating can significantly better cardiac patient outcomes.

Alex Nation

TN - University of Tennessee at Chattanooga

Discipline: Natural and Physical Sciences

Authors:
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Keyle Bryant

Abstract Name: Utilizing ArcGIS StoryMaps for the Representation of Honor Trees Across Signal Mountain

The research project embarked on a collaboration with Dr. Boyd and the Signal Mountain Tree Board to delve into the exploration and documentation of honor trees using ArcGIS StoryMaps. These honor trees serve as a way for Signal Mountain residents to commemorate or cherish individuals by acquiring native trees, subsequently planted in designated areas on Signal Mountain. The project unfolded through a series of planned steps, starting with engaging with the Signal Mountain Tree Board to assess the existing information within the organization. Upon gathering information, we delved into the fieldwork phase, where we systematically gathered data points. This encompassed employing GPS technology to pinpoint precise locations, assessing the overall health of the trees, and considering various factors contributing to the vitality of these honor trees. The collection of this data laid the groundwork for a comprehensive understanding of the trees but also formed the basis for future analyses and interpretations. With the data in hand, the project transitioned into digital storytelling using the ArcGIS StoryMaps platform. The StoryMap served a dual purpose – not only as a promotional website for the honor tree program but also as an informative resource for Signal Mountain residents, potential donors seeking to contribute, current donors wanting to check on their tree(s), as well as furthering the legacy of Signal Mountain's Tree City USA status. In essence, this research project transcended the conventional boundaries of tree documentation by weaving together technological innovation, community engagement, and environmental stewardship.

Bryan Navarrete

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Bryan Navarrete
#2 Kerollos Roufael
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Kerollos Roufael

Abstract Name: Investigating the Importance of LXR Activation in C1q Modulation of Macrophage Foam Cell Responses

C1q (complement component 1q) is an innate immune protein that plays a protective role in early atherosclerosis by enhancing removal and reducing the accumulation of cholesterol in macrophages. This leads to increased macrophage foam cell survival. Cholesterol metabolism and survival are often linked with the activation of the liver X receptor (LXR) pathway in macrophages. The LXR is a nuclear hormone receptor that is divided into two isoforms, a and b, which respond to oxysterol ligands. Studies suggest that oxysterols and a few cholesterol synthesis intermediates are important bioactive metabolites in activating LXR, regulating efflux, and maintaining cholesterol homeostasis. We have previously shown that C1q increases certain oxysterols in macrophages under conditions of high cholesterol. This project aims to investigate whether LXR activation is important in the C1q-mediated macrophage protective responses in atherosclerosis such as increased foam cell survival and decreased inflammatory responses. We hypothesize that macrophages with knocked-down LXR will no longer show increased survival in the presence of C1q. For our methods, LXR a and b mRNA were knocked down in THP-1 macrophages via transfection with siRNA. The efficiency of knockdown was investigated by QPCR. Our preliminary results showed that 48 hours after transfection we were able to reduce expression of LXRa by 86%, and LXRb by 21%. Now that methods for LXR knockdown are optimized, we will investigate the importance of the LXR receptor in C1q-mediated macrophage survival and inflammatory responses. Understanding the mechanisms involved in macrophage cholesterol metabolism may be important in identifying novel therapies for atherosclerosis.

Maye Belen Navarro

NY - Guttman Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Maye Belen Navarro

Abstract Name: Quantification of Water-Soluble Polyphenols in Citrus Fruit Peels

Carefully designed experiments were performed to measure the amount of polyphenols present in citrus fruit peels. Citrus fruits are renowned for their vibrant colors, enticing aromas, and substantial vitamin C and polyphenol content. Previous scientific investigations have primarily emphasized the role of vitamin C in mitigating oxidative stress, often surpassing the significance of polyphenols, particularly flavonoids. Our research aimed to address this gap by quantifying the water-soluble polyphenols in various citrus fruit peels. Utilizing the Folin-Ciocalteu assay, the concentration of the polyphenols was measured, expressing the results in terms of an epicatechin equivalent reference scale. The experimental findings indicated a substantial presence of water-soluble polyphenols in the peels of different citrus fruits. This underscores the potential of citrus peels as a valuable source of antioxidants, which are crucial in neutralizing reactive oxygen species (ROS) and enhancing the body's natural antioxidative defenses. The study highlighted the nutritional value of often discarded citrus peels and contributed to a broader understanding of the health benefits of citrus fruits beyond their vitamin C content.

Manizha Nazari

WI - University of Wisconsin-Milwaukee

Discipline: Health and Human Services

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Mahrukh Delawarzad
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Abstract Name: A Scoping Review of Perceptions of Higher Education Personnel on Prevention and Response to Sexual Violence at University Campuses

Sexual violence is defined as any type of unwanted sexual contact or behavior that happens without the explicit and informed consent of the victim. Many students are being impacted by this problem, especially female first-year college students and LGBT students. While many efforts exist with students to address sexual violence, less is known about how the perceptions and behaviors of campus administrators and personnel influence the campus climate and sexual violence. A scoping review was conducted to answer the question, “What is the current state of research pertaining to campus sexual violence from the perspective of campus personnel, with an emphasis on those in administrative leadership positions?" A team of three undergraduate students, a research librarian, and a faculty member collaborated to design the study protocol following PRISMA-ScR guidelines. Three undergraduates reviewed 1853 publications for inclusion using the RAYYAN program, read included articles, and pulled key themes for the review from 27 peer-reviewed journal articles. The scoping review found that most research focuses on reporting and intervention, with less emphasis on prevention. Themes indicate that personnel are generally aware of sexual violence as a problem and recognize broad reporting requirements but lack an in-depth understanding of procedures and protocols. Essential actions include clearer policies, enhanced training for staff and students, and further research on the

topic. The issue of sexual assault should be taken seriously by the leadership teams in all higher education institutions, with clear actions taken for prevention and intervention.

Pape Ndao

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Pape Ndao
#2 Dr. Stuart Birrell

Abstract Name: Comparisons of Performance and Efficiency of Biodiesel and No. 2 Diesel in a 4.5L Diesel Engine

This study seeks to evaluate the comparative efficiency between standard diesel and biodiesel fuel. The investigation focuses on the impact of these fuels on parameters such as cylinder mean effective pressure, brake-specific fuel consumption (BSFC), and energy release rate, with the goal of discerning any significant disparities between the two fuel types. This work contributes to the research on alternative fuels and biodiesel engine efficiency domain, and the effect of biofuels on rate of energy release, combustion characteristics and thermal efficiency. The research will provide information to improve engine efficiency and manage emissions. The study integrates findings from various sources, offering a comprehensive grasp of biodiesel's potential as a sustainable alternative. Specifically, it explores how fuel blends influence pressure, energy, and temperature dynamics. This research provides information to optimize biodiesel engine performance and increase the adoption of alternative renewable fuels. The fuel properties will be determined utilizing ASTM D975 Standard Test Procedures, of essential fuel parameters such as flash point, heating value, and cloud point. After the engine has reached standard operating conditions, the engine will be tested at different speeds and load torques. The following measurements will be recorded: internal cylinder pressures, fuel consumption rates, engine torque, and speed, intake air pressure and temperatures, turbocharged boost pressure and temperature, and crank angle using a rotary encoder (720 pulses per revolution). The combination of measured pressures and crank angle facilitates the determination of the heat release rate. Anticipated results indicate a difference in the energy release rate, with the ensuing analysis focusing on the effects of the fuels on BSFC and Brake Thermal Efficiency. The expectation is that biofuels may contribute to an increase in BSFC. The discussion surrounding these outcomes aims to deepen our understanding of biodiesel engine performance's intricate dynamics, guiding future advancements in this critical area.

Brock Neel

IL - Illinois College

Discipline: Humanities

Authors:
#1 Brock Neel

Abstract Name: A New Look at the "October Surprise"

There has long been discussion over the validity of the 1980 "October Surprise" allegations, namely that Ronald Reagan’s campaign made a deal with the new radical Iranian government to hold fifty-two American hostages until after the presidential election, securing Reagan’s landslide victory as well as having the hostages released within minutes of his inauguration to increase his popular support. After a congressional

hearing on the matter after the publishing of Gary Sick's October Surprise found the theory to be without basis, most mainstream institutions and journalists rejected the theory and moved on. Now over forty years later, Mr. Ben Barnes has claimed in the press that he as well as his mentor John B. Connally Jr. traveled to the Middle East in order to deliver the message to the Iranians; do not release the hostages and the Republicans will give you a better deal. This new testimony from a highly respected and reliable source coupled with the decades of investigative journalism in and around the October Surprise forces even the most skeptical among us to reexamine the claims and evidence surrounding that fall in 1980. Taking into account the testimony of several figures who claim knowledge of the October Surprise, not all of whom can be trusted, the highly unusual series of events leading up to the election, and the known conspiracy of Iran-Contra along with other past transgressions by the Republican party, and the realities of the political situation within Washington at the time, the possibility, if not the certainty, of the October Surprise will become apparent.

Madie Neely

CA - University of the Pacific

Discipline: Humanities

Authors:
#1 Madie Neely

Abstract Name: Healing and Indigenous Ecofeminism in Solar Storms by Linda Hogan

This paper examines the intertwining of Indigenous feminist and ecological themes in Linda Hogan's 1997 novel, Solar Storms. Hogan crafts a narrative that revolves around the displacement and exploitation of indigenous lands and peoples. The story follows Angela Johnson, a young Native American woman, as she returns from white foster families to her grandmothers and birthplace on a journey of self-discovery and introspection with her ecological and cultural roots. Hogan weaves the themes of reconnection and reclamation to illuminate the deeply rooted intimate relations between women and the natural world. Analyzing Solar Storms from an Indigenous ecofeminist perspective allows us to uncover the connectivity that binds the contemporary and historical subjugation of both women and the environment. Indigenous ecofeminism is an intersectional theory that recognizes the kinship and intricate relationships between indigenous women and their land. Hogan explores how displacement, stemming from settler colonialism, alienates Indigenous communities and individuals from their lands and cultural traditions. The novel continues to develop this idea as it unravels Angela's alienated, complex relationship with her mother, grandmothers, and her Indigenous culture and community. This paper seeks to show how Angela's search for her roots and fight for her future mirrors the broader themes of ecofeminism from an Indigenous perspective. In my analysis, I delve into the profound ongoing impact of entangled setter colonial violence against the natural world and indigenous peoples, whose trauma is both physical and psychological. Angela's journey in Solar Storms encompasses not only the healing of the environment but also the healing of individuals, families, and communities through Native American traditional ecological wisdom that intervenes in the prevailing environmental degradation. This paper seeks to demonstrate how Solar Storms uses indigenous experiences and wisdom to underscore the inseparable connection between women and the environment.

Hawi Negewo

UAE - Zayed University

Discipline: Health and Human Services

Authors:
#1 Hawi Busa Negewo

Abstract Name: Assessing the Prevalence of Key Risk Factors Impacting Bone Health in Adult Population in the UAE

Osteoporosis, a condition characterized by decreased bone mass is a global health concern affecting more than 200 million individuals worldwide. This chronic bone disease, often called silent disease leads to fractures, particularly in individuals aged 50 and above. This study aims to evaluate the prevalence of certain risk factors for osteoporosis among the adult population in the UAE and analyze these factors based on sociodemographic characteristics. A cross-sectional study was conducted involving 214 participants from the UAE using snowball sampling for data collection. The survey was administered online, and information was collected on sociodemographic factors, anthropometric measurements, medical history, medication use, lifestyle choices, physical activity, dairy consumption, and exposure to sunlight. Based on calculated scores the levels of osteoporosis risk were categorized as low, medium, or high. Statistical analyses were performed

using Chi-Square on IBM SPSS version 29 software. Most participants fell into the medium-risk category (77.8%) while 22.2% were classified as high risk with a higher proportion being females in the high-risk category. Females also demonstrated vulnerability to risk factors such as back pain incidence and lifestyle decisions. Associations were observed between gender, age groups, marital status, education level, and income with specific risk factors. Older age groups exhibited higher rates of tobacco use, alcohol consumption and increased body mass index (BMI). The research highlights the importance of tailored interventions considering sociodemographic variations. Public health campaigns focusing on lifestyle modifications, especially in older age groups, are crucial to mitigate osteoporosis risk.

Kendall Nelson

NC - East Carolina University

Discipline: Health and Human Services

Authors:
#1 Kendall Nelson

Abstract Name: Exploring the Relationship between Migraines, Blood-flow, and Oculomotor Dysfunction

BACKGROUND: Migraines are a neurovascular disorder that causes extreme headaches, autonomic nervous system dysfunction, and sometimes aura. The purpose of this study is to assess how migraines, with and without visual aura, affect blood flow in the brain as well as oculomotor controls. METHODS: Healthy Participants (H, N=13), migraines without aura (MO, n=14), and migraines with auras (MA, n=13) (completed two trials of oculomotor tests while simultaneously recording oxyhemoglobin and deoxyhemoglobin levels through an fNIRS system. The fNIRS data was filtered with a lowpass filter of 0.1 and obtained through Oxysoft. Visual motor control, including horizontal, vertical, and circular smooth pursuit, was assessed with a RightEye system. An univariate analysis (p<.05) was conducted to examine differences between groups for both fNIR and eye data. RESULTS: There were no significant findings in the frontal lobes between groups. However, the right and left temporal lobes showed a significant difference in total hemoglobin (mg/dL) between the H and the MA group (p = .0045,). There was no difference between the MO and MA groups in the temporal lobes. Significant difference in efficiency error (≥7 mm off from the target location) in both the vertical and circular smooth pursuit between the H and MA groups (p = 0.034; p = 0.012, respectively).CONCLUSIONS: People who suffer from migraines with aura presented decreased efficiency in 2 out of the 5 oculomotor tasks when compared to a healthy group as well, and a group of migraine suffers with no aura. Additionally, the MA group presented decreased blood flow in the temporal regions of the brain when compared to the other groups.

Clara Nemzoff

VA - James Madison University

Discipline: Natural and Physical Sciences

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Abstract Name: Buckling Behavior of Thin Cylindrical Shells Under Uniaxial Compression

Hollow cylindrical structures are prevalent and critical in industries like aeronautics, space, automotive, defense, and more. The capacity for cylinders to withstand compression is a major point of interest, as in practice, they are observed to buckle under lower stress than theoretically predicted. However, when a thin-walled cylinder is wrapped around a rigid core and vertically compressed, it buckles into a regular pattern of closed-packed diamonds determined by geometrical parameters of the system. This study focuses on the formation of the bucking pattern. We aim to understand the process by which buckles are locally formed, with particular focus on how repeated compressions impact buckling behavior, and to what extent these patterns are reproducible. Through the simultaneous measurement of resistive force, buckling sound, and video capture of the buckling shell, our analysis reveals that although different shells display a unique force response, a shell with a known force response will closely reproduce the same buckling steps on repeat trials. Notably, we find that the first compression of different shells produces drastically different force distributions, while 10 compressions of the same shell yield roughly the same force distributions. Although less definitive, audio traces also appear to demonstrate replicability between repeat compressions, implying buckling memory.

Rejin Nepal

TN - Fisk University

Discipline: Health and Human Services

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Abstract Name: Predicting Income Based on Health-Related Variables

Understanding the intricate interplay between an individual's health and socioeconomic status is pivotal in public health and policy-making. This research endeavors to explore the predictive relationship between health-related metrics and income levels, leveraging a comprehensive dataset encompassing diverse personal health parameters and demographic information.The study dataset comprises multifaceted attributes, including average heart rate, activity levels (such as steps, active minutes), sleep patterns (deep, light, REM sleep), and demographic descriptors (gender, race, ethnicity). By harnessing machine learning techniques, particularly regression modeling, this research aims to construct predictive models to estimate income levels based on these health-related variables. The approach involves robust data preprocessing techniques, handling missing values, outlier detection, and feature engineering to extract meaningful insights from the dataset. Various regression models, such as multiple regression and possibly advanced ensemble methods, will be trained and evaluated to predict income brackets or levels.The outcomes of this research extend beyond predictive accuracy. It uncovers potential correlations and significance between specific health indicators and income, shedding light on the complex relationship between health status and socioeconomic factors. Additionally, the study identifies key health determinants that significantly influence income variations. The findings from this research hold promise in informing public health initiatives and policies, emphasizing the importance of holistic health in socioeconomic mobility and advocating for interventions that bridge health disparities to foster economic equity. Furthermore, this investigation provided insights specifically tailored to benefit African American communities, contributing to efforts aimed at addressing health disparities and fostering economic empowerment within this historically marginalized group. This investigation stood as a crucial step toward elucidating the connections between health metrics and income,

fostering a deeper comprehension of the multidimensional nature of individual well-being and economic outcomes.

madison nesbit

CA - Chapman University

Discipline: Interdisciplinary Studies

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Abstract Name: The Effects of Technology and Invention on the Future of Creative Work, A Literature Study

Over the past few years, a significant amount of literature has emerged on the future of creative work and changes in the creative industry caused by technological advancement and the effects of technologies on the gendered gap in labour and the environment. There are a few major changes in the creative workforce. Firstly, one critical shift would be the change in work culture and organization of labor due to the technological substitution of human tasks. Secondly, changes to the nature of creative work and work intensity have also occurred due to a shift from manual labor to digitalized labor and automation. Lastly, technological advancement has also affected skills and requirements for the creative industries' labor force. Understanding the impact of technological advancement on the labor force of critical historical eras for industrialization is significant for forecasting changes in the work organization of creative industries that will occur in the near future and their effect on the gendered division of labour and the status of the environment. It is hypothesized that changes to the creative workforce driven by technological advancement during the 19th century may predict shifts for creative work in the near future, such as increased productivity, division of labor, and degradation of work. Thus, the purpose of this review is to examine the effects that technological advancement and early inventions have had on the creative industry. The review seeks to answer the research question: How have technological innovation and early invention affected the work organization of the creative industry? This research aim will be achieved by reviewing pre-existing literature examining the potential technologically driven shifts of work organization in the labor force from various periods to determine whether or not there is a historical influence on this growing trend.

Tessa Nester

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 Tessa Nester
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Abstract Name: Role of BATF3 in Human T cells

Basic leucine zipper transcriptional factor 3 (BATF3) belongs to the family of transcription factors called Activator protein 1 or AP-1. During infection, T-cells multiply to achieve the numbers required to fight infection followed by contraction. A small portion of these T-cells are retained to make memory T-cells. BATF3 was originally discovered in human T-cells, however, our knowledge is limited to murine studies. In murine models, it was shown that when BATF3 is repressed, not as many cells make it out of the naive stage and into central memory. Cells expressing BATF3 live longer and proliferate more. This study aims to

determine the function of BATF3 in human T-cells. Interestingly, single-cell sequencing on human T-cells revealed that BATF3 was significantly upregulated in activated CD4 and CD8 T-cells. To study BATF3 in human T-cells, we will look at the proliferation marker Ki-67 to measure proliferation, and cytokine production to determine effector responses in BATF3 positive and negative T-cells. To do this we have stimulated human T-cells in three groups; unstimulated, stimulated with anti-CD3, or anti-CD3+anti-CD28. The cells were stained with fluorescently conjugated anti-CD4, anti-CD8, anti-BATF3, and anti-Ki-67. Anti-TNF-a, anti-IFN-y, and anti-Granzyme-B fluorescence will be used to determine effector responses. The data was acquired on Cytoflex and analyzed using FloJo software. Our results show that BATF3 is upregulated in T-cells upon activation. Further, there's greater upregulation of BATF3 in cells stimulated with anti-CD3+CD28 compared to anti-CD3 alone. Finally, BATF3 was upregulated at a higher level in activated CD8 T-cells as compared to CD4 T-cells. Interestingly, cells that express BATF3 have greater proliferation, suggesting that BATF3 may play a role in T-cell proliferation. Experiments are being performed to determine effector responses in BATF3+ve vs. BATF3-ve T-cells. Discovering BATF3 function in human T-cells may help develop a better understanding of memory T-cells.

Rebecca Nesvet

WI - University of Wisconsin-Green Bay

Discipline:

Authors:
#1 Rebecca Nesvet

Abstract Name: Decolonizing JANE EYRE with the Wisconsin First Nations Fusion Pedagogy Project

Informed by the Wisconsin First Nations Fusion Project ("Fusion") at the University of Wisconsin, Green Bay, I worked to "undiscipline" my teaching of Charlotte Brontë's Jane Eyre, An Autobiography (1847) to enable British Literature students to perform original research on the intersection between this novel and the cultural genocide that has long been perpetrated against Indigenous people through the pretense of formal education -- but can also be confronted in educational contexts. Rosemary Christensen and Lisa Poupart's Fusion project infuses Indigenous knowledge, history, and ethics into the curriculum, enhancing it with long-suppressed Indigenous world views. After attending Fusion dialogues in 2022-3, I refocused my teaching of Jane Eyre to enable students to utilize primary and secondary sources to explore connections between Brontë''s critique of Cowan Bridge School, where her sisters died, and residential school genocide in this continent. The first such school encountered in Jane Eyre is the hellish Lowood, which recalls not only workhouses and prisons but the deadly missionary schools of the imperial contact zones. In 1840, British colonists founded schools at Lucknow and Calcutta. Meanwhile, British missionaries in Canada founded mission schools such as the Mohawk Institute in Brantford, Ontario. Opened as a day school in 1786, the "largely church-run and funded" Mohawk Institute began boarding indigenous children in 1834, and continuing until 1970, became the longest-operating of the country's genocidal residential schools. Brontë did not know the horrific details of the imperial world's practices, but could her experience have made her sceptical? To conduct this experiment, students compare Jane Eyre's Lowood episodes with testimony by missionary, residential, and 'Indian' school 'students'/inmates from the open-access digital archive One More Voice (https://onemorevoice.org). This allows them to interpret primary sources in original ways and thereby lead the process of decolonizing our curriculum.

Zachary Nevala

MN - University of St. Thomas, Minnesota

Discipline: Natural and Physical Sciences

Authors:
#1 Zach Nevala
#2 Ella Homan
#3 Noah Stueven
#4 Wendy Nevala
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Abstract Name: Galectins 1, 3, and 9: Role in Pregnancy Immune Suppression and Parallels in Cancer

Immunosuppression is vital in pathophysiology of cancer, pregnancy, and related pregnancy complications. Pregnancy is a normal, biological process that can be studied as a model which mimics the immunosuppressive pathways of cancer. Pregnancy complications like Villitis of Unknown Etiology (VUE) and Chronic Histiocytic Intervillositis (CHI) consist of the breakdown of immunotolerance which can help identify mechanisms of cancer immune evasion and targets of immunotherapy.Cancer systemically shifts the immune response to an immunosuppressive tumor-supportive microenvironment. This is analogous to pregnancy in the sense that it is unfavorable for the immune system to attack the fetus. In pregnancy complications, we see a shift from TH2/M2 to an induced immune activation response, TH1/M1.Galectins, part of the lectin superfamily, extensively studied in pregnancy, play a role in the immune suppression of cancer. These proteins decipher information encoded by glycosylation machinery via a conserved carbohydrate recognition domain (CRD) which translates to proper cellular function. Dependent on the cancer, and tumor microenvironment, upregulation of certain galectins is associated with both immune activation and suppression. In pregnancy, galectins are recognized as an important factor in establishing immune tolerance at the feto-maternal interface and successful pregnancy.To understand the microenvironment in pregnancy and cancer, multi-plex immunofluorescence (MxIF) was utilized on pregnancy and tumor slides. Multiple tumor and trophoblast cell lines were cultured and treated with galectins with various in vitro assays. ELISA and flow cytometry were utilized to measure cytokines and cell surface markers, respectively.MxIF demonstrates that immune tolerance pathways at the feto-maternal interface and tumor microenvironment are similar in the upregulation of galectins and CD206 in both normal pregnancy and cancer as opposed to Th1/M1 upregulation in pregnancy complications and lymph nodes without tumors. In vitro assays suggest that galectins promote Th2 and M2 upregulation in T-cells and macrophages, respectively.

Manoela Neves

PA - Duquesne University

Discipline: Engineering and Architecture

Authors:
#1 Manoela Neves
#2 Ketki Velankar
#3 Wilson Meng
#4 Rana Zakerzadeh

Abstract Name: Simulation and Evaluation of Flow-Induced Shear in a Microfluidic Slide via Computational Fluid Dynamics

This study focuses on the development and validation of a computational framework to leverage a computational fluid dynamics (CFD) methodology into an in vitro platform that allows for quantifying the flow-induced wall shear stress on cultured cells in a microfluidic device and systematic investigation into the influence of scaffold permeability and perfusion flowrate. Previous literature shows that using CFD in microfluidic cell culture system studies is key, as fluid flow processes have direct implications on cellular

response. A coupled fluid-porous mathematical model of the scaffold of a microfluidic cell culture slide (ibidi GmbH, Germany) filled with hydrogel is developed to determine the fluid perfusion and resulting shear stresses within its boundaries. The Brinkman equation is applied for the characterization of fluid flow and transport in the porous model. The ANSYS CFX Workbench software is used to carry out numerical simulations that determine the fluid forces and flow mechanics produced within the hydrogel scaffold. Fluid is perfused at defined rates as experimentally derived properties for culture media and computer simulations are performed to obtain physiologically relevant values for shear stress as well as the extent to which porous media flow and the resulting stresses affect filtration velocity in the scaffold.The computational solver provides a prediction of filtration velocity within the porous channel, as well as the local shear stress fields. Moreover, the sensitivity of the model predictions to physical parameters such as hydrogel scaffold permeability and perfusion flow rate are explored. Whilst CFD model predictions are performed, laboratory experimental data is collected from cell culture experiments and the results are validated. These findings will help researchers to optimize the mean pore size of scaffolds and perfusion operating conditions to manage cell proliferation when mechanically simulating cells via flow perfusion.

Jacob Nevills

MO - Missouri State University

Discipline: Humanities

Authors:
#1 Jacob Nevills

Abstract Name: Kantian Moral Anti-Theodicy

Theodicy is a philosophical/theological practice reconciling the Western standard conception of God with the existence of suffering. Though there have been critiques of particular theodicies, moral anti-theodicy is a ‘metacritique’ of theodicies generally: it aims to critique the practice itself on moral grounds. Current arguments for moral anti-theodicy, given by Kenneth Surin, Grace Jantzen, Nick Trakakis, Samuel Shearn, John Culp, Toby Betenson, and others, show that theodicy is a practice of detachment and instrumentalization of suffering. Relying on these arguments, the aim of this essay is to consolidate moral anti-theodicy into a Kantian critique. If detachment and instrumentalization of suffering are necessary maxims of theodicy, and both maxims contradict the categorical imperative, then theodicy is immoral within a Kantian framework. Later, I will consider “The Doctor Analogy” as an objection, and my response will suggest that, if theodicy is to continue and be a moral practice, then it should model a therapeutic approach resembling Viktor Frankl’s Man’s Search for Meaning.

Laura Newcomb

CA - California State University - San Bernardino

Discipline:

Authors:
#1 Laura Newcomb

Abstract Name: Empowering undergraduates in laboratory courses to make research decisions and discover their science identity.

Traditional Molecular Biology laboratory courses use simple DNA digestion and ligation to construct a dual antibiotic resistant recombinant DNA plasmid, with no use other than as an educational tool. I transformed

this “cookie cutter” laboratory into a “Course-based Undergraduate Research Experience” (CURE) to empower students to make research decisions and discover their science identity. Here I show how to incorporate research involving protein interactions into a one semester Molecular Biology course for undergraduate STEM majors. My laboratory studies protein interactions of influenza virus, but this CURE can be modified to study any protein-protein interaction of interest. To start, students search the literature for information on influenza nucleoprotein (NP) interactions and decide which interaction to research. Next, sequence databases are accessed to retrieve NP protein sequences from human, swine, and avian hosts and analyze amino acid conservation, highlighting conserved residues across all isolates. Students then examine protein crystal structure to visualize the location of conserved residues. Based on this research, students select conserved and accessible residue(s) they hypothesize are involved in the NP interaction of focus and decide how to change the amino acid to alter interaction possibilities. Typical molecular biology techniques are then used to construct the recombinant DNA plasmid, including designing primers to amplify the altered NP gene using polymerase chain reaction (PCR), ligating DNAs together into an expression plasmid using Gibson Assembly, and transforming DNA into bacteria to amplify and isolate constructed recombinant DNA plasmids. Students send the plasmid for sequencing and analyze the sequence to confirm the desired coding change. Successful plasmids will be used to express altered NP proteins and assess function in my laboratory, or (in the future) as another CURE course, “Advanced Molecular Techniques”, expanding this CURE into a one year-long project to empower students to make research decisions and discover their science identity.

Arielle Newfield

MN - Hamline University

Discipline: Interdisciplinary Studies

Authors:
#1 Arielle Newfield

Abstract Name: Psychology in Rick and Morty: Character, Trauma, and Grief

Using Rick Sanchez C-137 from the show Rick and Morty as a character study, the paper dissects the relationship between personality, action, trauma, and grief and seeks to answer the question: What are the effects of trauma and grief on a character’s personality and actions? Through qualitative analysis, Rick’s character is divided up and each important area of his psychology is discussed; from the big five personality traits he displays and his autism to the traumatic loss of his wife and daughter and the subsequent grief that consumes him, Rick Sanchez C-137 as a character is understood through the lens of his psychology. After analyzing the application of psychology in Rick Sanchez C-137’s character, this project asks and answers the question: How can creative writers be taught to apply psychology to their own characters? Learning from one popular example of a psychologically complex character, this independent study seeks to teach creative writers how to analyze a character’s psychology and identify how the psychology of the character influences the actions they make. The curriculum made from the research of the independent study spans over six lessons, which teach students how to analyze behavior and conduct research. Over the course of these lessons, writers are given the opportunity to apply what they are learning about character and psychology to their own work. This research-driven curriculum demonstrates how the accurate and authentic application of psychology can elevate writers’ craft and create characters that resonate with their audience. Teaching creative writers about this tool at the university level lays the foundation for powerful stories that resonate with their audiences to be made in the future.

Kayleigh Newman

VA - George Mason University

Discipline: Health and Human Services

Authors:
#1 Kayleigh Newman
#2 Megan Sax van der Weyden
#3 Joel Martin

Abstract Name: Examining Lifestyle Behaviors and Fitness in ROTC Cadets

The U.S. Army's Holistic Health and Fitness (H2F) program represents a significant paradigm shift in the assessment of soldiers' health and operational readiness, moving away from fitness testing as the main indicator. This shift acknowledges that suboptimal modifiable lifestyle behaviors (mLB), particularly physical activity (PA), diet, and sleep, are vital for overall wellbeing. PURPOSE: To examine mLB and fitness of Reserve Officers Training Corps (ROTC) cadets. METHODS: Eighty-four ROTC cadets (63 male) took an online survey consisting of the Pittsburgh Sleep Quality Index (PSQI), Rapid Eating Assessment for Participants short form (REAPs), and the International Physical Activity Questionnaire (IPAQ). Fitness was assessed via the Army Combat Fitness Test (ACFT). Descriptive statistics were calculated and reported as median (interquartile range). Spearman correlation coefficients were calculated for mLB and ACFT scores, with alpha level set at 0.05. RESULTS: Cadets' PSQI scores were 6.0 (4.0, 7.0) with 56 cadets reporting poor sleep (PSQI score≥5). REAPs score were 29.0 (26.0, 31.0) with 8 cadets reporting poor dietary habits (REAPs flags≥5). Cadets self-reported PA (min/week) was 90 (66,120) and 70 (60,120) of moderate and vigorous PA, respectively, with 1680 (900,2400) mins/week of sitting time. ACFT total scores were 502 ([469,545]; 82 passed). There were no significant correlations between mLB and ACFT total scores. CONCLUSION: The lack of correlation between mLB and ACFT scores was unexpected but supports the H2F framework not solely relying on fitness testing to evaluate health and wellbeing. Due to prevalent poor sleep among cadets, interventions are recommended, as suboptimal sleep may cause impaired performance and chronic health issues. Notably, ROTC cadets are full-time students and findings should not be generalized to active-duty military populations. Thus future research should explore the H2F framework in active-duty military populations.

Hudson Neyer

CO - University of Colorado Denver

Discipline: Natural and Physical Sciences

Authors:
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#2 Jacob Johnson

Abstract Name: Novel Carbazole Porphyrin as an Extended Chromophore used as a Photocatalyst in the oxidative formation of Amide Bonds

Synthesis of a novel carbazole-porphyrin was done to extend the absorption spectra and optimize the molecules effectiveness as a photocatalyst. Porphyrins are a chromophore that are commonly found in nature. Chlorophyll-b in mitochondria and heme in red blood cells are both porphyrin derivatives found in nature which showcase the versatility of function this class of molecules exhibits. Chlorophyll-b is a photocatalyst helping plants to synthesize glucose from CO2 and H2O while heme binds and transfers oxygen around the body in the blood. Out of all the visible light, porphyrins primarily absorb violet light. Carbazole, another chromophore, absorbs light in the ultraviolet spectrum. A new molecule made up of these two chromophores was synthesized to make an extended chromophore. This extended the absorption spectra and enabled it to act as an electron acceptor and donor. The carbazole porphyrin has an extended pi-system due to the conjugation of the porphyrin being extended to the carbazole via ethynyl groups at the meso-positions. Due to this extended conjugation electrons can be transferred throughout the entire molecule. The application for this molecule is as a photocatalyst for oxidation methods. Currently research is being done into the carbazole

porphyrin's ability to act as a photocatalyst in the oxidative amidation of aromatic aldehydes. This reaction was chosen due to the importance of amide bond formation in many fields including chemistry, pharmacy, biochemistry, and bioengineering. Previous work has been done using tetraphenyl porphyrin as a photocatalyst in this reaction and will be used as a baseline when compared to the carbazole porphyrin. This will give insights into whether the carbazole porphyrin is more reactive due to its larger absorption spectra and extended conjugation.

Hudson Neyer

CO - University of Colorado Denver

Discipline: Natural and Physical Sciences

Authors:
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#2 Nathanael Ramos
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#4 Will Medlin

Abstract Name: Electrochemical routes of biomass derivative oxidation to produce hydrogen gas and useful by products on gold, silver, and copper catalysts

An electrochemical oxidation process was used to convert biomass waste products into energy and useful byproducts such as hydrogen gas. Electrochemistry was used to oxidize the aldehyde functional group to a carboxylate group in basic conditions. This reaction was chosen due to the production of hydrogen gas at both the anode where hydrogen is produced from the aldehyde hydrogen and at the cathode where the hydrogen evolution reaction takes place from water. Additionally, the electrochemical cell operates at lower cell potentials using less energy to create the hydrogen gas and the other useful by products formed during the reaction. Using benzaldehyde, a simpler model for the biomass derivative furfural, the kinetics of the oxidation process was studied on the catalyst surfaces of gold, silver, and copper. This was done by using a rotating disk electrode to perform a Koutecky-Levich study on the reaction. The Koutecky-Levich study does linear sweep voltammetry at varying rotation rates. The study provided a better understanding of the kinetics of the reaction, how mass transfer effects the rate at which the reaction proceeds, and insight into the average number of electrons that gets transferred per reactant molecule at various potentials. Due to the Koutecky-Levich study a better idea of what conditions are needed for the optimal production of hydrogen gas as well as the highest rate of reaction was found. Gold reaches a higher current density and mass transport limiting current at high potentials. Benzaldehyde oxidation occurs at earlier potentials on silver but has lower peak current due to earlier oxide formation. Copper has the lowest peak current but has the earliest onset potential for the reaction. Gold and silver transition from production of hydrogen gas at lower potentials to the formation of water at higher potentials.

Kelsey Ng

CT - Eastern Connecticut State University

Discipline: Visual and Performing Arts

Authors:
#1 Kelsey Ng

Abstract Name: Fast Fashion

Poverty, persistence, and pollution, in a single industry. With a crisis staring at you in the face, it can be difficult to ignore, especially when it is reflected in the mirror. The current climate of the fashion industry requires, or rather, begs, for it to exploit the rapid shifting of trends, the availability of materials to support the trend—as well as the wage-slavery of people—for a quick profit. On average, a single shirt in the United States is only worn several times until it is thrown out, and a great deal of clothes never get worn in the first place before they are donated, and after being donated, are more likely than not to be placed in a landfill. Many materials used in clothing manufacturing are non-biodegradable and contribute to the mark of the human age, microplastics, leaving a layer of plastic in earth that is not too dissimilar from the layer of ash and debris found around the globe that marked the end of the dinosaurs. Fast Fashion, as a typographic poster, aims to show the fleeting nature of the industry by constructing an image of a shirt created out of many lines of text, with each row of text's gap allowing for a see-through quality indicative of haste in its construction. Each line of text is warped, with many lines of text displaying a facet of the industry that is less-than-ideal, yet persistent throughout. The blue pants and the human character are the only objects solid in color, indicative of their propensity to last. Although there are many parts of the fashion process working against us, there needs to be an initiative—and from there—the gall to continue that momentum towards positive change, change that can affect much more than what you look like, but what you leave behind.

Yan-ho Ng

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Yan-ho Ng

Abstract Name: AI Impact on Form and Shape of Architectural Design

Background: This study aims to compare the form and shape in the building designs by AI and those by architects and to find out which design is superior to the other.Purpose: The study seeks to find out if the architects, who have received formal architectural education and training, can design buildings with better form and shape than those created by AI.Method: This study uses a survey to find out the opinions of Utah Valley University students regarding the comparison of the form and shape in the designs by AI and architects. To contact the potential respondents, a flyer will be posted with a QR code to the online survey in all classrooms. In the online survey, four sets of images created by AI and four sets of images designed by architects will be provided for the respondents to select the ones with better form and shape. The respondents will then decide whether the images are designed by AI or architects. The images are Gothic and modern Catholic cathedrals and churches. After receiving the responses, the data and summarized result regarding the preference of the respondents and their ability to distinguish whether the design is by AI or by architects would be provided.Result: As expected, most of the students can tell the designs by AI and which designs may have better form and shape. Further, the results from the architectural and non-architectural students may have some differences.Conclusion: AI is one of the tools in architectural designs. Nevertheless, it cannot take over the works from architects who have received years of training on learning architectural elements such as form and shape. As an architecture student, this research will help architectural students to value the education and training more.

Priscilla Ngantung

CA - Vanguard University

Discipline: Social Sciences

Authors:

#1 Priscilla Ngantung

Abstract Name: Life Habits and Practices Among Vulnerable Youths in Family Reunification Care

Family-level involvement can positively impact the outcomes for vulnerable children, implying that policies and practices designed to engage kinship networks should be further prioritized in child welfare. Since the COVID-19 pandemic, some orphanage systems in developing countries started shifting towards family-based orphan care through reunification. This research project partnered with an NGO, which serves vulnerable youths in Southeast Asia. The NGO's family-based care program has the goals of holistic restoration, discipleship, and education continuation. This study analyzes in-depth interview data from 37 children who have transitioned from the orphanage program to kinship care for the last three years. This study created the interview instrument for the organization to conduct the interviews in their respective non-English languages. My research goal is to understand the children's retention of habits and practices into transitioning to kinship care. The interview findings are that most children implemented and continued success-building life habits like studying, time management, and household work. Some children mention the change in their discipline and character from the program and expressed hopes to take care of their families through educational attainment. This study has ran chi-square cross tabulations to detect correlation between variables within the in-depth interviews. One limitation would be the interviewer effect and possibly some meanings of the interview content lost in translation. Given the context of the interview setting, the children might have felt obligated to give a correct answer instead of an honest answer. For further studies, this study proposes making this a longitudinal study to examine the progress of this cohort of children.

Kien Ngo

PA - Dickinson College

Discipline: Natural and Physical Sciences

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#1 Kien (Kyle) Ngo

Abstract Name: Enhancing Hydrophobic Interactions in Sorafenib for Improved Binding Affinity to Target Enzymes in Modern Enzyme-Substrate Modeling Software

Sorafenib is a pivotal targeted therapy in treating late-stage kidney, liver, and thyroid cancers, acting through the inhibition of c-Raf-1, a serine/threonine Raf kinase, effectively suppressing tumor-promoting gene transcription. While it stands as a primary treatment option for hepatocellular carcinoma, its commendable 10-month median overall survival is counterbalanced by substantial side effects and the common development of drug resistance. Consequently, the research focus has been directed toward the development of Sorafenib analogs with improved efficacy and safety. The emergence of modern and advanced molecular docking software has expedited the screening process by detecting cavities and simulating molecular interactions. Our research strategically employed CB-Dock 2.0 (Liu et al. 2022); an automated docking tool designed to calculate Vina scores—a weighted sum of molecular interactions—with lower scores indicative of stronger binding. We modified Sorafenib analog side chains to increase hydrophobic interactions with amino acid residues composing the c-Raf-1 cavity and generated Vina score using crystal structure of c-Raf-1 (3OMV) (Hatzivassiliou et al. 2010) and the crystal structure of the general kinase domain 4ASD (McTigue et al. 2012), yielding a Vina score 3 kJ/mol lower than the original. More significantly, the modified drug adhered to all of Lipinski's Rule of Five, suggesting a potential for oral bioavailability. There was an observed direct correlation between Vina scores from post-model and published IC50 values (Lowinger et al. 2002), suggesting the potential for a mathematical formula linking these parameters. Our next step involves refining and empirically validating this formula with our redesigned drug candidate.

Eva Ngono

MN - St. Catherine University

Discipline: Humanities

Authors:
#1 KC Meredyk
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#3 Rachel Neiwert
KC Meredyk

Abstract Name: The Legacies of Neighborhood Segregation in St. Paul, Minnesota's Independent School District 625

During the 1970s, federal government efforts to desegregate schools began in the Northern United States. Desegregating schools was especially challenging in the North because school segregation was often the result of neighborhood segregation. Our research proposes an initial answer to the question: how did school desegregation efforts in St. Paul, Minnesota address the problem of neighborhood segregation in the 1970s? St. Paul's Independent School District 625 (ISD 625) implemented school desegregation through the creation of the Learning Centers Program, an alternative strategy to simply bussing students to new schools. The Learning Centers program, started in the early 1970s, created clusters of schools in an effort to allow students to attend more diverse schools for part of their school day while still preserving neighborhood schools. Within each cluster, there were several Learning Centers a student could go to and learn a specialized skill, such as music or languages. Students would spend the first part of their day learning the basics at their neighborhood school and the other half at the Learning Centers. Examining the records of ISD 625 from 1970-1977, including intradistrict communication, correspondence with parents, and communication with the Minnesota Board of Education, reveals tension from all sides about the impact of the Learning Centers program. The cluster program placed students in a desegregated environment for part of the day, but without undoing neighborhood segregation, schools remained fundamentally segregated. As a result, the end of the Learning Centers program brought a return to segregated neighborhood schools. This research shows the ways that neighborhood segregation creates a persistent structural barrier to desegregation efforts.

Hong An Nguyen

WI - University of Wisconsin-Stout

Discipline: Natural and Physical Sciences

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Kal Breeden

Abstract Name: Trends in Long-term Dissolved Oxygen in Mid-western Lakes in Response to Climate Change

Long-term dissolved oxygen (DO) trends in lakes are an important metric to assess the well-being of lakes under the effects of climate change. Along with temperature, other climate change signals such as higher frequency of floods and severe weather also impact lake DO, negatively leading to harmful algal blooms and fish kills. Land use change is another essential factor associated with nutrient pollution in lakes and surface temperature increase. Urbanization is one of the most accountable anthropogenic adjustments in the natural world, particularly in metropolitan cities such as the Twin Cities, Minnesota. This area is a hot spot of land use change and has high lake density. Lakes are culturally indispensable to Midwestern people because they

bring influential values to people (e.g., water resources, recreation, economy, etc.). However, a study of the long-term DO trends in this area is still limited due to data sufficiency and the complexity of climate change. In this study, we will analyze data collected in lakes across the Twin Cities, Minnesota in terms of DO, temperature, and land use change over the past two decades. Our goal is to assess trends in DO and better understand how lakes have responded to climate change.

Ellie Nguyen

CA - Chapman University

Discipline: Mathematics and Computer Science

Authors:
#1 Ellie Nguyen
#2 Franceli Cibrian

Abstract Name: HarmonicThreads: A Smart Elastic Display to Support Musical Interactions

Our research revolves around HarmonicThreads, a novel, smart musical interface designed to foster the social and emotional development of children, particularly those facing differences in motor, sensory and attention skills. Currently, HarmonicThreads leverages an elastic display embedded with conductive threads and Arduino circuitry, enabling users to produce music by touching a fabric surface. Previous research has prompted the need for personalization in music therapy. Hence, we focus on the use of AI, specifically deep learning, to generate music according to the user's unique interactions with the fabric. We explore two deep learning approaches in HarmonicThreads, musical accompaniment with Google's AI Duet, and musical continuation with Magenta. The first approach takes notes played by the user and runs them through AI Duet's trained neural network, which produces a new set of complementary notes. The second approach utilizes Magenta's ImprovRNN model to play an arpeggiated pattern around a single note or chord held down by the user. We find that the first approach with AI Duet promotes more seamless musical interactions. Particularly, the algorithm allows the user to continue playing notes simultaneously with AI, instead of holding down a note and waiting for the response to complete. Therefore, we adopt the musical accompaniment method to enhance the engagement and creativity in HarmonicThreads. In our future work, we will conduct user studies to gather feedback from individuals of diverse contexts, and build upon HarmonicThreads to personalize towards the needs of these individuals. Through this exploration, we aim to contribute a unique and impactful perspective to the intersection of music, technology, and inclusive education.

Danh Nguyen

CA - Medanos College

Discipline: Natural and Physical Sciences

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#1 Danh Nguyen
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#3 Zaire Allen

Abstract Name: Agar's Dye Adsorption Capabilities, and the Effects of Amino Acids on Adsorption

With the increase in human population, the demand for clothing and textiles is also increasing, leading to an increase of wastewater released into rivers and creeks. Agar plates generally have a short life span and are

often discarded as waste in the lab regardless of them being contaminated or not. The purpose of this study is to investigate the ability of recycled agar, a substance derived from seaweed, to adsorb methylene blue, a dye used in textile industries, and to explore the effects of amino acid tryptophan plays in the adsorption. Adsorption is a phenomenon in which particles stick to the surface of the adsorbent. We focused on synthetic dextrose minimal agar base containing tryptophan, adenine, and histidine compared to agar containing just histidine and adenine. We tested the adsorption of agar by monitoring spectroscopically the amount of methylene blue remaining in solution. After testing, the agar changed from clear beige to dark purple meaning that methylene blue is being adsorbed on agar. The percent removal for agar containing tryptophan was much higher than without tryptophan, 12% vs 22% after 60 minutes. This suggests that the presence of tryptophan greatly increased the adsorption of methylene blue. This preliminary investigation of lab waste as a bioadsorbent warrant further studies regarding the effect of agar on creeks and rivers' water environment and the effect of different amino acids to improve the removal of contaminate dyes like methylene blue.

Jennie Nguyen

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Jennie Nguyen

Abstract Name: Fostering Body Positivity and Cultural Inclusivity – TIGRESS AND RABBIT as a Case Study

This project focuses on integrating biophilic design and creating a comprehensive environment in women's gyms, as demonstrated by TIGRESS AND RABBIT. The purpose is to examine how to establish a distinctive and empowering environment designed to create a safe space for women to embrace their bodies and beauty.Inspired by the diversity of a rainforest, TIGRESS AND RABBIT seek to contribute space for a supportive community in fitness that celebrates all types of backgrounds of women (particularly addressing the beauty standards) especially in minority communities. Using surveys and interviews during research, this study aims to analyze the effectiveness of TIGRESS AND RABBIT's design by comparing it with existing women's gyms. The design focuses on understanding how biophilic design elements impact the user experience and well-being and creating a safe and inclusive space for women. Case studies are also used to identify design principles and their implications for fostering body positivity.The project's significance lies in understanding how this design approach positively influences the fitness journey of women, fostering a profound sense of balance, serenity, and personal growth. The overarching goal is to contribute valuable design principles that can be applied broadly in interior design for fitness spaces, emphasizing inclusivity and body positivity. By incorporating different types of activities for women to participate in such as sports (pickleball, volleyball, swimming, track, martial arts, and boxing), classes (meditation, pilates, cooking, and dance), and lounge/relaxing spaces (cafe, courtyard, pool, and rooftop lounge) this research project provides a comprehensive approach to women’s health using biophilic design inspired by the rainforest.

Kevin Nguyen

TX - Southern Methodist University

Discipline: Natural and Physical Sciences

Authors:
#1 David Son
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Abstract Name: Synthesis of biodegradable polymers from furan-protected maleimide compounds

In recent years, the Son laboratory has developed several types of degradable polymers. More recently, N-(2-hydroxyethyl)maleimide, or HEMI, has been found to be a key starting material for degradable polymers that can be formed by simple Diels-Alder reactions between furan and maleimide derivatives. One of our goals is to develop alternative syntheses to prepare degradable polymers more cheaply and on a larger scale. Specifically, an alternative reaction similar to the Gabriel synthesis is used to eliminate a ring opening step in forming HEMI and related derivatives. The key starting material is a furan-protected maleimide. To explore this proposed alternative route, different ratios of reagents and solvents will be examined, and reaction conditions will be varied. The final products will be characterized by NMR spectroscopy. Once optimized, we hope the synthesis will have broad applicability to prepare structurally diverse maleimide derivates for incorporation into degradable polymers and networks.

Sandra Nguyen

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

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#2 Jazmin Dozier
#3 Sarah Davidson
#4 Brandon Carpenter

Abstract Name: SPR-5 and MET-2 maternal reprogramming cooperates with DREAM and MEC complexes to regulate developmental cell fates

At fertilization, histone methylation must undergo maternal reprogramming to reset the epigenetic landscape in the new zygote. During maternal reprogramming of histone methylation in the nematode, C. elegans, H3K4me is removed by the H3K4 demethylase, SPR-5, and H3K9me is subsequently added by the histone methyltransferase, MET-2. Recently, it was demonstrated that SPR-5; MET-2 maternal reprogramming antagonizes the H3K36 methyltransferase, MES-4, which maintains a transcriptional memory of a subset of germline genes between generations. Maternal loss of SPR-5 and MET-2 results in ectopic expression of MES-4 germline genes in somatic tissues and a severe developmental delay. Data from the Petrella and Ahringer Labs demonstrates that members of the DREAM Complex, a transcriptional repressor complex that regulates cell cycle, also represses germline genes in somatic tissues through H3K9me2 promoter marking. Furthermore, preliminary data from our lab shows that the histone deacetylation, MEC Complex, is also required to prevent a soma-to-germline transition. These data suggest that the DREAM complex, MEC complex, and SPR-5; MET-2 maternal reprogramming work together to prevent ectopic expression of germline genes in somatic tissues and developmental delay. To test this hypothesis, we knocked down Dream complex and MEC complex members in spr-5; met-2 mutants using RNAi and found that knocking down either complex exacerbates the severe developmental delay that we normally observe in spr-5; met-2. Using RNA-seq, we further demonstrate that knocking down Dream and MEC complex members exacerbates the ectopic expression of MES-4 germline genes in spr-5; met-2 mutant somas. Our findings provide mechanistic insight into how evolutionary conserved transcriptional repressor complexes and reprogramming of histone methylation synergize to ensure proper germline versus somatic cell fates during development.

Benjamin Nguyen

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

Authors:
#1 Benjamin Nguyen
#2 Brandon Carpenter

Abstract Name: A major regulator of germline transcription, LSL-1, contributes to developmental defects when histone methylation is inappropriately inherited

Histone methylation is a post-transcriptional modification to the N-terminal tails of histone core proteins that regulates DNA accessibility, and consequently, gene expression. Like DNA, histone methylation can be inherited between generations, and is highly regulated during embryonic development. At fertilization, histone methylation must undergo maternal reprogramming to reset the epigenetic landscape in the new zygote. During maternal reprogramming of histone methylation in the nematode, C. elegans, H3K4me (a modification associated with active transcription) is removed by the H3K4 demethylase, SPR-5, and H3K9me (a modification associated with transcriptional repression) is subsequently added by the histone methyltransferase, MET-2. Maternal loss of SPR-5 and MET-2 results in ectopic expression of germline genes in somatic tissues and a range of developmental phenotypes, including a severe developmental delay. Using a combination of RNA-seq and ChIP-seq experiments, a recent study identified a major regulator of germline transcription, LSL-1, that binds and turns on germline genes in the germline during development. From our own transcriptional analysis performed on C. elegans lacking SPR-5 and MET-2, we find that lsl-1 is significantly upregulated in somatic tissues. Together these data suggest that LSL-1 may be turning on germline genes aberrantly in somatic tissue and contributing to developmental delay. To test this hypothesis, we knocked down lsl-1 using RNA interference (RNAi) and found that the developmental delay in spr-5; met-2 mutants is significantly rescued. Using RNA-seq, we further demonstrate that knocking down LSL-1 in spr-5; met-2 mutant rescues ectopic expression of MES-4 germline genes. Together, our findings provide mechanistic insight into how inappropriate inheritance of epigenetic states perturb germline versus somatic cell fates specification during development and how this perturbation contributes to developmental phenotypes.

Brock Nguyen

CA - California State University - Fullerton

Discipline: Engineering and Architecture

Authors:
#1 Brock Nguyen

Abstract Name: Exploring Industry 4.0 through PLC Smart Factory Integration

This research delves into the transformative influence of Industry 4.0 on manufacturing, with a particular focus on the integration of Programmable Logic Controllers (PLCs) within smart factories. Industry 4.0 signifies a paradigm shift, uniting digital technologies and physical systems to revolutionize manufacturing through intelligent decision-making, automation, and enhanced efficiency. PLCs are pivotal in this transformation, enabling real-time data analysis, predictive maintenance, and seamless machine communication. Nonetheless, challenges like interoperability and security need to be addressed for successful implementation. The research aims to comprehensively analyze the implications of PLC-driven Industry 4.0, offering insights for manufacturers and policymakers while contributing to academic discourse on manufacturing's future. Additionally, it explores the integration of PLCs, IoT, and cloud computing in smart manufacturing. Practical validation is provided through an innovative 3D printing system, demonstrating cost reduction, waste minimization, and enhanced efficiency. The automation of post-printing processes improves productivity and reduces labor while contributing to sustainability. In conclusion, this study underscores the

potential benefits and challenges of Industry 4.0 and PLC automation, emphasizing the importance of meticulous analysis for successful implementation, ultimately fostering productivity, sustainability, and global competitiveness in manufacturing. In addition to its immediate implications, this research holds the promise of catalyzing broader transformative impacts, spurring innovation, and setting a precedent for the widespread adoption of PLC-driven automation, thereby shaping the future landscape of Industry 4.0 across diverse industries.

Anna My Nguyen

CA - University of California - San Diego

Discipline: Engineering and Architecture

Authors:
#1 Zaid Haddadin

Abstract Name: Taking ‘L’s in Mie Resonator Arrays for the Colorimetric Differentiation of Chiral Light

On-chip imaging platforms can be designed using two-dimensional arrangements of nanoscale structures to create a nano-optical array. Breaking the symmetry of the nanoscale structure shape allows for selective interactions with varying polarizations of incident light. Symmetry-breaking can result in chiral shapes whose mirror image cannot be superimposed onto the original image through rotation or translation operations. Circularly polarized light is chiral and can be assigned a clockwise or counterclockwise orientation according to its space-time traversal. The ideal chiral nanostructure will produce maximally different interactions between clockwise and counterclockwise circularly polarized light. However, the ideal design of a chiral nanoscale structure has yet to be discovered. In this work, we identify a methodology to guide us toward creating an ideal chiral structure by systematically altering the geometric parameters of two-dimensional chiral, L-shaped nanoscale structures comprising a nano-optical array. The merit of each geometric alteration to gain the ideal structure is determined by analyzing the near-field and far-field responses of illuminating the chiral structure with clockwise or counterclockwise light. This work provides insight into design guidelines for engineering L-shaped chiral nanostructures to differentiate between chiral orientations of circularly polarized light. The problem is constrained to the visible light regime, allowing our nano-optical arrays to be used as a differential colorimetric sensor for clockwise and counterclockwise circularly polarized light. These arrays have sensing applications in high-precision imaging to detect chemicals, gases, or biomolecules, ultimately improving diagnostic technologies.

Nancy Nguyen

OK - Oklahoma State University

Discipline: Education

Authors:
#1 Nancy Nguyen

Abstract Name: The Cultural Significance of Design in Japan

The reflection of traditional and innovative design is found in the craftsmanship of Japanese design. Graphic design in Japan has rich history rooted in their works of calligraphy, woodblock printing, and art forms such as ukiyo-e. Usage of these works can be found in the Edo period of Japan as they were focused on telling historical tales and depicting beautiful scenes of life with various subjects. Their art embraces the idea of minimalism and harmony while also serving to showcase certain societal viewpoints in the culture of Japan.

This analysis will dive into the historical evolution, influences, how it shaped the cultural identity of Japan today, and how their graphic design differs from the Western take of graphic design.

Audrey Nguyen

CA - University of California - Irvine

Discipline: Education

Authors:
#1 Audrey Nguyen
#2 Sandra Nguyen
Sandra Nguyen

Abstract Name: Phocrastination: A Game-Based Approach to Assessing and Classifying Academic Procrastination In College Students

Academic procrastination, a pervasive issue among college students, significantly impacts students' academic performance and overall well-being. Current research accredit the phenomenon to personality traits and characteristics that define each individual student. This research explores two crucial constructs related to academic procrastination: conscientiousness and self-regulation. To gain a deeper understanding of higher-order cognitive behaviors, researchers are exploring innovative approaches that can measure such complex phenomena. This study employs Game-Based Assessments (GBAs) and Evidence-Based Game Design (EBGD), which have the potential and capability to measure academic procrastination. Introducing Phocrastination, a 2D cooking video game that simulates a student’s natural learning environment and analyzes their procrastination tendencies through interactions and decisions made within the game. We aim to uncover potential connections between procrastination tendencies and the domains of time management, perfectionism, distractibility, emotional regulation, and self-discipline. The design of Phocrastination was an iterative agile design process validated through extensive review of the current literature on academic procrastination and its ability to accurately measure the intended constructs. The study was conducted over summer 2023 with 77 college students enrolled in higher education in Southern California. The raw data was collected through Firebase logs and wrangled into six usable variables. Descriptive statistics and machine learning models, including Support Machine Vector, were used to achieve convergent and predictive validity. Through Phocrastination, we seek to broaden our understanding of academic procrastination as a personality trait and demonstrate the effectiveness of game-based assessments. It provides valuable directions for future studies aiming to enhance learning outcomes and student achievement.

Tran Quynh Nguyen

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Junia Nguyen
David Rouque
Cassidy Moreau

Abstract Name: Remotely Controlled Capsule for Faster, Low Risk Brachytherapy for Cancer Treatment

The current problem with brachytherapy is that there are only two possible choices, High Dose Radiation (HDR) and Low Dose Radiation (LDR) brachytherapy. HDR uses radiation sources with very high energy

levels with a high dose rate that has a shorter treatment time but a higher risk of radiation. LDR uses radiation sources with low energy levels and low dose rates, that has lower risk of radiation but a long treatment period. In this research, a new implantable device is proposed that can control the release of radiation so that when closed, there is no radiation being emitted, and when opened can release the radiation with directivity towards the tumor to minimize the risk of radiation to the surrounding healthy cells, tissue, and organs. The frequency and duration of the release of radiation can be remotely controlled from outside the body, thereby enabling the optimization of the radiation therapy based on the size, type, and location of the tumor. The research methodology includes design of the capsule dimensions, type of metal, and thickness of metal based on the radiation source and energy level used. A circuit with inductive coils and electromagnet is designed to control the opening and closing of the radiation capsule remotely using inductive coupling via magnetic fields of the coil outside of the body and the implanted coil. Conclusions show that gold is the optimal candidate for the capsule metal, and the calculations show reasonable thickness of around 1mm to attenuate the radiation level within the safety level. Circuit designs showed it is feasible to use a single diode to convert AC current to DC current to control the electromagnet to push or pull the capsule cylinder. Overall, this is a first attempt in controlling the radiation for brachytherapy in the range between LDR and HDR.

Lynn Nguyen

OH - Denison University

Discipline: Natural and Physical Sciences

Authors:
#1 Lynn Nguyen
#2 Solomon Chak

Abstract Name: Development of UCE markers for phylogenomics in Caridean shrimps

Eusociality has evolved multiple times in the Caridean (infraorder) shrimp, especially in the genus Synalpheus from the West Atlantic. This genus is the only group known to have evolved eusociality in the marine ecosystem. The comparative analysis of the ecological and genomic underpinning of the eusocial evolution in Synalpheus has been limited by having phylogenies based on a small number of genetic markers and with a geographic breadth restricted to the West Atlantic. However, Synalpheus and potentially other origins of eusociality, can be found globally. This research aims to develop and design phylogenomic markers that can be used in Synalpheus and across the Caridean infraorder. We used the program PHYLUCE to develop ultraconserved element (UCE) markers using genome assemblies of four Caridean shrimp species (Pandalus platyceros, Caridina multidentata, Palaemon carinicauda and Macrobrachium nipponense) and one outgroup (Eriocheir sinensis). We designed baits to target these loci and evaluated these baits using an in silico approach. We identified over 6,000 markers and generated over 25,000 baits. We tested these baits using simulated Illumina reads from the four Caridean genomes and a preliminary genome assembly of Synalpheus chacei, and reconstructed a maximum-likelihood phylogenetic tree. Our tree is similar to published trees based on whole mitochondrial genomes and has better bootstrap support. Our research supports the utilities of UCE markers for phylogenetic inference across Caridean shrimps and the possibility within Synalpheus shrimps.

Anh Nguyen

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:

#1 Anh Nguyen
#2 Zhi-Ling Guo
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Abstract Name: Adenosine A2A receptors in the rostral ventrolateral medulla participate in blood pressure decrease with electroacupuncture in hypertensive rats

Acupuncture is increasingly used to manage high blood pressure (BP) as a complementary therapy. However, the mechanisms underlying its hypotensive effects remain unclear. Our previous studies have shown that electroacupuncture (EA) at ST36-37 acupoints, overlying the deep peroneal nerve, attenuates pressor responses through adenosine A2A receptors (A2AR) in rostral ventrolateral medulla (rVLM). However, it is uncertain whether rVLM A2AR contributes to EA's BP-lowering effect in sustained hypertension. We hypothesized that EA treatment lowers BP, in part, through activation of adenosine A2AR in the rVLM in hypertensive rats. To mimic essential hypertension in the clinic, we performed EA in conscious Dahl salt-sensitive hypertensive rats (DSHRs). EA (0.1–0.4 mA, 2 Hz) was applied at ST36-37 for 30 min twice weekly for four weeks, while sham-EA was conducted in a similar manner but without electrical input. In hypertensive rats, BP was reduced by EA (n = 14) but neither by sham-EA (n = 14) nor in the absence of needling (n = 8). Following four weeks of eight treatments and then under anesthesia, EA's modulatory effect on elevated BP was reversed by unilateral rVLM microinjection of SCH 58261 (1 mM in 50 nl; an A2AR antagonist; n = 7; P < 0.05) but not the vehicle (n = 5) in EA-treated DSHRs. Activation of rVLM A2AR in DSHRs treated with sham-EA by an A2AR agonist, CGS-21680 (0.4 mM in 50 nl; n = 8), decreased BP. Unilateral administration of SCH 58261 or CGS-21680 into the rVLM did not alter basal BP in salt-sensitive rats fed a regular diet with normal BP. The A2AR level in the rVLM after EA was increased compared to sham-EA and untreated DSHRs (n =5 in each group; all P < 0.05). These data suggest that a 4-week twice weekly EA treatment reduced BP in salt-sensitive hypertensive rats likely through adenosine-mediated A2AR in the rVLM.

Jennifer Nguyen

KY - Morehead State University

Discipline: Interdisciplinary Studies

Authors:
#1 Jennifer Nguyen
#2 Dakota Murphy
#3 Sarah Lakes
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Dakota Murphy
Sarah Lakes

Abstract Name: The Hazel Green Academy Revitalization Project

The Hazel Green Academy Revitalization Project is a community service-based project focused around restoring and repurposing the Hazel Green Academy (HGA). HGA was a private, college preparatory high school in Wolfe County, KY, that opened in 1880. At its height, HGA served not only as a school, but also as a source of education and community events. However, HGA closed in 1983 due to a rise in public schools in the area.The HGA Revitalization Project has three strategic priorities: create a community engagement event called Music on the Green; place all campus buildings on the National Register of Historic Places; and use the administration building for educational outreach by holding college courses on HGA's campus.These

strategic priorities will serve the community socially, academically, and holistically as HGA once did. Service-learning projects have been conducted to achieve the three strategic priorities. Students from the Craft Academy at Morehead State University have taken service-learning trips to HGA to maintain campus upkeep. This special project offers students the opportunity to engage in STEM education as well as serve the community. It is the hope of the HGA Revitalization Project to share this innovative project with other STEM-focused students throughout the state of Kentucky and beyond.

Arnold Nguyen

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Arnold Nguyen

Abstract Name: Critiquing Fukuyama: Unraveling the Complexities of 21st-Century Challenges Through Deconstruction and Hauntology

In 1992, Francis Fukuyama declared in his book, 'The End of History and the Last Man,' that Western liberal democracy and capitalism were the final unfolding of history. Margaret Thatcher's slogan, "There is no alternative" reflects this general consensus in the geopolitcal West that the old ideological wars of the USSR and the United States were over, and what remained was Western liberal democracy and capitalism. However, the 21st century elucidated that this can no longer be the case. Impoverished countries, including in West Africa, Middle East, and South America, have revealed that productive forces of capitalism are heavily reliant on the mass colonial exploitation of labor. Additionally, the ongoing economic crisis and instability demonstrated through the recessions of 2008, the contradictions of the free market, and foreign debt. Lastly, the abundant evidence of ecological degradation on a global scale, most notably observed in climate change, is a significant concern. In this presentation, I explore the field of phenomenology within academic philosophy and its political implications. I draw on Jacques Derrida's book, "Specters of Marx," specifically examining his neologism of 'hauntology', which demonstrates that Neoliberal capitalist discourse, embodied by figures such as Ronald Reagan and Margaret Thatcher, still finds itself 'haunted' by the 'specters of Marxist' thought. Through this exploration, I aim to demonstrate and offer a critique of Fukuyama's ideas. Finally, to contribute to how we can revitalize the notions of what freedom, democracy and action can be understood within the 21st century as an urgent call for collective action. Only by confronting our reality can we effectively address these pressing concerns.

Erik Nguyen

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Erik Nguyen
#2 Samee Rauf
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Samee Rauf

Abstract Name: Student Success Classification in Higher Education

Higher education is a required prerequisite for most professions in the STEM field. However, STEM fields

are inherently difficult, and some higher education students may find themselves lacking the necessary support or resources to succeed, currently resulting in an alarming 40% dropout rate. The objective of this research project is to bring awareness to early predicting factors that lead to increased student dropout, so that those students can be provided with help and resources early. This project involved developing a machine learning classification model to predict student success using early academic performance and various socioeconomic and macroeconomic factors. After trying various machine learning techniques, a Random Forest model was selected and trained on the dataset “Predict students' dropout and academic success” from UCI's machine learning repository, successfully achieving a test set accuracy of over 90%.

Duong Nguyen

CA - California State Polytechnic University - Pomona

Discipline: Natural and Physical Sciences

Authors:
#1 Duong Nguyen
#2 Chantal Stieber

Abstract Name: Probing Electrochemical CO2 Reduction with a Bidentate N-heterocyclic Carbene Nickel Complex: (tBuNHC2Me)Ni(COD)

Chemistry plays an important role in CO2 reduction as well as closing the carbon cycle. Using nickel catalyst to reduce CO2 is the main goal of this research to be able to use CO2 as a chemical feedstock. Bidentate N-heterocyclic carbene nickel complexes (RNHC2R1)Ni (R, R1 = alkyl, aryl) have been reported for cross coupling reactions and can be readily synthesized from bis(imidazolium) salt ligand precursors. [tBuNHC2Me][Br]2 was deprotonated with 2 equivalents of potassium bis(trimethylsilyl)amide (KHMDS), generating two carbenes. After that, Ni(COD)2 was added resulting in formation of (tBuNHC2Me)Ni(COD), which was characterized by 1H NMR. Stoichiometric experiments with NHC carboxylates showed some reactivity with captured CO2 sources, and additional electrochemical reactivity studies are in progress.

Khanh Linh Nguyen

CA - University of the Pacific

Discipline: Mathematics and Computer Science

Authors:
#1 Khanh Linh Nguyen
#2 Vivek Pallipuram

Abstract Name: A study of machine learning processes to guide domain scientists using TIMSS education data.

Motivated by a growing interest within the education community, in this research we employ machine learning models to study students’ math and science achievements of Singapore students using non-cognitive factors. This study comprises three pivotal components: data balancer, feature selectors, and machine learners. To address the dataset's pronounced class bias challenge, the data balancer component evaluates the SMOTE and Random Undersampling methods to alleviate data imbalances. The feature selector comprises multiple feature selection algorithms that collectively vote to select the top features (out of several non-cognitive factors) for machine learning. This process reduces the data dimensionality, allowing ML models to learn and predict effectively. The machine learners consist of a suite of classifiers and regressors. The

classifiers comprise popular machine learning models to classify student achievement into five performance categories. The regressors use the selected features to predict the math and science scores. In our evaluation of machine learning models, we employ the Trends in International Mathematics and Science Study (TIMSS) data focusing on Singapore students. Our tested ML models demonstrate commendable classification and prediction capabilities. We also demonstrate an ML model selection algorithm that leverages machine learning performance metrics and user analysis preferences to select effective ML models for classification and prediction. Our study outlines an effective machine learning process, creating an effective guide for non-computer science researchers who wish to employ machine learning for their studies.

Jessica Nguyen

VA - Virginia Commonwealth University

Discipline: Engineering and Architecture

Authors:
#1 Jessica Nguyen

Abstract Name: Sex Differences in Response to Extracellular Matrix Nanoparticles in LPS-Induced Lung Injury

Acute Respiratory Distress Syndrome (ARDS) is a severe form of lung injury with a high mortality rate and no cure. ARDS is characterized by fluid accumulation in the lung and an exaggerated immune response, leading to poor gas exchange. Current treatments include mechanical ventilation and inhaled treatments. These treatments merely work to subdue ARDS symptoms or attempt to prevent further injury. The current inhaled treatments have a particle size on the microscale; however, it has been suggested that particles should be between 100-500nm to enter and remain in the distal alveolar regions of the lung. By utilizing electrosprayed nanoparticles of a decellularized porcine lung, we expect to see increased deposition of particles and higher biocompatibility due to organ-specific components of the ECM. We hypothesize that a higher dose will have a more positive effect on LPS-induced lung injury. For this study, a porcine lung was decellularized, lyophilized, cryomilled, and electrosprayed to form nanoparticles with a diameter of 225nm. Afterward, mice were injured with LPS to mimic the conditions of ARDS, then treated with ECM nanoparticles. Following a 24-hour recovery period, lung mechanics, bronchoalveolar lavage fluid, fixed lung tissue, and plasma were collected from the mice. In female mice, the most significant decrease in cell infiltration occurs with 0.125 mg/mL (1x) of ECM nanoparticles administered. In male mice, however, a lower dose (0.0625 mg/mL, 0.5x) of ECM nanoparticles trends toward a greater decrease in cell infiltration. While we hypothesized that higher doses of ECM nanoparticles would have a more positive effect on lung injury, our recent data has shown increased cell infiltration with the highest dose of nanoparticles. To further explore these findings, our future studies will include detailed protein and cytology analysis in BAL fluid, as well as analyzing lung histology, gene expression, and plasma proteins.

Chau Nguyen

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Chau Nguyen

Abstract Name: The Cuban Revolution: Its' End & Beginning for Graphic Recognition

Cuban graphic design emerges as a vibrant and politically charged art form, reflecting the resilience and creativity of designers amidst challenging circumstances. Through a comprehensive analysis of the evolution of Cuban posters, this research illuminates the innovative techniques, visual languages, and ideological foundations that characterize the era's influence on graphic design. The study not only sheds light on the intricate interplay of art, politics, and culture in Cuba but also highlights the far-reaching influence of Cuban designers on global visual communication. By unraveling the threads of history, politics, and creativity within Cuban graphic design, this paper offers valuable insights into the impacts it had on a worldwide scale. Additionally, I examine Cuban poster design's transformative power of graphic communication with its messaging—shaping societal narratives and challenging established norms. Ultimately, this exploration of Cuban graphic design serves as a compelling case study, enriching our understanding of the intricate connections between design, society, and cultural evolution.

Chau Nguyen

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Chau Nguyen

Abstract Name: Post-Impressionism in the East

Through a review of relevant literature and analysis of primary sources, this research demonstrates that post-impressionism had a profound impact on Eastern cultures. The movement inspired artists in Japan, China, and other Eastern countries to adopt new techniques and styles that blended traditional techniques with post-impressionist principles. For instance, the rapid emergence of techniques in Japan and the Shanghai School in China were a direct result of post-impressionism influence. The research also highlights that post-impressionism's impact went beyond just art styles, as it challenged traditional notions of beauty and representation in Eastern cultures. This led to a more diverse and inclusive artistic discourse, which allowed artists to explore their individuality and creativity. Additionally, I examine how the adoption of Post-impressionist techniques by Eastern artists helped to create a new visual language that blended traditional Eastern art forms with Western influences. Ultimately, my research highlights how Post-impressionism shaped the artistic and cultural landscape of the East in the early 20th century.

Ngoc Nhi Nguyen

MD - Johns Hopkins University

Discipline: Natural and Physical Sciences

Authors:
#1 Nhi Nguyen
#2 Michael Rubenstein
#3 Charles Bieberich

Abstract Name: Investigating the role of Hoxb13 in castration-resistant prostate cancer

Prostate cancer is the second most lethal cancer in men, whose ten to twenty percent are classified as castrate-resistant prostate cancer (CRPC), which makes special cases when patients receive hormone treatments. Although disease risk is most closely associated with age, a few cases linked to hereditary gene variants contribute to disease initiation and progression. HOXB13 is a homeobox protein that plays a role in prostate

epithelium development and expresses normal levels in an androgen deficiency context. At the same time, Hoxb13 has been shown to modify the Androgen-Receptor(AR)--binding gene expression responsible for tumorigenesis in either upregulation or downregulation. Using the transgenic HMKO mouse prostate cancer model, which overexpresses the human oncogene MYC in a prostate-specific manner, along with Hoxb13 loss-of-function, we study the impact of the Hoxb13 in prostatic carcinogenesis. At first glance from histology of different Hoxb13 genotypes, we observed a significant decrease in tumor initiations in mice carrying the deleted Hoxb13 allele compared to the Hoxb13 wildtype and Hi-Myc. The results suggest that Hoxb13 contributes to the transcriptome changes that permit transformation in MYC-driven prostate cancer, and one of those is the Androgen Receptor (AR) transcriptome. To confirm that loss-of-function Hoxb13 will downregulate proto-oncogene and upregulate the tumor-suppressing gene that under the regulation of AR, we analyze the mRNA and protein expression in HMKO. Understanding the role of HOXB13 eventually specialized drug development treating prostate cancer by targeting HOXB13 mRNA or protein,

Minh Nguyen

UT - Utah Valley University

Discipline: Natural and Physical Sciences

Authors:
#1 Minh Nguyen
#2 Stella Lima
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#4 Elena Laricheva
Stella Lima

Abstract Name: Exploring the Effect of Heteroatom Doping on Optoelectronic Properties of Nanographynes vs Nanographenes

Graphene-like 2D materials have been a subject of great interest due to their potential applications in photonics and electronics. Yet, achieving efficient bandgap tuning in these materials to render them semiconducting remains a challenge: graphene, in its pristine form, lacks a bandgap. Various methods, from exploiting quantum confinement and creating nanostructures to chemical modifications, have been explored to open the bandgap in graphene—all with limited success. Recently, a novel material called graphyne, which resembles graphene, but contains a mix of sp2 and sp-hybridized carbons, has been discovered. Early studies suggest this material may offer a more easily tunable bandgap, positioning it as a promising alternative to graphene.In this computational study we have investigated the effect of single dopants (e.g., Si and Ge) and co-dopants (e.g., B-N and B-P) on the optoelectronic properties of nanographene and nanographyne using density functional theory. Our results show that nanographyne, in comparision to nanographene, exhibits higher sensitivity to bandgap tuning and has a more stable electronic structure. In particular, doping nanographyne with Ge and Si induced a red shift in absorption wavelength, while B-N and B-P substitutions resulted in a blue shift of absorption. Among the various substitution patterns explored, heteroatoms incorporated within the central ring had the most pronounced impact on the bandgap of nanographyne.The results of this project advance our understanding of the factors governing optoelectronic properties in nanographynes, paving the way for the creation of well-defined nanostructures with desired characteristics. Moreover, it provides critical insights for the controlled design of 2D graphyne-based materials applicable in organic field-effect transistors, organic photovoltaics, and organic light-emitting diodes.

Lan Nguyen

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Lan Nguyen

Abstract Name: Arts and Crafts: Is it Art?

The Arts and Crafts period started around 1876 and ended around 1916. This period consisted of very floral designs, borders, blackletter typefaces, and new technology. This movement was the response to the Industrial Revolution and the effects of mass-produced art and design. The most prominent design that affected graphic design would be typography, the evolution of printing, and wood carvings. William Morris had an immense amount of impact on the arts and crafts and influenced many other designers as well. He kept the handcrafted arts alive as well as designed multiple books that would also become very popular. The connection between typography, printing, and wood carvings conveys the impact the arts and crafts movement had on graphic design.

Kiana Nguyen

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Gwen Shaffer

Abstract Name: Trust, Transparency, and Technology: Building Digital Equity Through a Civic Digital Commons

This research project involves designing and deploying a digital rights platform that operationalizes the City of Long Beach's data privacy guidelines and its Framework for Reconciliation. The researchers are mounting "data privacy notices" in three Long Beach neighborhoods, physically adjacent to or digitally embedded within civic technologies, e.g., surveillance cameras, mobile payment kiosks, public WiFi routers, the City's parking app. The notices feature a QR code that, when scanned, takes users to an online platform that details how the City uses and stores data from that device, and who can access those data. Users can also share comments/concerns with local government officials. By providing transparency and accountability, the digital rights platform has the potential to promote greater trust between residents and local government. This mixed methods study utilized focus groups, data walks, and surveys to collect qualitative and quantitative data to answer the research questions. Transcripts of comments gathered from these data collection efforts were coded and analyzed using the constant comparative method of Glaser & Strauss (1967). The research findings will inform the digital rights platform design and ensure it is aligned with the priorities and needs of Long Beach residents.

Rachel Nguyen

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Rachel Nguyen
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#5 Amy Lasek
#6 Emily Legge

Abstract Name: Insular Cortex Perineuronal Net and Parvalbumin Intensity Throughout the Mouse Estrous Cycle

Perineuronal nets (PNNs) are extracellular matrix structures that stabilize synapses of parvalbumin (PV) interneurons in the insular cortex and play a crucial role in the brain's adaptive response to drugs and alcohol. Studies indicate higher PNN intensities in the insular cortex in female mice, which is associated with increased aversion-resistant alcohol drinking. As alcohol use disorder (AUD) has increased in women over the past few decades, understanding the mechanisms that mediate this condition is vital for the development of new biological targets and sex-specific treatments. While previous research has linked estrogen levels to elevated hippocampus PNNs, the relationship between 17β-estradiol fluctuations during the estrous cycle and insular cortex PNNs remains unexplored. This study tracked the estrous cycle stages in female mice and compared PNN intensities in the insula, assessing associations with estrogen and progesterone levels. Using fluorescently labeled Wisteria floribunda agglutinin (WFA) to visualize PNNs and a fluorescent antibody to parvalbumin for PV neurons, we show here that PNN intensity was highest in the insular cortex during estrus, indicating an association with low estradiol levels. In contrast, the estrous cycle had a limited impact on PV intensity. These findings suggest a complex relationship between hormone fluctuations, particularly 17β-estradiol levels, and PNN dynamics in the insular cortex. This knowledge may provide a greater understanding of sex-specific mechanisms underlying AUD.

Jacob Nguyen

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Jacob Nguyen

Abstract Name: Lifetime Discrimination, Perceived Stress, and Social Support as Predictors of Depression.

Depression, or major depressive disorder, is the most common psychiatric diagnosis, and is a leading cause of disability worldwide (NAMI, 2022). As depression becomes more widespread, many studies are being conducted to analyze its etiology. The study aimed to identify whether social factors, such as lifetime discrimination, perceived stress, and social support predict depression. The study hypothesized that higher levels of both lifetime discrimination and perceived stress would predict depression. Additionally, the study hypothesized that lower levels of social support would predict depression. For the study, the target demographic was young adults, ranging from 18 to 24 years of age. The participants consisted of 113 undergraduate students recruited from the psychology department at California State University, Long Beach. The participants completed an online survey that consisted of questions regarding the discrimination they have experienced throughout their lifetime, their perceptions of stress, their levels of social support, and their symptoms of depression. A multiple regression was conducted such that lifetime discrimination, perceived stress, and social support were regressed onto depression. The result indicated that the regression model was statistically significant ($F(3,109) = 6.07$, $p < 0.001$, $R^2 = 0.14$). The findings indicated that perceived stress ($\beta = 0.35$, $t(109) = 3.98$, $p < 0.001$) was a statistically significant predictor of depression. Moreover, greater perceived stress would significantly predict greater depression in participants. Therefore, it is plausible that perceived stress may predict depression. However, the findings indicated that lifetime discrimination ($\beta = 0.15$, $t(109) = 1.68$, $p = 0.097$) and social support ($\beta = -0.003$, $t(109) = -0.03$, $p = 0.977$) were not statistically significant predictors of depression. Thus, it is plausible that neither lifetime discrimination nor social support would predict depression. Nonetheless, further extensive research is necessary to learn more about lifetime discrimination, perceived stress, and social support as predictors of depression.

Desiree Nguyen

AZ - University of Arizona

Discipline: Social Sciences

Authors:
#1 Desiree Nguyen
#2 Kelly Kim
#3 Alisa Huskey
#4 Daniel Taylor

Abstract Name: Does cognitive behavioral therapy for insomnia (CBT-I) improve insomnia and anxiety symptoms in college students?

Introduction: Insomnia disorder is prevalent in college students and commonly co-occurs with mental health conditions such as anxiety. Cognitive behavioral therapy for insomnia (CBT-I) is the first line recommended treatment for insomnia, typically for patients that are middle aged or older, but less is known about its performance in college students, which this study aims to investigate. Methods: 34 college students (Mage = 19.71 years, 58.8% Female) from Denton, Texas, and diagnosed with insomnia disorder were randomized into in-person CBT-I or waitlist control (WLC) groups. At both pre- and post-treatment, participants completed the State-Trait Anxiety Inventory (Spielberger et al., 1983) and the Consensus Sleep Diary (Carney et al., 2012), from which sleep efficiency (SE) and wake after sleep onset (WASO) were derived. One-Way Analyses of Variance (ANOVA) assessed group differences in pre- to post- treatment changes in SE, WASO, and anxiety symptom severity.Results: One-Way ANOVAs revealed significant group differences in pre-to post-treatment changes in SE ($F(1, 26) = 9.57$, $p = 0.005$) and WASO ($F(1, 26) = 10.54$, $p = 0.003$) but non-significant group differences in anxiety symptom severity ($F(1, 27) = .045$, $p = 0.834$) between CBT-I and WLC groups. Specifically, those who completed CBT-I reported more improvements in SE ($M = 0.14$, $SD = 0.09$) and WASO ($M = -23.90$, $SD = 19.06$) than controls ($M = -0.01$, $SD = 0.16$; $M = -2.04$, $SD = 15.46$, respectively).Conclusion: Our results demonstrate CBT-I improves sleep, specifically SE and WASO, in college students. However, results suggest CBT-I does not significantly impact anxiety symptoms. The literature on CBT-I and anxiety remains mixed which warrants further investigation into the transdiagnostic effects of CBT-I on secondary mental health outcomes in college students. Future research should also investigate the specific conditions that CBT-I should be perform under that could produce effective improvement on secondary mental health symptons, such as anxiety.

Phocheng Ngy

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Phocheng Ngy
#2 Olga Tsyusko

Abstract Name: Assessing toxicity of the potential nitrogen carriers for nano-enabled fertilizers, hydroxyapatites, in Caenorhabditis elegans.

The growing global population has increased the demand for crop production, leading to an increased usage of nitrogen-based fertilizers. However, less than 50% of the applied nitrogen is bioavailable for the plants due to being leached out in the form of nitrates and emitted into the air as greenhouse gas, thus contributing to climate change. Nano-enabled fertilizers that can be employed for more efficient targeted nitrogen delivery with slow release are being developed. In this study safety-by-design approach has been utilized to evaluate potential toxicity of such candidate nanomaterials, Zn- or Fe-dopped Hydroxyapatite (ZnHAP and FeHAP) in a soil nematode, Caenorhabditis elegans. To aid in delivery of nanomaterials into the plant's stomata by reducing surface tension, surfactant is being added. Thus, we have examined toxicity of Zn- and FeHAP alone and in the presence of surfactant Silwet L-77. Mortality, reproduction, and growth endpoints were assessed to determine toxicity of Zn- and FeHAP to C. elegans. With ZnHAP, on average 24% to 34% mortality was observed from 100 mg/L to 275 mg/L potentially due to Zn dissolution after uptake. We have not observed the release of Zn from the materials before the uptake in the media. FeHAP showed lower toxicity and did not cause mortality above 10% up to 300 mg/L and reached 25% only at 700 mg/L . Reproduction was not affected at the tested lower concentrations of both Zn- and FeHAP. However, surfactant Silwet L-77 at 0.1% and 0.2% alone and when combined with the Zn- or FeHAP caused significant toxicity to the nematodes. Our results indicate that FeHAP has lower toxicity and might be a better candidate for nitrogen-enabled fertilizers. [TV1] We are also exploring toxicity and behavior of other surfactants in the presence of Zn- and FeHAP. Please re-check these results according to your poster data. [TV1]

Ariel Nicastro

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ariel Nicastro

Abstract Name: Ultrasound Forcing: Device Design and Applications in Neuromodulation

Focused ultrasound, a cutting-edge technology, has emerged as a powerful tool in the field of medical science for noninvasively targeting and manipulating biological systems within the human body. Neuromodulation, the manipulation of neural activity using low-intensity focused ultrasound, is a growing interdisciplinary field with a major goal of noninvasively treating disorders in the brain such as epilepsy, chronic pain, and migraines. In order to advance towards these goals, it is crucial to study neural systems in isolation, as this allows for direct observation of the neuromodulation's impact. For this reason, an acoustic forcing device that can create focused ultrasound waves was designed and assembled. This square-shaped device fits inside a petri dish, and the vibration of its piezoelectric ceramic plates when connected to a function generator creates waves that propagate through the medium. To test the device, we patterned microbeads in a petri dish of water in order to characterize the strength and spatial pattern of the acoustic forcing. This acoustic forcing

device was then used in experiments attempting to stimulate calcium activity in human neural progenitor cells. In future experiments, this device can be used to conduct further experimentation on neural networks. The results of this acoustic forcing research provide further information on the impact of focused ultrasound on neural cells, and future research will expand upon the characteristics of the acoustic forcing device.

Taylor Nichols

OK - Tulsa Community College Northeast Campus

Discipline: Natural and Physical Sciences

Authors:
#1 Taylor Nichols
#2 Mona Easterling

Abstract Name: Identifying Geographic Disparities in Suicide Rates and Survey Data Involving Risk Factors

The purpose of this project is to identify geographic disparities in suicide data and known risk factors using publicly accessible data. The state of Oklahoma has been in the top fifteen states reporting suicide mortality for the past ten years, usually falling within the top ten. Within Oklahoma, we will attempt to identify factors that contribute to disparity using BRFSS survey data. Our community campus is located within Tulsa County, second only to Oklahoma county in population. Data from the National Violent Death Reporting System will be compared to self-reported survey data involving the risk factors related to cause of death. Public Health initiatives regarding suicide are relevant and significant. In 2020 suicide was the twelfth leading cause of US death overall (45,979). This number is almost twice the size of homicides (24,576) reported in the US during the same year. Provisional CDC data indicates that both the number and the rate of suicides in the US increased 4 percent from 2020 to 2021, after two consecutive years of decline (2019-2020). The Oklahoma Violent Death Reporting System (OKVDRS) is a statewide surveillance system for monitoring suicides, homicides, undetermined manner deaths, unintentional firearm injury deaths and legal intervention deaths that collates data from medical examiner reports, death certificates, and law enforcement reports. Medical examiner suicide data for the state's two most populous counties (Oklahoma and Tulsa) will be compared to collated data. Adults reporting a health care professional diagnosis of any depressive disorder will be compared between counties, and adults reporting 14 or more days during the past 30 days during which their mental health was not good. Geographic disparities exist and can help leverage public support for protective factors, education, and intervention strategies. The goal of this project is illumination of potential solutions for our campus community.

Kaleb Nichols

IA - Iowa State University

Discipline: Social Sciences

Authors:
#1 Kaleb Nichols
#2 Kyle Burgason

Abstract Name: Willingness and Reluctance to Communicate with Police

The study aims to understand social psychological scales and create a data set that properly assesses the relationship between populations and their communication with police. There is a high level of aversion to communicating with police throughout the United States between individuals and communities. There needs

to be more knowledge of the degree of willingness of citizens to communicate with police. Many minority communities consider "snitching" a highly infamous offense with a particularly negative connotation. An examination of the phenomenon of snitching is carried out in this study by using a survey to examine and analyze the willingness/reluctance of individuals to communicate with police. The survey scales individuals' trust, loyalty, and connection to the police. The measure more directly addresses the matter than traditional measures of "trust in police" and also looks at key potential correlates. Some of these probably are indicators of criminal risk, but others might be seen as positive attributes, such as distrust of authority or loyalty to groups and friends. Many studies on this issue have problems because reluctance to work with police is correlated with distrust of police and criminal thinking and behavior, which are not shared widely in general population samples and may not be studied in enough numbers. After a small pilot study, we attempt to remedy that by targeting the study toward a more at-risk and economically disadvantaged U.S. population.

Faye Nichols

WI - University of Wisconsin-Madison

Discipline:

Authors:
#1 Faye Nichols

Abstract Name: Creating a Ten Legged Spider: Using CRISPR Technology to Produce a Transgenic Arachnid

Transgenic animal models have been used for a variety of different species to show how DNA can be modified to enhance specific mutations and showcase gene function. For example, Dr. Frank Ruddle figured out stable inheritance by inserting foreign genes into a transgenic mouse and seeing how it transferred to its offspring. However, there is not a successful completion of a transgenic arachnid yet to be completed. By using a CRISPR-Cas9 system, it is believed that creating a transgenic arachnid is possible. CRISPR-Cas9 technology can be used to edit genes by creating an RNA complex that attaches to DNA strands, cutting them in half, and then inserting programmed DNA into the cut section. By using this technology, we hypothesize that arachnid DNA can be modified to remove the segmentation between the head/thorax and abdomen, and instead generate a fifth pair of legs, making this the first transgenic arachnid. Parasteatoda tepidariorum, the common house spider, is injected with the Cas9 sequence into the ovaries. Once the parasteatoda tepidariorum lays eggs and then hatches, the clutch is separated into multiple containers. At this time, the spiderlings are highly observed through microscopes to determine if any physical characteristics of the mutation are present. After about two weeks, one group of ~10 parasteatoda tepidariorum undergoes DNA extraction, which is then used to run PCR tests to determine if the clutch carries the DNA to generate a fifth pair of legs. The PCR results are observed through gel electrophoresis, and then interpreted through the present alleles. The process is then repeated with all future clutches from the offspring of the originally injected parasteatoda tepidariorum until results are shown. If succeeded, this will be the first transgenic arachnid, and can be used to study future regeneration and evolution of segmented invertebrates.

Brooke Nicholson

OK - Cameron University

Discipline: Humanities

Authors:
#1 Brooke Nicholson

Abstract Name: Satire in the Magical World

The research collected in this essay provides new insights into Harry Potter and The Order of the Phoenix revealing J.K Rowling's hidden social criticism. In Harry Potter and the Order of the Phoenix, J.K. Rowling uses satirical elements, such as parody, hyperbole, and mockery, to call out and expose the dangers of government interference with the education system. Whether or not this was her intention, Rowling uses the teachers in her novels to represent good versus evil, good education versus American education. This paper highlights stumbling blocks that American Education has had to overcome, such as the No Child Left Behind Act. The NCLBA is the basis for the mockery shown in Harry Potter and the Order of the Phoenix through Professor Umbridge neglecting active learning and solely focusing on the education pushed by the Ministry. Professor Umbridge and The Ministry of Magic can be read as a mimicry of the American Education system suffering through the rules of the NCLBA. My analysis is shaped by Victoria Scholz's paper "Other Muggles' Children: Power and Oppression in Harry Potter," and John McNally's article regarding the NCLBA: "Many Children Left Behind: How the No Child Left Behind Act Is Damaging our Children and Our Schools." This interpretation of The Order of the Phoenix helps us to recognize and spread awareness about how America's education system is suffering. Rowling's novel is trying to help us through the means of parody: showing our education system how things can go terribly wrong when government interferes, using the allegorical interference of the magical government in the wizarding school. This paper hopes to humble us and show that even our neighbors in the UK are noticing what is wrong with our education system and that they are trying to show us what's right and wrong.

Daniel Nickel

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Danny Nickel

Abstract Name: Cutting Costs on Campus: Early In-Person Voting and Voter Turnout

National voter turnout rates reveal that young Americans are consistently underrepresented at the polls. With millions of the nation's youngest voters obtaining their right to vote amidst the transition from high school to college, this period highlights an opportunity to instill patterns of habitual voting within the nation's newest voting bloc. Relatedly, it is recognized that college students may face unique barriers to casting a ballot. One potential reform that may increase access to voting for undergraduate students is the convenience of on-campus early in-person (EIP) voting locations. Accordingly, this study investigates the impact of on-campus EIP voting on undergraduate voter turnout in North Carolina poised around the question, "Does the presence of on-campus EIP voting yield a higher turnout of undergraduate voters?" Drawing on theories of voting behavior and civic education, I expect that the convenience of on-campus EIP voting sites could increase voter turnout amongst undergraduates. To test this hypothesis, the study uses a mixed-method approach, combining voter turnout data from 2018, 2020, and 2022 general elections at North Carolina universities with interviews of collegiate professionals to identify cross-institutional patterns. The ultimate findings of this study will contribute to a more nuanced understanding of the role that convenience voting methods play in enhancing youth engagement in the democratic process. Ultimately, this study provides insight into youth voter turnout with broader implications for policymakers, educators, and public administrators seeking to implement effective strategies that promote youth voter engagement in the United States.

Jade Nickel

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Jade Nickel

Abstract Name: The History and Evolution of Traffic Signs

AbstractThis paper will cover the design history and evolution of traffic and street signs in the United States from the 1900s to the present day. It will include the importance of easy recognition within street signs. As well as how certain design elements can have an impact on how quickly a driver can react to a sign. The use of color, typography, shape, and reflectivity play an important role in traffic signs. In addition, there have been multiple changes to increase legibility and driver safety through acts of standardization and material changes.

Amelia Niedermier

PA - Drexel University

Discipline: Engineering and Architecture

Authors:
#1 Amelia Niedermier
#2 Ulrike Altenmüller-Lewis
#3 Debra Ruben

Abstract Name: Inclusive Playful Learning Spaces: A Guide to Intergenerational and Diverse Learning Environments

The Disability Rights Movement established the United States' first civil rights guidelines for people of various abilities in public spaces and education. However, since then, limited progress has occurred in creating socially equitable environments for all to experience. Inclusive design considers the age, identity, race, abilities, location, and economic demographic of the people in a space. By investigating how to make these spaces inclusive, designers can create more diverse and accessible learning tools for children and communities. Therefore, what if inclusive design could be incorporated into playful learning practices to alleviate this problem? Playful learning is a design concept meant to create educational opportunities for children that allow self-exploration and expand social, emotional, physical, cognitive, and academic skills. Reviewing existing literature on inclusive design and playful learning spaces, I have developed guidelines and learning tools to educate designers and community members on what these environments consider. These learning tools will inspire awareness of designing for inclusivity while encouraging learning through play.

Alicia Niemann

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Alicia Niemann
#2 Lara LaCaille

Abstract Name: Weight Stigma Toward Pregnant Patients: An Experimental Study of Medical Students

People who are overweight and obese commonly experience weight-related stigmatization, including within the healthcare system. Weight stigma from healthcare providers can lead to negative psychological and physiological outcomes for patients. This is particularly important in pregnancy care, as weight stigma is associated with pregnancy complications, even when controlling for actual weight. Previous research indicates that many medical providers harbor biases towards individuals with obesity, but few studies have explored the prevalence of weight stigma specific to pregnant patients. The current study investigates the presence of implicit and explicit weight bias in a sample of pre-service healthcare professionals (i.e., medical students). Using a between-subjects experimental design, participants are randomly assigned to either read a vignette about a normal weight or an obese pregnant patient. Participants then complete a number of questionnaires related to medical decision-making, perceptions of and liking of the patient, explicit attitudes about people with obesity (the Anti-Fat Attitudes Questionnaire), and knowledge about weight gain guidelines during pregnancy. We are currently collecting data at one Midwestern medical school (n=47 to date), with plans to recruit additional participants in January, 2024. Independent samples t-tests and Cohen's d effect sizes will be used to compare medical students' perceptions and attitudes towards obese versus normal weight patients. We hypothesize that medical students will report more negative attitudes toward caring for obese pregnant patients, and perceive obese pregnant patients as having poorer self-management. We also predict that few students will have accurate knowledge of official pregnancy weight gain recommendations. The results of this study will be useful in understanding current trends in medical students' weight biases, which can then inform curriculum decisions.

Sabrina Nino

CA - University of California - Merced

Discipline:

Authors:
#1 Sabrina Nino
#2 Beth Scaffidi

Abstract Name: Dietary Adaptations to Fertilizer Use. Exploring Short-term Dietary Change from Stable Isotope Analysis of Mummy Hair and Archaeobotanical Remains in Pre-Hispanic Chincha, Peru

While stable carbon and nitrogen isotope analysis are the pillars of paleodietary reconstruction, we know that climatic aridity and agricultural additives live bat guano or manure fertilizers can alter stable isotope values from those expected based on the presumed food web consumed by a community at a particular time. Therefore, before attributing isotopic change in human tissues to dietary change, we must first rule out changing fertilizer usage and understand the contributions to altered isotope ratio values from periods of intense desertification—dependent of human practices. This study conducts stable isotope analysis of human mummy hair from a drought period prior to the Inca Empire's rise, relative to modern and ancient plants from excavated and AMS-dated contests in the Kingdom of Chinch (South Coastal Peru). Together with published comparative SIA data from hair and plants, results will show how similar maize agricultural practices and maize consumption were In Chincha to other sites and region to identify the outcomes of human intervention in this case.

Matthew Nissen

MN - St. Olaf College

Discipline: Social Sciences

Authors:

#1 Matthew Nissen
#2 Maheen Asim
#3 Ahn Phan
Ahn Phan
Maheen Asim

Abstract Name: Understanding trends in political issue framing through innovative statistical processes

Understanding political discourse requires analyzing how candidates frame issues differently even if they agree, called issue frames. This research analyzes the issue frames used by congressional candidates from 2008-2022, utilizing a dataset of about 55,000 issue positions pulled from candidate's websites. Our research gives recommendations on finding the right number of issues to analyze and how to identify issue frames by using diagnostic statistics.We first employed BERTopic, an algorithm developed by Grootendorst (2022), to analyze all statements together and identify the primary political issues being discussed. This gave us a list of primary issues and keywords that signify a specific issue, but requires us to specify standards to find the right number of issues and when to combine or separate issues as needed.We then find a discrete snippet of words surrounding BERT keywords for a given issue, and compile these words for each candidate in a year. This yields a data frame, where each row has a candidate, a year, and all of the words they used discussing that issue that year. Next, we used structural topic models (STMs), as outlined by Roberts et al. (2013), to find issue frames based on candidate's word choices. We use topic coherence and uniqueness measurements to find the right way bandwidth of words to analyze and number of topic frames to look for. STMs can take into account various covariates such as political affiliation and year while analyzing word choice clusters. This gives an understanding of how political parties have separated, how time has impacted issue frame choices, and what trends we may expect to continue in the future.

Daniel Nkansah

GHA - Ashesi University

Discipline: Business and Entrepreneurship

Authors:
#1 Daniel Nkansah
#2 Eric Acheampong

Abstract Name: THE FEASIBILITY OF BIODEGRADABLE PACKAGING IN GHANA

Research Question What is the feasibility of biodegradable packaging in Ghana? Research Context This research would be solely focused on Ghana. Ghana is committed to achieving the Sustainable Development Goals of the UN, especially Goal 12 on responsible consumption and production and Goal 13 on life below water, which is supported by this study. Using sustainable packaging may decrease plastic pollution, which will help Ghana progressively get closer to meeting these goals. The use of biodegradable packaging will assist Ghana in protecting public health, marine life, and economic growth. Research Methodology The research methodology for exploring the feasibility of biodegradable packaging in Ghana is meticulously outlined. The research philosophy employed is pragmatism, emphasizing practical problem-solving rather than adhering to a specific philosophical stance. The reasoning approach is inductive, aligning with the exploratory and qualitative nature of the study. The research design adopts an exploratory case study with a qualitative approach, allowing for a detailed investigation into the complexities of biodegradable packaging within the Ghanaian context. The scope involves purposive and convenience sampling of key stakeholders such as manufacturers, food vendors, and consumers. Data will be collected through semi-structured interviews and focus group discussions, employing thematic analysis for qualitative data interpretation. The study acknowledges limitations in generalizability and potential oversights in stakeholder representation. Validity is reinforced through member checking and peer debriefing, ensuring the trustworthiness of findings. Ethical considerations encompass informed consent, confidentiality, voluntary participation, and respectful

treatment of participants, ensuring the study upholds ethical standards in its exploration of biodegradable packaging's feasibility in Ghana. Conclusion Biodegradable packaging has various advantages and can significantly reduce Ghana's plastic waste problems. This study would bring economic benefits to businesses using greener packaging, which might lead to cost savings and enhanced corporate social responsibility.

Olivia Noell Baker

CA - Pepperdine University

Discipline: Social Sciences

Authors:
#1 Olivia Noell Baker

Abstract Name: Do Voters Turnout for Black Women?

The United States Congress is meant to be an establishment that represents the US population within our government. With 7.7% of the population being Black women, why do they make up less than 1% of our congressional branch? Previous scholarship on voter turnout and congressional representation focus on the overall representation of a minority population without reference to the potential impact gender might also play. I leverage election data from the 89th Congress to the 118th as well as voter turnout records to answer the following questions: What is the differential impact of gender on voter turnout for Black candidates for the United States Congress? Is there a racialized gender differential between Black men and women within Congressional elections? Through an ordinary least squares statistical analysis, I aim to determine the difference in voter turnout when there is a Black woman on a Congressional ballot versus a Black man to better understand the impacts of race and gender on voter turnout.

Rebecca Nokku

MI - Michigan State University

Discipline: Engineering and Architecture

Authors:
#1 Rebecca Nokku
#2 Subha Kumpaty

Abstract Name: Challenges in Post-Processing of Fused-Deposition Modeled Parts

This work explored possible improvement in the Post-Processing of Additively Manufactured Acrylonitrile-Butadiene-Styrene (ABS) parts from the Stratasys F370 Fused Deposition Modeling (FDM) 3D Printer. The printed support material was dissolved in a Sodium Hydroxide solution at a pH of 10; previous research found that blisters/voids were formed in ABS parts when placed in an ultrasonic tank for cleaning. To eliminate or minimize these formations, a flow method was employed using the same ultrasonic tank but leaving the frequency off and incorporating circulation within the solution. This method used a steel paddle attached to a synchronous motor with an Revolutions Per Minute (RPM) of 60-70. Five 1x1x1in blocks were printed and tested for the first test of experiments. Another set of experiments looked at the dissolving rate of support material. Four 3x2in cylinders with a depth of ⅛ in were printed using ABS that had soluble support inside the hollowed-out area. This was to determine the dissolving rate by both ultrasonic method and the flow method. It was found that in the flow method void experiment no voids were found. In the support removal experiment, it was found that each method was more optimal for specific design formats. Nevertheless, both methods were successful and effective for removal of support in all four experimental

trials.Keywords: Fused-Deposition Modeling, Flow Method, Ultrasonic Tank, Support Material, Blisters, Post-Processing

Jackson Noll

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Daniel Pham
#2 Jackson Noll
Daniel Pham

Abstract Name: Opinions on the Necessity of a Carbon Tax

Daily activities including transportation, production of goods, electricity generation, and waste all add to humans' overall carbon footprint. One way to incentivize people to produce less carbon is to apply a tax to those who over-emit. The target of these taxes generally are corporations who contribute greatly to our carbon footprint, but there are often misunderstandings about how these taxes work. This study attempts to measure the opinion of students at the University of Wisconsin-Stout about carbon taxes when they are levied on an individual versus when they are levied on corporations. We find that most respondents wanted corporations to pay the tax if they over-emit. Leveraging Chi-square analyses, evidence supporting several relationships were determined. Much like the US population broadly, partisanship was an important influence. Ninety-seven percent of UW-Stout students that identify as Democrats stated that society would receive benefits if corporations paid more in taxes to lower emissions. Alternatively, only thirty-five Republican identifying students at UW-Stout stated that corporations paying more in taxes to lower emissions would be a benefit. There were a substantial number of neutral opinions about carbon taxes, which was a surprising finding considering past literature showing that the respondents would be more unanimous feeling more positively about having the tax be placed on corporations. Perhaps our results indicate that students have a certain level of distrust towards the government. There could also be a lack of knowledge overall when it comes to the carbon tax policy. Alternatively, it could be that they don't care what happens in their community if it doesn't affect them personally. We suggest that future studies further explore the relationship between trust in government and environmental policy knowledge and their effects on opinions on carbon taxes.

Adaline Nolley

VA - Liberty University

Discipline: Humanities

Authors:
#1 Adaline Nolley

Abstract Name: Evita: The Unassuming Rise of Argentina's Most Beloved First Lady

Born in the rural town of Los Toldos, Argentina, Eva María Duarte was not the heiress to great wealth, fame, or success. The illegitimate daughter of a wealthy farmer, Eva was often overlooked and shunned by siblings and citizens of her town. Her rise to fame as one of Argentina's most renowned historic figures was unprecedented, and it did not follow the acceptable patterns of her time nor those of other great Latin American heroes. From rumors of a romantic relationship with a dashing guitarist to her fateful move to the

city of Buenos Aires and her marriage to the low-ranking Minister of War, Juan Domingo Perón, who would become President of Argentina, the life of the now-iconic Eva Perón is shrouded in mystery. This research explores the myths, presuppositions, and assumptions made about Eva Perón's life and influence, and separates fact from fiction and speculation. It is a study of the charismatic leadership of one of Latin America's most famous ruling couples and an exposition of the origins of many long-perpetuated rumors regarding Eva Perón's rise to fame. Known charmingly as "Evita," a nickname that garnered international renown with Andrew Lloyd Webber's musical of the same name, Perón is often viewed as a sleazy, over-sexualized female powerhouse rather than a charismatic, adoring, and calculated leader who sought to accomplish what she perceived as best for her nation. Using Evita's memoir, primary sources from those affected by her policies, and modern praises of her work, the research seeks to provide an accurate portrait of Argentina's most loved First Lady, Eva Perón.

Gavin Norton

IA - Iowa State University

Discipline: Interdisciplinary Studies

Authors:
#1 Gavin Norton
#2 Stephanie Reinders

Abstract Name: The Impact of Zoom on Smartphone Camera Identification

Feature-based forensic science involves the process of identification, where experts attempt to determine whether a questioned object is of the same origin as a known item. In camera identification, this typically means a photo of unknown origin is compared to a camera fingerprint from a suspect's camera. By using the Peak-to-Correlation Energy (PCE) score to measure the similarity between a questioned image and a camera fingerprint, it is often possible to determine with a high level of accuracy whether the questioned image was taken by the suspect's camera, i.e., whether the image and fingerprint 'match.' This project expands on camera identification by testing whether zooming in affects the reliability of identification on various smartphones. The Center for Statistics and Applications in Forensic Evidence (CSAFE) purchased sixty phones for camera identification research. This project began by testing ten iPhone 14 Pro's-- a phone with a dedicated telephoto (zooming) camera. Photos were collected with the telephoto camera on each phone at five different zoom levels (3x, 6x, 9x, 12x, and 15x). Two hundred images were taken at each zoom level, one hundred of which were of a blank wall and one hundred were of natural scenes. The blank wall images are used to calculate the phone's fingerprint, an average of the blank wall image noise residuals. The natural scene images are then compared to the blank image fingerprints. Our initial results show that camera identification for 3x zoom magnification is fairly accurate but unreliable for magnification greater than 3x. Further trials are being conducted to evaluate this result over a range of phones and to see if anything can be done to improve the reliability of identification.

Sarah Norton

SC - The Citadel

Discipline: Natural and Physical Sciences

Authors:
#1 Tristan Eberbach
Tristan Eberbach

Abstract Name: Portable Weather Prediction Device

Abstract— The U.S. military currently relies on the Defense Meteorological Satellite Program to predict weather around the world. In some situations, communication with satellites is dangerous or difficult, if not impossible, a localized system for predicting severe weather is therefore beneficial to soldiers. To address this problem, the team has developed a portable low-cost weather detection system and algorithm to make predictions of extreme localized weather. The small-footprint microcontroller-based system measures pressure, temperature, and humidity over time and provides a real-time extreme weather assessment without reliance on satellite data or any communications. Though current devices are capable of collecting localized data, none of these predict incoming weather. Using data for Charleston, SC, the most significant indicators for predicting incoming weather are pressure, temperature, and humidity. In assessing storm risk, the pressure must be above 1009 mb for no storms, 1000-1008 for mild storms to thunderstorms, and any pressure of 1000 or under can result in Hurricanes, cyclones, and typhoons. Heat and water vapor are required for precipitation. As temperature increases so does humidity leading to a storm formation.

Tina Nosrati

NJ - Ramapo College of New Jersey

Discipline: Mathematics and Computer Science

Authors:
#1 Tina Nosrati

Abstract Name: The Art of Communication with AI: Unlocking the Power of Generative Language Models

The increasing popularity of generative AI models has led to a new research trend focused on improving collaboration with these models and optimizing their results. In other words, now that generative models are capable of solving problems, how should we interact with their applications, such as ChatGPT and Bard, in order to get the best result? In our research, we focused on Prompt Engineering, one of the trends in this area. We used a systematic literature review framework to gather and analyze the newest papers, introducing Prompt Engineering methods and how they can improve human interaction with language models in the form of prompts and lead to accurate and applicable results. In addition to a brief description of the logic behind each of these methodologies, we will present a number of examples to show how to apply these methods in our daily use cases of Language Models. This research aims to provide a guideline for understanding and using prompting methodologies for different use cases, including but not limited to Few-Shot Prompting, Chain-of-Thought Prompting, and Generated Knowledge Prompting, in addition to understanding the general attributes of a successful prompt. We are looking forward to a comprehensive literature review that includes test cases and identifies research gaps in this developing area.

Brienna Notaro

MA - Bridgewater State University

Discipline: Education

Authors:
#1 Brienna Notaro

Abstract Name: Anti-Racist and Inclusive Arts Education in Secondary Schools

My project aimed and succeeded in creating a website that hosts a curriculum framework that is inclusive to

artists all over the world. In our education system, there is a serious lack of diversity in the artists we learn about. In middle schools, some kids don't even really learn specific artists, just different art styles, but what good are the styles if we know nothing about their stories! I researched and focused on artists who are Black, LGBTQ+, and disabled, but organized the project resources so that educators can use the template to include endless possibilities of other cultures and/or groups of people. Along with the groups of artists, the website contains a page full of resources for teachers to make diversifying their classrooms more simple in hopes to take anxiety out of an often heavy subject. Not only will this educate our educators, but it will allow students (especially students belonging to a minoritized group) to get an understanding of how they want to develop their own personal art styles and see themselves as artists because they have someone whom they can look up to. Owning my positionality is important here because as a white woman I will never understand the struggles and complexities of what it means to be minoritized, but I just hope that I can use my voice to help, and I am always open to learning from diverse groups on how to improve and become the best version I can be for all my future students!

Cecilia Nottingham

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Cecilia Nottingham
#2 Morgan Ayscue
Morgan Ayscue

Abstract Name: An Investigation of Water Quality Surrounding Environmental Justice on the Waterways of Southeast Raleigh, NC

Walnut Creek Wetland Center located in downtown Raleigh, North Carolina is rich in history of injustice resulting from a lack of environmental stewardship over several years. Many homes built in this southeast area of Raleigh where known floodplain issues occurred were forced on historically black families. Over the years, the waterways in this vicinity were known for trash dumping grounds and resting areas for waste coming from the upstream flow of Walnut Creek. In the mid 1990s, the surrounding community took action and began focusing on improving the issues of flooding and poor water quality. Working with Partners for Environmental Justice (PEJ), we began a study to monitor the waterways as a result of the years of environmental justice issues. The aim of this project is to investigate the possible point sources that could be the main cause for contamination in the Little Rock Creek. Weekly measurements of basic water quality parameters such as pH, dissolved oxygen, conductivity, turbidity, and nutrients, along with monthly biological testing, have shown significant concerns. The preliminary data findings will be used for community outreach and assessing wetland ecosystem services. This monitoring of various locations will lead to vital information to share with stakeholders in making future decisions regarding environmental stressors and their impact on this community.

Samuel Nowak

WI - University of Wisconsin-Stout

Discipline: Humanities

Authors:
#1 Samuel Nowak

Abstract Name: The Influence of Historically Contextual Video Game Franchises Towards an Individual's Perception of Historical Knowledge

Video games are a form of interactive entertainment which encourages further engagement from players. Billions of people have incorporated video games into their lives, with many playing daily. This has led many to consider the potential video games have as instructional tools in education. Past research has focused on analyzing the educational potential of incorporating video games into social studies courses. While findings are mixed, a sizable group of researchers support the incorporation of video games into the classroom. Outside of the debate on whether they should be used or not, the literature hasn't focused as much on how video games are related to an individual's perception of their knowledge, and specifically how historically contextual videogames can effect one's perceived rating of historical knowledge. In order to fill this gap, I distributed a unique online survey to 1500 students at a regional public school in Wisconsin and separately to a community Facebook group for the town the University is located in. The results indicate that there is a significant relationship between those who are interested in playing historically contextual video game franchises and their perceived knowledge of world history, with those who were interested in historical video games rating their historical knowledge higher. Even when controlling for demographics like gender, marital status, and the amount a person reads, there still is a significant relationship between one's perceived knowledge of world history and their interest in playing historically contextual video game franchises. This study thus provides further information about what influences our perception of historical knowledge.

Emma Nuechterlein

WI - University of Wisconsin-Stout

Discipline: Social Sciences

Authors:
#1 Emma Nuechterlein

Abstract Name: What do Americans Know?: A Study on the Relationship between Students US Civic Knowledge and their Demographics

Civic knowledge is pivotal for creating informed citizens who participate in government and understand how their country operates. A lack of education in this area could be diminishing our abilities to understand complex issues and participate in democracy. Thus, this project centers on assessing the amount and type of knowledge amongst college students as measured by their performance on the US citizenship test. Acknowledging the differential effect that culture, education, and experience can have on civic knowledge, this research examines the relationship between test scores and age, race, gender, and economic status. Which segments of American college students tend to have more civic knowledge than others? Who could be targeted to foster a more informed public? To answer these questions, I created and administered a unique survey with questions from the US citizenship test, demographic questions, and a state identification quiz. Tests were administered in person to students in general education courses at a regional public college in Wisconsin, with a total of 122 completed. The average score on the citizenship test section was 81%, while the average for state identification was 72%. Thus, at the coarsest level, college students are knowledgeable in these areas. In addition, on average, males scored 6% higher, students studying in the Human and Social Science career cluster scored 10% higher, and people who identify as white scored 7% higher. Other demographics had no effect on students' test scores. Students thus displayed a high level of civic knowledge, suggesting that current education of history is working in Wisconsin. However, the map section data shows a need for more emphasis on geography. Further research on this topic will allow for finer-grade identification of knowledge gaps, allowing for a more precise application of policy in the current civic education system.

Jisel Nuevo

FL - Miami Dade College

Discipline: Social Sciences

Authors:
#1 Jisel Nuevo

Abstract Name: Our Children Need Us

This essay delves into the challenges and injustices surrounding the protection of children's rights in the United States despite the foundational principles in the Constitution. Despite children being granted the same rights as adults, this essay highlights the prevalence of child abuse and the inadequacies of the justice system, leading to thousands of children facing adult consequences for their actions. Limitations on children's First Amendment rights are explored, focusing on cases of restricted freedom of assembly within the school environment. The Eighth Amendment is scrutinized for failing to protect children from cruel and unusual punishment, exemplified by the practice of incarcerating children in adult facilities. The Fourteenth Amendment's promise of equal protection is also found to fail the youth, particularly when it comes to children facing dangers in adult prisons or the foster care system. This essay concludes by advocating for solutions and systemic changes that include educational initiatives, separate institutions for juvenile offenders, improved support for mental health, and more access to rehabilitation programs. It calls for a collective effort to raise awareness, enact reforms, and safeguard the well-being and rights of the youth, emphasizing that the protection of children's rights is crucial for the future of society.

Lance Justin Nuique

MD - Bowie State University

Discipline: Interdisciplinary Studies

Authors:
#1 Lance Justin Nuique
#2 Jariah Bartlett
#3 Konda Reddy Karnati
Jariah Bartlett

Abstract Name: Exploring Dual Inhibition of D2 Dopamine and A2A Adenosine Receptors

D2 Dopamine and A2A Adenosine are Class A GPCRS that are implicated in the onset of neurodegenerative diseases like Parkinson's disease. Alternatively, these receptors are also capable of decreasing the symptoms of the disease. GPCRs are considered excellent drug targets, because of their involvement in several integral functions within the body, like hormone regulation and cell recognition. The aim of this research is to identify potential dual inhibitors that target A2A and D2 receptors that can down regulate Parkinson's disease. To achieve this, we employed virtual screening tools, such as HTVS, SP, and XP and the stability of the screened compounds were validated through long range molecular dynamic simulations. The MD results revealed GLU-169, ASN-253 interactions are important, and other analyses support our findings.

Kailey Null

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Kailey Null
#2 Catherine Mbango

Abstract Name: The Impact of a Palliative Care Nursing Elective Course on Baccalaureate Nursing Students' Knowledge and Confidence/Self-Efficacy

Purpose: This study aims to assess the impact of a newly developed Palliative Care elective nursing course on baccalaureate nursing students' knowledge and confidence/self-efficacy in providing care for patients with chronic illnesses. Approximately 45% of Americans suffer from chronic diseases, which are the most prevalent and costly health conditions in America. The new 2021 American Association of Colleges of Nursing (AACN) Essentials identified palliative care as one of the four spheres of care. Schools of nursing need to incorporate new teaching strategies to ensure that nursing students are equipped to care for populations with chronic illnesses. Study findings will be used to make data-driven curriculum changes, that will incorporate student feedback. Methodology: Quasi-experimental design (pre-test and post-test) utilizing purposeful sampling of undergraduate nursing students enrolled in the Palliative Care elective course in the Fall 2023 semester. The Undergraduate Nursing Palliative Care Knowledge Survey 2.0 (UNPCKS 2.0) measured knowledge and the CARES Perceived Competence Measure 2.0 (CARES-PC 2.0) survey measured confidence/self-efficacy. Results: Data collection is completed. Using SPSS, pre- and post-scores will be analyzed in December 2023.Implications: We predict an increase in participants' knowledge and confidence/self-efficacy in providing care to patients with chronic illnesses. These findings will be utilized to better understand how to implement palliative care nursing education in undergraduate nursing curricula, as recommended by the AACN (2021). These results will provide students with insight on their clinical reasoning and empower them to apply this knowledge confidently into their professional practice.

Jeremiah Nunez

TX - The University of Texas at Austin

Discipline: Social Sciences

Authors:
#1 Jeremiah Nunez

Abstract Name: Cultural Stigma and Health Behaviour: A Case Study of Mexican Americans in the U.S.

One of the fastest-growing demographics in the United States is the Hispanic population. Historically, many underserved groups, such as Mexican Americans, have faced health inequalities; thus, more research is required to serve this growing population. This research project aimed to measure if stigma within the Mexican American population existed towards certain illnesses and if stigma affected the health behaviors of individuals in the community. The review process found that many existing articles assumed that stigma existed, but there was a lack of research into what different forms of stigma existed, and potentially why. This study will begin by conducting 12 cross-generation interviews to gather relevant information on the individual-level impact of stigma. There will have been three generations of Mexican Americans interviewed, with each having four individuals. The interviews will then be analyzed through several rounds of qualitative coding to identify similarities and differences in respondents' views. The presentation will showcase the preliminary results, which primarily aim to illustrate how perceptions of health stigma have evolved across generations within the Mexican American community. These initial findings will also explore whether beliefs associated with stigma persist among younger generations. The overall study aims to highlight the need for community-based interventions that tackle disparities originating and existing within communities. Most funded interventions are focused on addressing external disparities, but this study aims to emphasize the importance of addressing internal disparities to improve health outcomes for the Mexican American population.

Sarah Nurpeisov

GA - Georgia State University

Discipline: Education

Authors:
#1 Sarah Nurpeisov
#2 Christopher McBride
#3 Tina Herzberg

Abstract Name: A Survey of Teachers of High School Students with Visual Impairment to Explore Enrollment in Secondary Mathematics

The objective of the presentation will be to inform others about the current trends in the mathematics course-taking patterns of secondary high school students with visual impairment nationally including but not limited to Advanced Placement and Dual Enrollment course-taking patterns and the highest level mathematics courses taken by graduating secondary students. The data was collected using a Qualtrics survey divided into four sections. In the first section, the respondents provided consent, confirmed themselves as a teacher of at least one high school student with visual impairment in the 2022-2023 academic year, and provided basic demographic information. The second section asked about the amount of hours respondents and paraprofessionals dedicated to attending class with secondary students with visual impairment and assisting secondary students with visual impairment with completing mathematics assignments. In the third section, respondents answered three questions regarding each secondary student on their caseload taking at least one general education mathematics course: the preferred media type (audio, braille, dual media, or print), grade level, and mathematics courses taken during the 2022-2023 academic year. In the fourth section, respondents discussed the challenges currently faced by secondary students with visual impairment and potential aids. The results of the survey were compared to the 2009 National Assessment of Educational Progress as reported by the National Center for Education Statistics in 2018, the 2019 National Assessment of Educational Progress High School Transcript Study, and a study analyzing the status of secondary mathematics for students with visual impairment in 1988 conducted by Rapp and Rapp. An analysis of the data revealed significant progress in the past few decades: secondary students with visual impairment were performing at a similar level to all secondary students nationally. However, with the increasing use of technology in secondary education, new challenges and concerns were also identified.

Ranita Nyarko

GHA - Ashesi University

Discipline: Business and Entrepreneurship

Authors:
#1 Ranita Nyarko

Abstract Name: Revolutionizing Venture Capital: Unveiling the Impact of Emotional Intelligence and Financial Literacy on Portfolio Selection in Ghana's Dynamic Investment Landscape

This research unravels the intricate interplay between financial literacy and emotional intelligence, exploring how they redefine the very fabric of portfolio selection strategies. By dissecting the uncharted potentials within the venture capital landscape, this study unveils novel strategies, challenges traditional investment paradigms, and propels a paradigm shift in fostering entrepreneurial ecosystems in the African context.

Research on the venture capital space has been largely on the evolution of the industry in Africa and the benefits it offers the African context. However, this study seeks to explore the influence of emotional intelligence and financial literacy on decision-making in the venture capital space. The study delves into understanding these dynamics using homophily and heterophily theories, offering insights into market interactions based on emotional intelligence and financial literacy. Departing from conventional quantitative methodologies, based on an exploratory research design, the research employs interviews to explore the varying perceptions and experiences of different venture capitalists. The anticipated results aim to provide a comprehensive understanding of how financial literacy and emotional intelligence inform investor decisions, suggesting whether or not venture capitalists prefer portfolio companies whose management teams exhibit comparable or higher levels of these variables, aligning with the homophily theory. These findings would foster an understanding of a more holistic approach to portfolio selection, combining emotional intelligence and financial acumen for enhanced decision-making in Ghana's dynamic venture capital investment landscape. Overall, this research contributes to a crisp understanding of the Ghanaian venture capital, addressing decision-making, risk, and relationship dynamics.

Andrew Oabel

CA - University of California - San Diego

Discipline: Mathematics and Computer Science

Authors:
#1 Andrew Oabel
#2 Sindhu Kothe
#3 Anh Pham
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Sindhu Kothe

Abstract Name: Measuring Emotion Bias in Large Language Models

Large language models (LLMs) are continuously being adopted into the lives of everyday people, increasing the need to understand biased text generated by these models. Recent studies show LLMs have societal bias in domains such as gender, race, and religion, but there is lack of knowledge of whether or not LLMs have the potential to resonate with human emotion. To address this gap, we create a dataset from many online communites on reddit for emotion detection. Using theories of emotion and word embeddings of LLMs, we measure emotional emotional bias in LLMs. We also begin to investigate ways to mitigate this bias and control generated output by prompting LLMs and controlling input data based on physchological literature.

Mason Oakes

CA - California State University - Channel Islands

Discipline: Social Sciences

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Abstract Name: The Role of Isolated Facial Cues in Perceiver's Judgments of Speech Onset Times.

Talkers' facial cues are known to aid speech perception and signal social turn-taking conventions. Less is understood about how they affect specific temporal coordination between partners. We tasked participants with timing keypresses to coincide with the beginnings of recorded utterances. In our experiments, audiovisual recordings of talkers initiating utterances were drawn from a corpus of natural conversations. Final audiovisual stimuli were animations of isolated facial features, created using Python scripts operating over face-tracking data. Stimuli were presented in three counterbalanced conditions (within participants). In one experiment we had: talker's lips animated over a black background with sound, talker's head tilt animated over a black background with sound, and with the face completely invisible with sound. In another experiment, we had: talker's lips animated over a black background with sound, talker's lips animated over a black background without sound, and with the face completely invisible with sound. In our former experiment, key press RTs were the shortest with lips only. The no visibility and head tilt conditions had the same reaction times. In our subsequent experiment, keypress RTs were shortest in the lips-only condition, followed by lips and sound and then sound only. Other implications for models of turn-taking, and possible future directions, will be discussed.

Abiodun Obafemi

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
#1 Abiodun Obafemi

Abstract Name: A Comprehensive Analysis of the Sentiments of ChatGPT on Social Media

Since November 30, 2022, ChatGPT has seen a rise in popularity, going viral across several social media platforms. ChatGPT is an artificial intelligence chatbot developed to enable users to engage in human-like conversations and much more with a chatbot. We look to focus on understanding the global impact of ChatGPT and the influence it is had across the world. Reddit is a social media platform, where users can post and share different content. Twitter (currently X) as well, is another social media platform, where users can express their thoughts and ideas, sparking conversations among a larger audience. Both platforms offer a variety of data containing valuable information into the sentiments and perceptions surrounding ChatGPT. The primary objective of this research paper is to gain insight into the sentiments of ChatGPT to provide useful information about the product. We will analyze Reddit and Twitter data using natural language processing tools: Textblob, Vader, NRC Lexicon, and Word2Vec. Using the sentiment analysis tools, Textblob and Vader, we found an overall neutral sentiment within the 52, 416 comments gathered from Reddit and 478, 265 tweets from Twitter. This suggested that the sentiments expressed on social media were balanced and did not significantly lean towards positive or negative. From NRC Lexicon, we found more positivity and optimism in the data. Additionally, we looked into the topics of ChatGPT in different contexts such as social, academic, and economic aspects in Reddit posts and communities. From Word2Vec, we discovered 50 of the different topics that were frequently discussed. It is important to note that human interpretation plays a crucial role in understanding the sentiment analysis. Our findings shed light and contribute to a deeper understanding of the impact of ChatGPT and the discussions surrounding this technology.

Chidimma Obeleagu

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Chidimma Obeleagu
#2 Savannah Miller
#3 Kathryn McDougal

Abstract Name: The Effect of Age and Race on Prevalence of Preeclampsia

Preeclampsia is a disorder of hypertension in pregnant women, after their 20th week of pregnancy, which causes a reduced blood supply of oxygen and nutrients to their fetus. Both genetic and environmental factors have been previously shown to contribute to the development of preeclampsia. The goal of this research project is to compare women from a diverse population who have been pregnant and investigate the factors that may contribute to preeclampsia. Data from participants in the All of Us Research Program were analyzed using R in a Jupyter Notebook environment. Genomic analysis was performed using Hail. The average age at diagnosis for preeclampsia was 31. It was found that pregnant women who had preeclampsia were significantly younger than pregnant women without preeclampsia (p-value =1.56 e-4). There was no statistical significance between age at diagnosis and pregnant women with preeclampsia (p-value = 0.9306). Also, white women developed preeclampsia significantly more than black women (24.3% vs 10.4%, p-value < 2.2e-16). These findings suggest more demographic, socioeconomic, and genetic factors need to be investigated to provide a better understanding of the development of preeclampsia, which may lead to precision preventive care for pregnant women.

Lily Ober

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Lily Ober
#2 Farah Abou Daya
#3 Dev Patel
#4 Girish Melkani

Abstract Name: Identifying the effects of adult-phase suppression of CVD- and insomnia-related genes on cardiac and sleep phenotypes

Cardiovascular disease (CVD) remains the leading cause of death world-wide, while insomnia is the most common form of sleep disorder. Recent genome-wide association studies have identified several loci for insomnia with links to CVD. Despite the impact these two diseases have on society and their genetic links, the mechanistic connections between CVD and insomnia remain relatively unknown. Our previous research using Drosophila melanogaster has shown that 4 genes near this locus show compromised sleep and cardiovascular phenotypes when suppressed throughout development and adulthood. We hypothesized that adult-phase-specific suppression of CVD- and insomnia-related genes will also compromise sleep and cardiac function. To test this, we used the drug-inducible UAS-Gal4 GeneSwitch system to suppress gene expression only in the adult phase in a tissue-specific manner. RNAi lines of CVD- and insomnia-related genes with fly orthologs were crossed with the cardiac-specific driver Hand-GS-Gal4 and the neuronal-specific driver Elav-GS-Gal4 to determine the roles of genes in cardiac and sleep physiology, respectively. Once progeny reached adulthood, the flies were transferred to food drugged with 200 or 500 μM of RU486, initiating adult-phase knockdown of the gene of interest. To quantify cardiac physiological parameters, 3- and 7-week-old Drosophila hearts were prepared in a semi-intact manner and imaged using high-speed videography. To assess the genes of interest's roles in sleep, sleep and locomotor activity of 3- and 7-week-old flies were then measured using Drosophila Activity Monitor (DAM). Data collection is currently underway. Overall, this

study will establish the importance of four CVD- and insomnia-related genes in development, thus enhancing our understanding of their role in each disease.

Whisper OBrien

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Whisper O'Brien
#2 Mary Adams

Abstract Name: Perceptions of Femininity and Masculinity as Presented by Hamlet

This piece will explore the main character of Hamlet by Shakespeare, Hamlet's perceptions of femininity and masculinity based upon his inability to grieve and his relationships with his mother, Gertrude, and his supposed lover, Ophelia, and their own femininity in relation to Greek tragedy characters Niobe and Hecuba. In the wake of his father's death, Hamlet struggles immensely with the idea of grieving as a man, especially after his uncle calls his grief "unmanly". Hamlet is forced into a position in which his intense need to grieve is viewed as a weak sign of femininity and places him at odds with his desire to portray his manliness in lieu of the power vacuum that will take place after the death of his father. As Hamlet denies his own need to grieve, he simultaneously rages at the women in his life, drawing unfavorable comparisons between his mother, Gertrude, and the Greek tragedy character, Niobe, and between his lover, Ophelia, and a prostitute. Hamlet's own desire to present himself as a hyper-masculine being comes at the cost of many things, including his relationship with Ophelia. As Hamlet feigns madness, his lack of love and empathy for Ophelia drives her to suicide by way of true madness. This work will be supported by Shakespeare's intricate use of puns, metonymy, and parallelism, as well as imagery of sex and prostitution. Author Tanya Pollard and Lynn Enterline's works will also be included as a means to discuss boys' education during the 15th and 16th centuries in which boys were asked to perform female roles in order to learn how to feel deep emotion and to perform it because it was believed that boys lacked this ability while it was an intuitive gift for women.

Jose Ocampo Gomez

CA - Los Angeles City College

Discipline: Engineering and Architecture

Authors:
#1 Jose Ocampo Gomez
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Harley Nieves
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Abstract Name: Flight Data Telemetry Device with Data Logging using Customized Off-The-Shelf Modules for Experimental Radio Control Aircraft

Radio Controlled (RC) airplane models are important for developing innovations in aircraft. Live telemetry data such as aircraft orientation, power system status, and kinematics are useful for both flying the aircraft

through remote control and for evaluating performance. Proprietary telemetry systems for RC planes are not easily customized, and do not offer local data back up in case of failure of the radio link. In this work, an RC plane telemetry device was built using off-the-shelf sensor modules interfaced to a Raspberry Pi Pico microcontroller board that was programmed in MicroPython. The system was designed to be low cost, use widely available components, and be easily customized. The completed device incorporated, a Global Positioning System sensor, barometer, current sensor, a 6-axis acceleration sensor, and a micro flash memory card. A pair of NRF24L01 wireless modules with whip antennas were used for data transmission, one mounted on the aircraft and the other on the ground station. The completed device had a mass of 46g and was 30mmx100mmx30mm in size. Software for displaying the received data was developed in Java using Processing software. Details of the construction of the system will be presented together with data from the planned evaluation of the system on a 120cm wingspan RC plane in terms of verifying basic operation, communication reliability, effective sampling frequency, range, crash survivability, and assessing its interference on RC transmitter signals

Maria Ocando Monaco

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Maria Ocando Monaco

Abstract Name: Addressing the Overdose Problem in Orlando, Florida: An Anthropological Exploration of Overdose Prevention Perceptions Among People Who Use Drugs

The ongoing overdose problem in the United States, particularly exacerbated by the widespread use of the synthetic opioid, fentanyl, and polydrug use, represents a critical public health challenge. This project explores how people who use drugs (PWUD) in Orlando, Florida, are responding to overdose in their community. Drawing on ethnographic research conducted at a syringe services program in Summer 2023, I argue that PWUD in Orlando actively take measures to prevent overdose and overdose deaths but are faced with many obstacles that challenge their overdose prevention efforts. I examine overdose narratives of PWUD to show how factors preventing effective overdose prevention are not just systemic but also cultural. In particular, the prevailing stigma of opioid use hinders the creation of a supportive environment for preventing overdoses and perpetuates the ostracization of PWUD in Orlando. Recognizing the profound influence of stigma towards the PWUD with whom I conducted research, I make the case for comprehensive overdose prevention training in Orlando to equip PWUD, their families, first responders, and the broader community with the knowledge, skills, and tools to address overdose. Such training also has the potential to recalibrate cultural misconceptions and biases toward PWUD. As Florida and the nation continue to experience an overdose problem, understanding local cultural and structural challenges remains pivotal. This project demonstrates that by integrating comprehensive training and combating stigmatization of PWUD, Orlando communities can prevent overdose and save lives more effectively. Moreover, this project aims to contribute to the anthropological literature on drug use and overdose to understand how these topics are perceived and framed in the US. Furthermore, this project addresses the broader lack of representation of PWUD in the literature of overdose prevention, which has tended to focus on public health experts and other stakeholders rather than those directly affected by overdose.

Alejandra Ochoa Alvarado

TX - The University of Texas at El Paso

Discipline: Health and Human Services

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#5 Manuel Morales
Leonel Caro Gallegos
Esther Afangideh

Abstract Name: Impact of Social and Physical Activities on Balance and Quality of Life in Displaced Elderly Women

In the United States, nearly 600,000 individuals face displacement, with 40% of this population navigating the challenges of unsheltered living. Therefore, addressing this community's necessities will impact the health, mental health, and overall quality of life. This service-learning project aims to improve motor and cognitive skills to mitigate the risk of falls by enhancing these individuals' overall quality of life.The preliminary analysis included seven female participants aged 62 to 77 from La Casa de las Abuelitas (Shelter for displaced elderly women). The modified Quality of Life questionnaire and the Timed-up-and-go were assessed pre- and post- intervention. The intervention consisted of one weekly session for over eight weeks.T-test revealed no significant difference between the pre- and post- level of quality of life [T(2)=1.89; P= 0.199] and no significant difference in the participant's balance [t(2)= -1.144; p=0.371]. Despite the absence of statistically significant findings, this project brought qualitative data on social happiness and a heightened sense of connectivity among the Abuelitas.While recognizing the need for a larger sample size to establish statistical significance, the project underscores the transformative potential of community-driven interventions. The project's broader impact demonstrated how simple acts of community engagement can positively influence the lives of displaced elderly individuals. Ultimately, the project demonstrates the importance of recognizing and addressing the unique challenges faced by this vulnerable community, offering insights into the potential for positive changes through targeted interventions and community support.

John O'Connell

CT - Eastern Connecticut State University

Discipline: Natural and Physical Sciences

Authors:
#1 John O'Connell
#2 Barbara Murdoch

Abstract Name: Impaired Neurogenesis Following Simulated Microgravity

As NASA strives to advance the reach of human space exploration, astronauts are spending longer durations exposed to microgravity. Astronauts returning from space show cognitive deficits, like attention lapse and lower reaction times. With commercial spaceflight becoming more common and soon accessible to the public (via private ventures like SpaceX) understanding the mechanism of such deficits is imperative. Space exploration presents novel challenges to biological systems, often precipitated by micro-gravitational conditions. For example, data from NASA's Lifetime Surveillance of Astronaut health program indicates that the cognitive deficits seen in astronauts following spaceflight are accompanied by changes in brain structure. The mechanism for this remains unclear, however, one possibility is that microgravity causes the loss of cells in the brain. We studied whether microgravity could lead to cell loss by testing the ability of neural stem cells to produce astrocytes and neurons, the main cell types in the brain. We found that simulated microgravity compared to control gravity decreased the production of neurons, the communication cells of the brain, without changing the production of astrocytes. To investigate the underlying mechanism associated with

neuron loss, we performed quantitative polymerase chain reaction (qPCR) on neural stem cells exposed to simulated microgravity compared to control gravity, to test for changes in gene expression of proteins known to drive neurogenesis. Of particular interest from our results was a protein important for neural development and neuron production, MASH1, whose expression was significantly lower in microgravity-exposed cells. This could explain the loss of neurons seen in our study and provide a target to counteract the microgravity-mediated effects on neural differentiation, hence reducing complications associated with spaceflight.

Shawn Oderio

IL - Illinois College

Discipline: Humanities

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#2 Robert Kunath

Abstract Name: History & Community: The Work in Progress of the Pullman National Historic Park

The Pullman Palace Car Company of Chicago was established in Chicago at a time of great economic expansion. Located about twelve miles south of Downtown Chicago the company mainly manufactured top-of-the-line rail sleeper cars. The product ultimately made travel more comfortable and luxurious. As demand grew for its product, a company town was established to allow workers to live and produce in the same space. The town included high-end amenities such as plumbing, electricity, and gas heating along with recreational amenities such as theaters, saloons, and sports facilities. At the time many saw this as revolutionary both for the worker and company. This dynamic ultimately came into question when the U.S. experienced the Panic of 1893, which resulted in the company lowering wages while maintaining high rents in the company town. The strike led to about 200,000 walkouts nationwide, yet ultimately failed. The legacy of the PPCC is now a memorial site, established by the National Parks Service in 2022. The site was established to preserve what is left of the PPCC to allow for further interpretation of the company's legacy. Through primary sources and other scholarly articles, questions arise about whose history is effectively portrayed. Narratives favoring the corporate version of history appeal to most visitors, yet the narratives of the community of Pullman are underrepresented even though they establish a significant part of the current interpretation.

Marias Oelkers

NY - Long Island University

Discipline: Health and Human Services

Authors:
#1 Marias Oelkers

Abstract Name: Hear the People, Heal the People: Community and Provider Perceptions of Pre-Hospital Emergency Services in Mas, Bali, Indonesia.

This transdisciplinary qualitative case study, conducted in situ in Bali, Indonesia, from September to November 2023, explores the perspectives of local community members and emergency care providers regarding the pre-hospital services available in the Mas area. The research contributes to the literature on the implementation of emergency medical systems in lower- and middle-income countries (LMICs), in recognition of the fact that emergency medical care is of paramount importance to individual and community health but remains under-addressed in much of the world. Drawing on Participatory Action Research and

Decolonial Theory methodologies, the study utilized participant observation, surveys, and semi-structured interviews to capture an illustrative and informative range of perspectives. Participants included community members who may or may not have utilized pre-hospital transportation and care as well as healthcare providers responsible for delivering those services. The findings of this study support much of the existing literature regarding the difficulties LMICs face when developing emergency medical services, such as incompatible infrastructure, traffic, and a lack of local engagement with, and understanding of, the ambulance system. In addition, the focus on Mas, a peri-urban Balinese village, provides unique insights, such as how cultural and social norms influence a person's decision to call an ambulance, and how emergency care information campaigns could utilize Balinese community structures to better reach locals. The research also discusses broader systemic issues, such as the impacts of economic inequalities on access to care and corruption in the Indonesian healthcare system. This case study may serve as a resource for policymakers, healthcare providers, and community members to better understand the existing challenges of, and potential improvements to, pre-hospital services in Mas. Moreover, it contributes to a wider discussion on emergency medical care in challenging settings and emphasizes the importance of cultural awareness and community involvement in shaping emergency services.

Elizabeth Ofosu

MA - University of Massachusetts - Amherst

Discipline: Natural and Physical Sciences

Authors:
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#2 Nick Sbrockey

Abstract Name: Effect of Food Storage on Vitamin C Content of Mangoes

Mangoes contain vitamin C aka ascorbic acid which is a water-soluble vitamin that is easily oxidized. In our CURE research project, we aim to investigate the effect of storage on the concentration of Vitamin C in various mango pieces at room temperature, in the freezer, in a dry cupboard, and immediately after blending.

Zeynep Oghan

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
#1 Zeynep Oghan
#2 Gautham Venkatasubramanian
#3 Alicia Carriquiry

Abstract Name: Machine Learning in Forensics: Footwear Impression Analysis

Footwear Impression Analysis is a discipline of forensics where one tries to determine if shoeprints left at a crime scene can be reliably linked to a suspect's shoe. Recent developments in this field have led to the design of quantitative and algorithmic approaches to compare shoeprints, which involve applying ideas from statistics and machine learning.However, machine learning requires large amounts of labelled high-quality data. In our case, this means a dataset of shoeprints where features relevant for comparison have been marked accurately. A recent paper by Park and Carriquiry used interest points on the shoeprint image (such as corners or centers of circles) as relevant features for comparison, but such interest points are difficult to extract

automatically from shoeprint images.We present a graphical tool designed to assist in the markup of interest points in shoeprint images. We use this tool to create a dataset for training deep neural networks. The trained networks are to be tested on shoeprints of varying levels of quality, with a focus on accurate extraction, speed, and explainability. We hope to provide the markup tool and the best performing model to help forensic examiners in their work.

Alexis Ogrinz

IN - Purdue University Main Campus

Discipline: Mathematics and Computer Science

Authors:
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Joy Gao

Abstract Name: Polk Directory Indicators as Factors of Transiency in Lafayette, IN, Neighborhoods

The city of Lafayette, Indiana, has identified above-average levels of transiency in the neighborhoods of Lincoln, Hanna, Vinton, Monon, St. Lawrence McAllister, and Historic Jefferson. Despite the availability of funding for community development projects, the city lacks consistent and updated data to inform its proper usage. The Polk Directory is an online database housing demographic and socioeconomic data on the residents of Lafayette, which can be used to provide the city with information on where its funding can be best spent. Data contained in the Polk Directory provides the city of Lafayette with important context surrounding the well-being and lifestyle of its citizens including spending habits, income, and assets and liabilities. By combining this data with US Census data and student-collected property condition surveys, a clear image of Lafayette's socioeconomic diversity can be revealed. Through the use of Tableau, a data visualization software, this study aims to visualize the distribution of socioeconomic statuses of the residents living in the seven neighborhoods identified by the city of Lafayette. This study aims to examine demographic and socioeconomic data from the Polk Directory and US Census data, housing condition data from property condition surveys, and the high levels of transiency in the neighborhoods for potential correlations. A summary of findings will be presented using a heat map. The heat map aims to show the property condition of houses in each neighborhood and individual and group socioeconomic indicators as factors of the neighborhood transience level. Lawmakers would be able to use this map to identify and isolate leading factors that lead to high levels of transience in the city of Lafayette.

Adam Ohana

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Adam Ohana
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Abstract Name: Molecular Analysis of Root Fungal Communities in a Truffle Orchard Chronosequence

Truffle fungi form a mutualistic relationship with their host tree, relying on it entirely for carbon while helping the tree acquire limiting nutrients. In North Carolina, farmers are attempting to cultivate these fungi in orchard settings. Many ectomycorrhizal fungi in the soil compete with the truffle fungi for the tree roots,

therefore truffle farmers look to control conditions to favor the truffle fungi. Shifting soil conditions due to orchard succession and orchard treatments therefore can alter the competitive landscape in a fungal community. This study looked at fungal community development as orchards age at Burwell Farms in Warrenton, North Carolina. Growing Tuber borchii, a desirable white truffle species, has been their specialty and their farm has orchards at multiple stages of development. The oldest and most profitable orchard is around 8 years old, the middle-aged orchard is 3-4 years old and the youngest orchard is 1-2 years old. It was hypothesized that the fungal community would shift as the orchard ages. We took advantage of the different orchard development stages to study the fungal root community change as the orchard ages. Because ectomycorrhizal fungi - including the truffle - cannot be cultured, we used molecular approaches (DNA community fingerprinting of the total fungi through T-RFLP) to analyze the fungi on the roots. Root samples were collected in May of 2023, and a bulk DNA isolation was done on the ectomycorrhizal root tips found in each sample. DNA sequencing was also performed to determine what was on the roots to the genus level. T-RFLP community fingerprinting results support that fungal communities within each stage are more similar than they are between stages. Bulk sequencing data shows that abundance of Tuber borchii decreases as the orchards age. These results can be used to start to project trends as competition for tree roots increases.

Kacie O'Hearn

WI - University of Wisconsin-La Crosse

Discipline: Mathematics and Computer Science

Authors:
#1 Kacie O'Hearn
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Abstract Name: A Median Estimator for Three-Dimensional Rotations

The median is a way of measuring the center of a data set that is robust to outlying values. While the median has been studied extensively for traditional 1-dimensional data sets, it has received less attention for 3-dimensional rotation data. Bingham and Fischer (2014) develop a median estimator for 3-D rotation data through minimization, but this process relies on optimization search algorithms and does not have a closed form solution. As such, this minimization technique does not always compute the same result for the median rotation when applied to the same data set.In this poster, a different approach for computing a median rotation that does not depend on minimization techniques is explored. This newly developed median rotation is compared to the pre-existing notation of the mean rotation under various conditions through a simulation study to investigate whether the median rotation outperforms the mean rotation.The newly established median is also compared to the approach of Bingham and Fischer (2014) to verify that the new approach keeps the desirable properties of the median but is computed in a more efficient manner.

Tobi Ojo

VA - Virginia Commonwealth University

Discipline: Humanities

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#2 Mary Boyes

Abstract Name: Examining Waiting Time, Charting Language, and Evaluation of Black/African American Patients in Emergency Departments in Virginia: Refining DEI Training with Implicit Bias Recognition and

Management

Patient satisfaction is dependent on the patient's waiting time, provider evaluation, and overall treatment. 47% of African Americans believe that health inequities stem from hospitals and medical centers prioritizing their well-being less than other patients (Funk, 2022). Only 47% of African Americans believe that health outcomes have improved for them over the past 20 years (Funk, 2022). This dissertation examines patient waiting time, physician language used in medical charting, and the evaluation of Black/African American patients at Emergency Departments (ED) in Virginia teaching hospitals in order to determine the nature of implicit bias in treating Black/African American patients. There are currently six teaching hospitals in Virginia and only four hospitals that have an ED. This literature review aims to understand the need to incorporate Implicit Bias Recognition and Management (IBRM) curriculum in diversity, equity, and inclusion (DEI) training given to ED faculty and staff. Peer reviewed articles were cross examined to analyze DEI initiatives seen in teaching hospitals in different locations to understand the limitations within each program. Based on current literature, implicit bias training is imperative to patient satisfaction among racial and ethnic minorities; yet, there is a lack of transparency and delineation of training in teaching hospitals located in Virginia.

Crystal Okeke

OK - University of Oklahoma Norman Campus

Discipline: Natural and Physical Sciences

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Abstract Name: An LCMS-Guided Bioanalytical Approach for Rational Natural Product Library Design and Optimization

Natural Products play a pivotal role in the field of drug discovery, accounting for a significant portion of approved pharmaceuticals. These natural products are derived from various sources, including fungi, bacteria, and plants. While these sources offer a rich supply of potential medicinal compounds, discovering and developing new drugs from them is not without resource constraints, high costs, and time-intensive efforts. Fungi, due to their ubiquity and adaptability, stand out as an up-and-coming source to produce metabolites and antibiotics. To harness the full potential of natural products, the creation and maintenance of comprehensive Natural Product libraries are indispensable. Screening these natural product libraries against infectious diseases is a key part of the drug- pipeline. However, the construction of these compound libraries is troubled with difficulties arising from the slow production of diverse natural product samples and the associated financial burden. Our overarching objective is to employ evidence-based methodologies to reduce the size of the design of natural product libraries, thereby bolstering the efficacy of new drug development processes. To achieve this, we used untargeted metabolomics techniques, allowing us to achieve equivalent chemical diversity while reducing the number of samples required. This approach not only enhances the proportion of identified chemical features but also diminishes the need for extensive extraction procedures, producing significant cost and time savings. Building upon our findings, considerable progress has been made in advancing our novel approach to drug optimization. We are actively exploring new sample selection methodologies and assessing the significance of diversifying natural product families within our libraries. We will be applying publicly available datasets to our new method to verify our process. Moving forward, percent hit rate analyses will be run through RStudio to determine if our library-building method is effective enough to reduce the number of biota samples needed for testing.

Chinenyenwa Okolie

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Design and Synthesis of Peroxisome Import Moieties

Peroxisomes are membrane-enclosed organelles in eukaryotic cells that are involved in cellular lipid metabolisms such as long chain fatty acid β-oxidation and synthesis of myelin sheath lipids, as well as the metabolism of potentially harmful Reactive Oxygen Species (ROS) including hydrogen peroxide. The study of peroxisomes is particularly important to human health because their dysfunction plays a role in the pathogenesis of various disorders including obesity, cancer, and certain neurological abnormalities like neuronal migration defects and demyelination. Despite the known role of peroxisomes in various metabolic processes, peroxisomes remain understudied compared to other organelles. We believe developing chemical tools that can be used to examine peroxisomal cellular functions would lead to a better understanding of the origin of these metabolic disorders. Current approaches to target chemical tools to the peroxisomes utilize Peroxisome Targeting Signal 1 (PTS 1) amino acid sequences. Polar sequences limit the types of molecules that can be directed into peroxisomes to very nonpolar cargos, which balances overall polarity to enable passive diffusion into cells. Our approach is to synthesize Peroxisome Import Moieties (PIMs) that are more nonpolar than current PTS 1-based sequences. This will enable the import of more polar cargos into the peroxisomes. Overall, our PIMs will allow for the production of chemical tools that can be used to study the peroxisomes in live cells.

Chiagoziém Okonkwo

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Chiagoziém Okonkwo

Abstract Name: Exploring the Relationship between Igbo Language Proficiency and Sense of Belonging to Igbo Culture among Igbo People Living in North America and Nigeria

Language is an important aspect of how members in a community cement their bonds with one another, and it is often the foundation of any community. Community members can communicate their identity, cultural history, background, and opinions through the use of language. In Nigeria, there are three major languages and culture groups–Igbo, Hausa and Yoruba. Existing literature highlights that the Igbo language is not yet endangered, but is nearing the line and programs need to be implemented to prevent its endangerment and possible extinction. However, Hausa and Yoruba are not at risk of endangerment. Using a mixed-methods approach, this study explores the relationship between the level of an Igbo person's proficiency in the Igbo language and their sense of belonging to their culture. The data source for this study includes students from North American and Nigerian tertiary institutions, as well as members of Umu Igbo Unite chapters in various cities across North America. This research highlights the effects of being unable to speak one’s native language, and assesses the importance of language transmission across generations for the preservation of cultures.

Chiagoziém Okonkwo

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Chiagoziém Okonkwo

Abstract Name: Campus Cultural Promotion Groups: Exploring their Effects on Belonging and Achievement Scores for African College Students

Students from racial/ethnic minority backgrounds are known to face decreased belonging and academic achievement. Studies have shown the protective factors of cultural promotion groups for Asian-immigrant and African-American students. However, the experiences of African students remain unstudied. This research project aims to explore the relationship between awareness and participation in cultural promotion groups within higher institutions and the campus sense of belonging and achievement scores of African students. This study utilizes a mixed-methods approach: 150 surveys and 5 focus groups. The survey measures academic scores and awareness and participation levels in cultural promotion groups. The focus groups employ the photovoice methodology to delve deeper into the experiences and perceptions of participants. It is hypothesized that greater participation in cultural promotion groups will correlate with enhanced campus belonging and academic scores for African students. The study holds potential implications for institutional policies, aiming to foster a more inclusive environment, emphasizing the empowerment of African students in higher education settings.

C.J. Okpala

GA - University of West Georgia

Discipline: Natural and Physical Sciences

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Abstract Name: Biochemical characterization of a new Microbacterium species isolated from a contaminated Chlamydomonas culture plate that is a vitamin B auxotroph

One of the side research interests of our research lab is to identify antibiotics that kills bacterial strains that contaminate Tris Acetate Phosphate (TAP) medium plates of the green micro-alga Chlamydomonas reinhardtii without affecting the algal growth. We isolated one yellow-pigmented bacterial strain from a contaminated Chlamydomonas TAP plate that we named as Clip185, based on the Chlamydomonas strain it contaminated. Partial 16S rRNA gene sequencing and whole genome sequencing revealed that Clip185 is a new Microbacterium species.We found that Clip185 cannot grow on TAP-agar plate solo, although it was isolated from a contaminated TAP plate. Clip185 can grow very slowly when it is co-cultured with Chlamydomonas on a TAP plate. We found that Clip185 can grow well in Chlamydomonas-grown TAP liquid culture filtrate, when supplemented with a carbon source. Clip185 can also grow in TAP liquid/agar medium solo when supplemented with a minimum concentration of 0.01% of yeast extract or Tryptone. Clip185 grows well in Lysogeny broth medium which contains both yeast extract and Tryptone. Yeast extract/Tryptone in bacterial growth medium provides nitrogen, amino acids and vitamins to bacteria. Clip185 can only grow in a minimal medium that contains vitamin B and a carbon source.Whole genome sequence analyses revealed that Clip185 is an auxotroph for four types of vitamin B and has a high requirement for branched chain amino acids. Our results show that Chlamydomonas is providing vitamin B and probably three branched chain amino acids to Clip185, when it is co-cultured with Chlamydomonas in TAP medium. Additionally, our research has created a new growth medium recipe based on TAP to screen vitamin B auxotrophs for their capabilities to utilize different organic compounds as the sole carbon source.

Mercy Olaniran

GA - Kennesaw State University

Discipline: Mathematics and Computer Science

Authors:
#1 Mercy Olaniran
#2 Xinyue Zhang

Abstract Name: Leveraging Generative Model to Protect Machine Learning Frameworks

With its countless applications, machine learning has become an integral part of our lives. Moreover, our increasing dependency on machine learning applications presents a growing need to safeguard sensitive data. Machine learning models, dependent on large datasets, can inadvertently memorize training data, making them vulnerable to threats like model inversion and membership inference attacks. For example, in model inversion attacks, even with only public API access, attackers can potentially reconstruct training samples. This research aims to propose a privacy preservation approach from a different perspective that is to protect the privacy of training data samples from the source. We investigate the feasibility of training machine learning models using only synthetic data produced by Generative Adversarial Networks (GANs),

eliminating the use of real data samples. Given the sensitivity of medical data, we employ the MedMNIST dataset, a standard collection of 2D and 3D biomedical images such as chest X-rays, breast ultrasounds, and abdominal CTs. By utilizing GANs to generate synthetic data for training, we aim to bypass the use of real medical data, thus safeguarding the patient's private information. In the experiments, we will evaluate the efficacy of synthetic data against MedMNIST data in training machine learning models and gauge the protective capabilities of GANs. Through risk assessments derived from empirical evaluations, we'll employ various inference attack models, such as membership inference and model inversion attacks, to measure the model's security when integrating GANs. Using the MedMNIST dataset, we will also examine the potential trade-offs between privacy preservation and the robustness of a machine learning model.

Joshua Olaniran

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Revolutionizing Recycling: A Low-Cost Smart Trash Can with Computer Vision and CNN Integration for Enhanced Sustainability Awareness

The increasing volume of waste and the environmental impact of improper waste disposal practices have emerged as critical global concerns, necessitating innovative solutions. Inefficient recycling practices and inadequate awareness regarding appropriate recycling methods significantly exacerbate this issue. This study employs cutting-edge Computer Vision and Machine Learning techniques, integrating them into a user-friendly Graphical User Interface (GUI) rich with educational content on recycling practices. Leveraging the VGG-16 model, our system adeptly categorizes waste into four distinct classes: glass, plastic, metal, and general waste, streamlining the recycling process.Furthermore, our innovation extends beyond software solutions. Incorporating an array of hardware components such as Raspberry Pi and Arduino-based LEDs and fans, we developed an affordable smart trash can. This technologically advanced system delivers not only real-time feedback but also engages users proactively by offering educational content. This fosters a culture of proper waste segregation, aligning with sustainable practices. The remarkable achievement of our machine learning model is reflected in its impressive accuracy of 91%, underscoring the efficiency and reliability of waste categorization within the system.By launching this initiative, our primary goal is to inspire and cultivate sustainable recycling practices. We aim to empower individuals by providing them with the knowledge and tools needed to make environmentally conscious decisions. Ultimately, this undertaking aspires to mitigate the adverse environmental impact of improper waste disposal, fostering a greener and healthier planet for generations to come.

Esther Olawunmi

MD - Bowie State University

Discipline: Natural and Physical Sciences

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#2 Anne Osano

Abstract Name: EFFICACY OF ULTRAVIOLET RADIATION DISINFECTION TECHNIQUE IN ELIMINATING PATHOGENIC MICROORGANISM FROM AQUAPONIC SYSTEMS.

The study aim is to investigating UV radiation's efficacy in purifying aquaponic wastewater, this study addresses sustainability, environmental safety, and water access. Objectives include assessing UV efficiency and optimal duration for eradicating harmful bacteria. The experiment utilized the spread plate method on samples from various water sources, exposed to UV for different durations at 37°C. Results indicated increasing bacterial colonies with extended UV exposure, with potential factors such as cross-contamination and uneven sample distribution. Notably, a 60-minute UV exposure at 37°C effectively reduced bacterial colonies, particularly fecal coliforms. The study aligns with prior research on UV disinfection in sewage water. This optimal 60-minute duration holds promise for improving clean water quality in aquaponic systems. Future experiments could explore UV and ultrasonic techniques' combined effects, considering temperature variations. Techniques like filter membrane, Quantitative PCR, and pour plate methods merit consideration in subsequent studies. The findings underscore the potential for synergistic benefits in aquaponic systems through combined UV and ultrasonic approaches, paving the way for enhanced environmental sustainability and pollution reduction.

Evan Oldham

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Evan Oldham

Abstract Name: Comparing the Housing First Model vs the Treatment as Usual Model for Homelessness Stabilization

AbstractBackground: Homelessness is on the rise, and it does not discriminate by age, gender, culture, or any other factors. Homeless creates an increased risk for the abuse of drugs, alcohol, and other substances. Because of that, there is an increase in the rates of death, disease, and comorbidities. Orem’s Self-Care Deficit Theory states nurses should help ensure a person’s basic needs are met to improve overall functioning, wellbeing, and therefore health. The Housing First Model is an initiative aimed at combating homelessness. This model focuses on providing safe and adequate housing as a prerequisite to treating addiction and predisposing factors. In Oklahoma City, the Homeless Alliance provides daytime housing, multiple employment opportunities, education, and access to case management to homeless individuals. Unfortunately, there is inadequate research into the effectiveness of the Housing First initiative in Oklahoma City on preventing and managing substance abuse. Because of this, there is a need to surveying of homeless individuals within Oklahoma City to determine if those needs are being met. Aim: The aim of this study is to assess the correlation between the homeless population and substance abuse by examining the Housing First model compared to the treatment as usual model. Method: This correlational study will compare the frequency of substance abuse in those participants who received housing through the Housing First model versus those who receive housing through other means. Conclusion: Individuals who are homeless are dying of preventable diseases and exposure to environmental elements. The provision of housing is a basic need for individuals. It is expected the provision or housing prior to life stabilization will improve long-term outcomes for those with alcohol, drug, and other substance abuse. Keywords: Homelessness, Health, Housing, Dependance, and Comorbidities

Diana Oliva Najarro

CA - University of California - San Diego

Discipline: Interdisciplinary Studies

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Abstract Name: HEAVY METALS: SILENT CONTAMINANTS IN THE BAY AREA

Heavy metal elements occur naturally through geogenic sources at concentrations that are typically harmless to their surrounding environment. However, a legacy of leaded paint, gasoline, and other industrial pollution has allowed the creation of pathways to concentrate these metals. Without monitoring, awareness campaigns, and proper remediation, they can expose communities to elevated concentrations via interactions with soils, dust, and even household items. Historically, discriminatory policies like redlining have disproportionately exposed minority communities to higher concentrations of heavy metals like Arsenic (As), Cadmium (Cd), Lead (Pb), and Mercury (Hg). Long-term exposure to these metals is known to be hazardous to human health, as they are identified as carcinogens and have been related to child growth and development problems. Through redlining, they have been shown to pollute neighborhoods near industrialized areas disproportionately. While minority neighborhoods are often exposed, they are also typically under-equipped to understand, measure, and remediate the heavy metal contamination that stems from historic environmental injustice. This project aims to prioritize community needs, where project direction was provided by community members in East Palo Alto (EPA), and the greater San Francisco Bay Area. To further understand the complexity of this contamination, soil samples from two parks were screened for heavy metals using a portable X-ray fluorescence (PXRF) spectrometer. Additionally, interactive maps were created to visualize the exposure, inequity, and health effects of heavy metal contaminants in the area. Lastly, suites of contaminated soil standards were also developed to support the “Soil Screening, Health, Outreach, and Partnership” (soilSHOP) program nationwide, to ensure accuracy between these important environmental justice outreach projects.

KYRA OLIVER

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Kyra Oliver

Abstract Name: Residential design for Open Angle Glaucoma Occupant

The project's purpose is to design a functional and intuitive single-family house that caters to the needs of someone with open angular glaucoma. This condition causes blurry vision that differs in severity and can worsen over time. Through in-person interviews and prior case studies, it is noted that there are six essential factors to consider when designing for those with open-angle glaucoma: task lighting, spatial layout, furniture considerations, material considerations, and organization. The most utilized characteristic in this space is contrast. The color palette is amber, charcoal, and cream with a mix of dark and light brown wood accents that provide high contrast. Contrast is taken into consideration with both the hues used and the light reflectance values of the paint colors, which vary significantly so they are easily defined. Each room is defined by primarily using one of the colors, providing intuitive wayfinding between each area. The furniture is also highly contrasted with surrounding environments to ensure safety. Task lighting provides focal illumination to work areas rather than illuminating the entire room. Spatial layout is critical to maintaining a hazard-free and intuitive path throughout space. Designing wide walking paths while reducing the number of physical obstructions (i.e. structural components like walls or physical items like furniture) and implementing wayfinding features ensure occupants maneuver through the space safely. Some materials provide extra safety by being non-slip or low-glare surfaces. The abundance of cabinetry, pantry space, and closets with built-in

shelving make organization simple throughout the home. A design with these six characteristics prioritized provides a safe and functional environment for those with open-angle glaucoma.

Liz Olivera

TX - San Jacinto College

Discipline: Humanities

Authors:
#1 Liz Olivera

Abstract Name: Brown Weasel Woman: An Exhibit on the Shattering of Norms

A specific figure from American history who exemplifies the ability of individuals to persevere and challenge the societal restraints placed upon them is Brown Weasel Woman. In order to bring stories like hers to the American public, my research involved the creation of a public history exhibit in which multiple items will be used in cohesion with the location to immerse viewers. The exhibit objects tell a piece of Brown Weasel Woman's story and include both artifacts and artworks. The descriptions behind each item incorporate both primary and secondary sources to explain their spot in Brown Weasel's progression. For example, one artifact is a war robe. Commonly, the Blackfoot tribe created robes with hand drawn images which portrayed their stories. While we do not have a replica of Brown Weasel's robe, another Blackfoot war robe is presented to give viewers a visual of what her robe would have looked like. This robe demonstrates the first time Brown Weasel portrayed her warrior self to her tribe. To save her family from a stampede of cows, she acted quickly, and threw her robe over the cow's leader blinding it. This strayed the cows away thus saving her family and creating food for her tribe as the cows fell off a cliff. Through this action Brown Weasel demolishes the norms of males being the protectors as she keeps not only her family safe but also her tribe. However, this was the start for her. She was later named Running Eagle due to her constant shattering of norms that have left an impact even now. Thus, through this exhibit of Brown Weasel's story, the American public is able to feel empowered while learning about the life of an Indigenous American woman, as this exhibit highlights aspects of the American past that are often silenced.

Kylie Olsen

UT - Utah State University

Discipline: Health and Human Services

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Abstract Name: Automating the analysis of language samples obtained from the Frog Story series: Step 1.

The purpose of this project was to create systematic, reliable rubrics for using the Frog Story series in language sample analysis for the diagnosis and treatment of children with developmental language disorders (DLD).Language sample analysis is a critical part of the assessment process by speech language pathologists

(SLPs) for determining whether a child has a developmental language disorder. This is accomplished by analyzing a child's use of vocabulary, sentence structures, and grammatical markers (i.e., past tense) and comparing it to their typically developing peers. Once diagnosed, language sampling is used as part of progress monitoring efforts to ensure the child is making reasonable progress toward their language goals in one (or all) of these areas.Elicitation of language from a child is often achieved by asking them to tell a story. One popular way that SLPs have obtained samples is to ask them to retell one of four popular wordless picture books from the Frog Story series by Mercer Mayer. This series involves the antics of a frog and his boy as they encounter different adventures. There is no rubric or "analysis key" associated with the stories leaving the SLP to decide how to use the information obtained from the story independently. This makes it hard to obtain reliable results over multiple time points for use in progress monitoring.In this project, a team analyzed all four Frog stories for their inclusion of specific story elements (i.e., character, setting, episode), vocabulary and sentence structures; and separate rubrics were created. The methodology for identifying the language parameters of interest, reliability in coding, and uses for the rubrics will be described. The rubrics will be automated using a web application so clinicians can upload their child's story and have them instantly scored, making their use in analysis more reliable and consistent.

Macallister Olson

WI - University of Wisconsin-La Crosse

Discipline: Health and Human Services

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Abstract Name: Gender Difference in Spatiotemporal Gait Parameters and Gait Symmetry During Treadmill Walking

Gender has been an important determinant in gait analysis as males and females walk differently. Previous studies reported females had higher cadences and shorter stride lengths even when normalized by leg length. Some studies showed gender differences in hip and knee joint kinematics during walking (Hurd et al., 2004) and running (Ferber et al., 2003). As of recent times treadmill usage has been increased in gait rehabilitation for individuals with gait impairments as well as for healthy populations, however, it is not known if this difference exists in spatiotemporal gait parameters among healthy young adults while walking on the treadmill. PURPOSE: The purpose of this study was to investigate gender differences during treadmill walking at the preferred walking speed in spatiotemporal gait parameters including step length, step time, step width, and toe clearance. METHODS: Healthy young adults aged 18 to 35 years old (18 males / 22 females) participated and performed a walking trial on the treadmill at their preferred speed. VICON human motion capture system was used to collect kinematic data and we calculated step length, step time, step width, and toe clearance in addition to the symmetry index and gait asymmetry as a measure of gait pattern. Independent samples t-test was performed using IBM SPSS Statistics (Version 29.0) at a significance level of 0.05. RESULTS: There were no significant differences between males and females in spatiotemporal gait parameters including normalized step length, normalized step time, normalized step width, toe clearance, symmetry index, and gait asymmetry during treadmill walking, except for step length before normalized by leg length. CONCLUSION: Once normalized there was no significance for gender differences in any categories including step length. Furthermore, normalized spatiotemporal parameters are strongly recommended to avoid and minimize gender effects resulting from physical and biological differences when conducting research with a treadmill.

Rebecca Olson

NC - North Carolina State University

Discipline: Natural and Physical Sciences

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#3 David Watts

Abstract Name: Maternal aye-aye (Daubentonia madagascariensis) anxiety peripartum

Mothers are anxious peripartum. Our previous pilot study of three hours per day for three days peripartum demonstrated that a mother aye-aye (Daubentonia madagascariensis) displayed anxiety behaviors such as repetitive, non-purposeful movements (stereotypies) (unpub). In this study, a mother aye-aye's anxiety behavior peripartum was assessed 24 hours before, the day of, and 24 hours after birthing an infant. It was hypothesized that anxiety behaviors would change over the three days. With IACUC approval, Pelco IMM12027-1S cameras were placed in a Duke Lemur Center (DLC) aye-aye mother's enclosure and nest to record her activity the three days peripartum. The resulting videos were watched and continuous focal animal sampling was used to note the time, duration, and type of repetitive behavior such as scratching or grooming. Data were analyzed using a Kruskal-Wallis Test and Chi-squared test. Results showed that the day before birth, the mother repeatedly constructed and deconstructed nests significantly more than the other two days (n=162x), while on the birth day, the mother auto-scratched and examined her genitalia significantly more (n=37x, n=27x, respectively). The day after birth, the mother was hyper-alert significantly more times (n=19x). Therefore, the hypothesis was supported as the mother exhibited signs of behavioral anxiety, and her behaviors changed over the three-day period. Limitations included the small sample size (n=1). This study is the first to examine maternal anxiety in aye-ayes over three complete days peripartum. The results yield insight into maternal behaviors exhibited by the rare and difficult-to-see aye-ayes.Funding generously provided by NC State's Provost's Professional Experience Program.

Hammad Omar

EGY - The American University in Cairo

Discipline: Engineering and Architecture

Authors:
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#3 Lin Zhuofan

Abstract Name: Data-Driven AI Modeling of Emerging FETs: XGBoost Deep Learning Approach

This paper tackles the urgent need for advanced modeling techniques for newly developed emerging Field-Effect Transistors (FETs). We aimed to leverage XGBoost for fitting the current-voltage (I-V) characteristics of Carbon Nanotube FETs (CNTFETs), thereby addressing the gap in precise modeling for this novel transistor type through an experimental study. Our methodology encompassed a comprehensive review of FET modeling literature, careful dataset identification, and preprocessing to accommodate CNTFETs' unique characteristics. We applied the XGBoost algorithm, fine-tuning hyperparameters to optimize prediction accuracy. A quantile transformation on the output data (Ids) was employed to normalize the distribution effectively, dealing with small values efficiently. XGBoost, renowned for its effectiveness in the computer vision field, also excels in predicting tabular data for regression problems. We expect the results to demonstrate superior performance, evidenced by low Root Mean Square Errors (RMSEs) and a high R^2 score, even with a constrained dataset. With 90% of the data allocated for training and 10% for validation, we anticipate an R^2 score exceeding 99.8% for the trained data, underscoring the model's precision in predicting

I-V characteristics. This research not only propels CNTFET modeling forward but also proves the XGBoost algorithm's efficacy. The significance of our findings lies in offering an efficient and reliable method for predicting I-V characteristics, paving the way for further advancements in the field of emerging transistor types.

Marwan Omran

EGY - The American University in Cairo

Discipline: Mathematics and Computer Science

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Abstract Name: Machine Learning in Autism Spectrum Disorder Detection and Classification

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition with a wide spectrum of symptoms that affect an individual's social communication and behavior. Early detection of ASD is crucial for timely intervention and improved outcomes. This study explores the potential of machine learning algorithms for detecting ASD through the analysis of clinical data. A diverse dataset incorporating demographic information, medical history, and behavioral assessments along with comprehensive genetic profiling of individuals with and without ASD forms the basis of this research. Various machine learning algorithms, including Support Vector Machines, Random Forests, and Neural Networks, are employed to decipher intricate patterns within the dataset indicative of ASD. To enhance the models' performance, feature selection and engineering techniques are applied, ensuring that the algorithms effectively capture relevant information for accurate detection. The study evaluates the models based on sensitivity, specificity, and overall accuracy to assess their efficacy in ASD detection. The research investigates the robustness and generalizability of the models across diverse demographic factors and clinical presentations. Ethical considerations and the interpretability of machine learning outcomes are emphasized to underscore transparency and accountability in the decision-making process. The study yielded promising results, achieving an impressive accuracy rate of 89.5% using the Random Forest algorithm. This level of accuracy represents a significant advancement in the field and underscores the potential of machine learning as a powerful tool for enhancing the diagnostic capabilities of ASD detection models. By providing evidence of the models' accuracy and generalizability, the study lays the foundation for the development of scalable and data-driven tools that can assist clinicians in the early and precise identification of ASD, thereby facilitating timely interventions and improving long-term outcomes for individuals affected by this complex disorder.

Kiara O'Neal

GA - Kennesaw State University

Discipline: Engineering and Architecture

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#3 Frank-Cedric Kadjo

Abstract Name: Enhancing Bridge Inspections with Drone Technology and Computer Vision

This research project centers on addressing the significant challenges inherent in traditional bridge inspection techniques, such as labor intensiveness, time consumption, high costs, and the often-required temporary closure of bridges. These closures lead to traffic congestion and pose considerable inconveniences to the local populace. With these issues in mind, the primary question driving this research is: How can the integration of advanced computer vision techniques and drone technology transform and enhance bridge inspection processes, making them more efficient, accurate, and cost-effective, all while minimizing disruptions? Safety and proper maintenance are of utmost importance in transportation infrastructure, particularly in bridges. Yet, existing inspection methodologies have left much room for improvement. In response, our methodology introduces a novel approach, employing drones coupled with machine learning algorithms. The drones, equipped with high-resolution cameras, capture detailed aerial data, which is then processed to produce intricate 3D virtual models of the bridges. These models facilitate a comprehensive inspection and generate critical data for subsequent numerical and structural analyses, thus aiding in informed decision-making processes concerning maintenance and repairs. Preliminary findings indicate that this automated bridge inspection framework considerably elevates the accuracy of inspections, providing infrastructure managers with a more in-depth insight into a bridge's condition. This streamlines the entire inspection process and augments the durability, safety, and reliability of these crucial infrastructure assets. By leveraging emerging technologies, transportation authorities can overcome the challenges of traditional inspection methods. Ultimately, this research embodies a pioneering exploration into technological avenues that could redefine the landscape of bridge inspections, emphasizing the vital role of innovation in addressing infrastructural challenges while simultaneously reducing costs and disruptions.

Calvin Ong

OK - University of Central Oklahoma

Discipline: Business and Entrepreneurship

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#2 Travis Roach

Abstract Name: Technological Advancements in Domestic Oil and Gas Production: Implications for Labor Markets and Sustainable Policy Shifts

In 2023, the United States hit a new record for the amount of oil and gas produced domestically. This occurred despite the fact that production rig counts are at near historic lows and are well below long-term averages. In this work, I discuss how technological advancement has impacted labor markets in states endowed with oil and gas resources. To do so, I make use of highly granular Job-to-Job flows data and a shift-share instrumental variables design. I find that the number of jobs supported by a shock to oil or gas production is decreasing over time, and that the elasticity of labor demand with respect to commodity price movements has also decreased. My work has implications for policymakers as they seek to transition to more sustainable technologies. Given the declining need for labor per unit of oil or gas production, policies like the 'energy communities' provision in the Inflation Reduction Act may have a larger benefit than originally envisioned.

Cameron Ong

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Cameron Ong
#2 Aileen Nava
#3 Valerie Arboleda

Abstract Name: Modulating the Epigenome of Cells Derived From Arboleda-Tham Syndrome Patients using Small Molecule Inhibitors

Histone modifying proteins play an essential role in facilitating cellular processes such as transcription, DNA replication, and cellular fate through altering post-translational modifications found on chromatin. While lysine acetyltransferase (KAT) and histone deacetylase (HDAC) enzymes regulate gene expression by adding or removing acetyl groups from histones, their dysfunction has devastating consequences on gene regulation. Specifically, nonsense mutations in the gene coding KAT6A have been linked to a pediatric neurodevelopmental disorder observed in more than 350 people worldwide known as Arboleda-Tham syndrome (ARTHS). Understanding the function of KAT6A and what downstream abnormalities result from this nonsense mutation on a transcriptomic and proteomic level are at the forefront of research toward treating individuals with ARTHS. Recent technological development of small molecule inhibitors of KAT6A offers a novel approach in phenocopying the broken acetylation pathway observed in ARTHS patients and providing insight into KAT6A's role in controlling cell cycle progression and neurological development. A survey of the histone residues acetylated by KAT6A according to literature gave rise to a quantitative analysis of western blots, revealing a decrease in acetylation at histone 3 lysine 18 and 23 with the introduction of KAT6A inhibitors. Conversely, the inhibition of HDACs increased acetylation at those marks, indicating a potential route for therapeutic treatment to counteract the changes in acetylation caused by KAT6A dysfunction. Applying this treatment protocol to an immortalized Schwann cell line, we observed a decrease in the same acetylation marks in fibroblasts and demonstrated a change in two new histone 4 marks. This establishes a new method for phenocopying ARTHS, but RNA sequencing data will be required to establish which genes are differentially expressed due to acetylation changes. Better models of how KAT6A functions present an exciting opportunity to establish a standard methodology in developing a treatment for ARTHS and other similar rare genetic diseases.

Yumiko Onohara

GA - Georgia State University

Discipline: Natural and Physical Sciences

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Abstract Name: The Antimicrobial Efficacy of Wasabia japonica on Sushi

Japanese sushi has become incredibly popular in the United States. Sushi is traditionally made with vinegar rice, seaweed wraps, vegetables, raw fish, and occasionally cooked seafood. Eating sushi is risky, especially if precautions are not taken. The CDC estimates that 48 million people get sick, 128,000 are hospitalized, and 3,000 die each year in the U.S. from foodborne illnesses. Raw seafood can contain various pathogens such as Vibrio parahaemolyticus, non-agglutinable vibrios, and Staphylococcus. Wasabi (Wasabia japonica, Japanese horseradish) is an edible plant that contains a variety of phytochemicals. In Japan, wasabi is traditionally consumed as a condiment with sushi. Wasabi has shown to have antimicrobial activity, which contributes to

the safety of eating raw fish. This study aimed to explore the antimicrobial properties of wasabi compared to a chemical alcohol disinfection product for food. Sushi was left at room temperature for 24 hours and sampled for microbial growth observation. After 12 hours of incubation on TSA plates, sushi with no wasabi and no alcohol showed significant microbial growth. Sushi treated only with wasabi had 1 beige bacterial colony, sushi treated only with alcohol had no colonies, and sushi treated with wasabi and alcohol combined had 1 transparent raised colony. Our findings showed that wasabi is effective in reducing microbial growth. Further studies could evaluate the most effective way of adding wasabi to foods as a safe alternative to using food service chemicals to prevent foodborne illnesses.

Eromosele Onokhua

PA - Community College of Philadelphia

Discipline: Natural and Physical Sciences

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#3 Kevin Ethridge
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#6 Samantha Ryan

Abstract Name: Anthropogenic Contaminants Alter Microbial Diversity in Aquatic Ecosystems of the Delaware Watershed.

Water quality analysis of surface waters in Philadelphia County reveals that storm events induce significant alterations in pollutant concentrations, including polycyclic aromatic hydrocarbons (PAHs), antibiotics, and heavy metals. These changes have potential repercussions for both aquatic microorganism diversity and human health. Despite the known impact on chemical pollutants, there exists a notable gap in understanding the responses of microbial communities in these environments to such disturbances. This study seeks to address this knowledge gap by conducting comprehensive culturing and genomic analysis of microorganisms isolated from surface water samples at two distinct time points: under typical conditions and three days post a storm event.Utilizing colorimetric water quality assays, the research aims to assess common pollutant levels and observe variations in the relative concentrations of different chemicals, particularly in the Schuylkill River following storm events. Microbial diversity is investigated through Gram staining and culture analysis of isolated colonies from Philadelphia County waterways. Genomic DNA extraction, followed by PCR amplification of the 16s rRNA gene, is performed in preparation for genomic sequencing. The subsequent analysis of genomic sequencing data, facilitated by bioinformatics software, aims to identify microorganisms and classify taxa.Preliminary results indicate a discernible influence of storm events on the microbial diversity within the Delaware River Watershed. However, to further comprehend the intricacies of this impact, additional analyses are imperative. Future work involves a more in-depth examination of pollutant levels and metagenomic data to elucidate specific correlations between pollutants, potential pathogens, and their collective influence on microbial diversity. This multifaceted investigation not only contributes to our understanding of the complex interactions within aquatic ecosystems but also underscores the importance of integrating chemical and microbial assessments for comprehensive water quality evaluations.

Anita Nonyelum Onyia

MD - Bowie State University

Discipline: Natural and Physical Sciences

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#4 George Ude

Abstract Name: Biodiversity and Phylogenetics Study of Mushrooms from Southeast Nigeria using DNA Barcoding Methods

Over the past two decades, DNA barcoding has gained popularity in the field of molecular biology as a tool for solving the issues faced by traditional taxonomical methods. Here, we explored the use of thistool to identify and classify various mushroom species found in the diverse ecology of southeast Nigeria (Enugu and Ebonyi states). Fungi are ubiquitous in both natural and human-made environments. They play important roles in the health of plants, animals, and humans, and in broad ecosystem functions. Thus, having an efficient identification system could significantly enhance our ability to make the most use of them for both nutritional and therapeutic values as well as monitor the spatial and temporal patterns of fungal distributions and migrations. By using DNA barcoding of nuclear ribosomal internal transcribed spacer (ITS) of the rRNA gene, with fungal specific ITS primers (ITS 1 AND 4), ITS barcodes were generated for 71 representative mushroom samples. The generated barcodes sequences were analyzed using the DNA subway online platform. Sixty-four out of the 71 samples were identified to the species level with Lentinus squarrosulus and Neonothopanus hygrophanus as the most abundant species. Four major groups of mushrooms were identified: Clade A - genus Leiotrametes complex; Clade B - genus Lentinus complex; Clade C – genus Neonothopanus; and Clad D – genus Choanephora. Overall, all the students acquired the skillsets and mastered the basic techniques in molecular biology research

Wei Ming Nelson Ooi

NY - Cornell University

Discipline: Engineering and Architecture

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Abstract Name: Optimization of Ion Confinement in Surface-Electrode Traps for High-Coherence Quantum Information Processing

Trapped-ion quantum information processing devices rely on optimized ion confinement to enable high-coherence operations. Surface-electrode ion traps are commonly used to confine ion qubits in space, using a combination of radio frequency (RF) and static (DC) electric potentials. A key aspect of optimal ion control is in determining appropriate electrode potentials for stable ion confinement. Here, we present multi-physics and numerical simulation techniques expanding upon Allcock et. al. to characterize surface-electrode Paul traps. Through this, we generate corresponding optimized basis potential sets, paving the way for in-situ experiments. We also compare the efficacy of these methods in performing characterization tasks.

Korbin Opfer

IN - Valparaiso University

Discipline:

Authors:
#1 Korbin Opfer

Abstract Name: Spirituality, Materialism, Isolation, and Virginia Woolf

At first glance, it might seem like materialism and spirituality are mutually exclusive in Virginia Woolf's To the Lighthouse. To be sure, within the novel, the human mind longs for spiritual moments, like Mrs. Ramsey's experience of the lighthouse, even as material conditions inhibit or limit them. Woolf conceives of spirituality dialectically, as the experience of perfection that cannot be found in the physical world. The experience of the tension between the spiritual and the material creates strife within the novel's characters. The very nature of experience is the push and pull of spirituality and materialism as opposed forces. As a result of this, Woolf's characters mourn death, believing that the spiritual is unattainable in the face of tragic materiality. This fear of death drives the characters more deeply into themselves rather than towards one another. However, even in the face of this dialectical tension, Woolf suggests a more nuanced view of the human experience. Though Woolf's world is full of people talking past one another, a natural world that is alien, and individuals who are tormented by tragedy, Woolf demonstrates that this existential loneliness is the precondition for individuality and its creativity. Out of isolation come the vast spaces within the human self, leading to dazzling human variety and artistic creation. The potential for tragedy in life therefore also becomes the precondition for art, which aims to heal the alienation from which it arises. Woolf does not paint an idealized picture of reality but depicts a generative dialectic in which the truth of human experience shines out in all its terrible beauty despite the vicissitudes of tragedy.

Ainsley O'Quinn

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Ainsley O'Quinn

Abstract Name: Teacher and Administrator Perceptions of Restorative Practices in Schools

Most schools use exclusionary discipline, which is a disciplinary practice that removes students who misbehave from the learning environment through suspensions or expulsions. This form of discipline is associated with adverse outcomes including academic disengagement, lack of support, and increased interaction with the criminal justice system. Black, disabled, and Queer students are disproportionately involved in this form of discipline. Some schools and teachers have begun shifting to using non-exclusionary strategies as a way to make discipline more effective and equitable. These restorative practices focus on proactively building trusting relationships within the classroom and, potentially, school-wide and repairing any interpersonal harm done while maintaining students' connections to their school environments. Despite the increased use, its value remains misunderstood by school personnel, parents, and communities. The current research study seeks to understand how teachers and administrators implement restorative practices and non-exclusionary discipline in school environments and their motivations for doing so. Existing research assesses educators' attitudes following district-wide training and implementation of non-exclusionary discipline and restorative practices. The current research differs in that it compares the experience of teachers and administrators who have chosen to implement these practices on their own. Semi-structured interviews were conducted with 12 teachers and administrators who currently use restorative practices and advocate for their use by others. Preliminary findings indicate that teachers and administrators use restorative practices because they are motivated to create a more equitable school environment and positive long-term outcomes for their students. Beneficial practices include restorative conversations and circles, specifically those that

focus on prevention of interpersonal conflict and disruption in the classroom. The lack of school-wide buy-in, consistency of implementation, and lack of time are obstacles that teachers and administrators face. The participants advocated for expanded use of these practices, increased training, and community-wide education.

Diana Orem

AZ - Embry-Riddle Aeronautical University

Discipline:

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#1 Diana Orem

Abstract Name: Solving Real-World Challenges: A Mentor-Student Model for Evaluating and Improving Law Enforcement Training

Recent events involving negative interactions between law enforcement officers (LEOs) and individuals with autism have made national news, particularly use of force incidents captured on body-worn cameras. This has led to calls for better training for LEOs during encounters with autistic individuals. Training programs have been developed and are thought to be effective in reducing the likelihood of use of force incidents, but these programs are not standardized, and many do not involve outcomes measures. Our project sought to identify the optimal training program and deliver this program locally. This involved several stages, including searching for existing training programs and entering key variables into a database, identifying gaps and weaknesses, identifying the optimal program, getting trained by an expert, and getting buy-in from local LE agencies. Over the course of 10 months, a three-person team (mentor and two undergraduates) achieved these goals and delivered seven trainings with approximately 50 participants in Yavapai County, Arizona. Accomplishing this required considerable assistance from the undergraduate researchers. The two students who are the subject of this talk started in a unique position – they were involved from the inception of the project to the point of delivering these trainings. Both have been invaluable to the project and have contributed meaningfully to our success while learning they can contribute to positive change locally and in society. By utilizing a collaborative mentor-student partnership model, both contributed based on their strengths and interests, and this method has paid off. One was instrumental in creating a database of existing trainings and the other helped develop a novel problem-based learning exercise, which was then incorporated into our protocol. Throughout the process, their ideas and contributions have made our training better and helped address a real-world problem. The impact on students and transferability of the model will also be discussed.

Chase Orf

AR - Lyon College

Discipline: Natural and Physical Sciences

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#2 William Richardson

Abstract Name: Intracellular Network Modeling to Predict Cardiac Fibrosis: Fibroblast Activation Protein

Cardiac fibroblasts are an essential part of the structural integrity of the heart. These cells regulate the extracellular matrix scaffolding which is critical to the heart's ability to function mechanically, chemically,

and electrically. Through focusing on the different ways these cardiac fibroblasts react to certain stimuli, it can be predicted on how to treat the heart when these stimuli disrupt its integrity in various disease conditions. It has been found that the heart has a network of proteins and other small molecules that interact to create a cascade of signaling pathways. The goal of our research is to map out newly discovered pathways related to fibroblast activation protein and show how they interact with the already existing pathways using a computer program called Netflux. Our computational simulations aim to determine how different levels of each small molecule affect the outputs of the pathway. Through this computational research, different levels of each molecule can be entered and determining the outcome of effects of different stimuli can be done electronically instead of needing to be done on physical cells. This virtual therapy screen can greatly accelerate the discovery of novel compounds for improving extracellular matrix structure contributing to heart disease.

Grace Origer

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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#3 Ankur Gupta

Abstract Name: Modeling Multiple Ion Transport in an Electrochemical Cell

Electrochemical cells are commonly seen across energy storage and environmental remediation devices, yet the understanding of ion transport for multi-ion electrolytes in these cells is limited. The challenge in predicting ion transport for multi-ion electrolytes arises because several processes–diffusion, electromigration, and electrochemical surface reactions–occur simultaneously. Moreover, the existing literature ignores the impact of double layers on electrochemical reactions because it requires stitching together multiple regions. Therefore, the objective of this study is to predict ion transport for multi-ion electrolytes while accounting for all these transport processes simultaneously as well as the influence of electrical double layers. To this end, our model uses a Poisson-Nernst-Planck framework with coupled double layers and a bulk electrolyte. We derive equations for concentration and potential profiles where surface reactions occur in the double layers and act as boundary conditions. We solve these equations using a Python ODE solver. Our study is able to predict concentration and potential profiles for 4 and 5 ions with a supporting electrolyte, and discover physical insights into the behavior of ions within the electrochemical cell. We are currently expanding our work to include Butler-Volmer kinetics and obtain current-voltage relationships. Overall, modeling electrochemical cells with this physics-based framework enables us to make more efficient cells by helping experimentalists optimize mass transport in their systems and predict reaction constants.

Paulina Ortega

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
#1 Paulina Ortega

Abstract Name: Understanding Emerging Adult Latina Women's Perceptions of Mental Health

With high rates of anxiety among Latina women between 18 and 25 years of age, this study aims to understand the complex interplay of culture, gender, age, and family on perceptions of mental health among Latina women. Guiding this study is the question of how emerging adult Latina women understand mental health issues (i.e., anxiety) and protective factors in their lives. For this study, an interpretive phenomenological analysis (IPA) of 18 interviews with Latina students attending a Hispanic-Serving Institution in Southern California was conducted. Findings indicate four recurring themes, including the experience of stress from breaking away from traditional gender roles of serving men while attempting to stay attached and committed to Latinx family culture. Participants also describe incongruent perspectives of mental health between their own views and their families, yet they express that family remains their primary support system. A sense of identity threat also surfaced, with some participants stating they are not "Latina enough." Lastly, participants describe their exposure to social media as being associated with more positive attitudes toward treatment while simultaneously describing experiences of upward social comparison and anxiety when using social media. These findings can help inform culturally aware practices for therapists working with emerging adult Latinas.

Renytzabelle Ortega-Cotto

VT - Norwich University

Discipline: Health and Human Services

Authors:
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#2 Kylie Blodgett

Abstract Name: Assessing the Correlation and Differences between Melatonin and Cortisol levels in College Freshmen throughout the Academic Year to help Determine if they are Reliable Stress Markers

Background: Cortisol is a circadian hormone whose values increase in the morning, while melatonin is a circadian hormone whose values increase at night. Stress has been shown to disrupt both circadian responses, and college students have various stressors that can cause dysregulation in cortisol and melatonin levels. Relationships between melatonin and cortisol may help to predict stress in college students, although limited research has been done to assess the potential correlations. Purpose: The purpose of this study was to assess whether melatonin is a reliable marker of cortisol in college freshmen at various timepoints throughout the academic year. Methods: Demographic data on incoming college first-year students at Norwich University (n=40) were collected via a self-report survey in September 2023. Saliva samples are being collected six times during the 2023-24 academic year. Salivary cortisol and melatonin were quantified in the September and October samples using Enzyme-Linked Immunosorbent Assays (ELISAs). Absorbencies were converted to concentrations using R. Pearson correlation were used to assess relationships between cortisol and melatonin at each timepoint, and t-tests were used to assess differences in each hormone between September and October and between genders. Statistics were run using SPSS version 28. Results: Analyzing the data revealed that there were no notable correlations observed in cortisol and melatonin levels between September and October. Furthermore, there were no significant differences between genders and no significant diffrences in melatonin between the timepoints, although cortisol was higher in October than September (p=0.056). Conclusion: While current data suggest that melatonin and cortisol are not correlated, the small sample size might be a limitation, and we will continue to recruit participants to increase power.

Chris Ortiz-Gonzalez

GA - Georgia Southern University

Discipline: Social Sciences

Authors:
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#2 Matthew Flynn

Abstract Name: Immigration Detention: Its Impacts on the Health of Immigrants

Immigration detention is the process of detaining migrants and refugees for criminal, ad hoc, and administrative procedures. While immigration detention is an international problem, the United States has the most extensive immigration detention system in the world, with 211 operational facilities that can house 50,000 immigrants at any time. As of July 2023, the US detained roughly 352,882 immigrants, and worsening this issue is the fact that 90.8 percent of immigrants detained will find themselves in privately run centers that prioritize financial gain over human rights. These detention facilities have been subject to various complaints by human rights organizations and scholars that note sexual assault, denied medical care, unsanitary conditions, excessive use of force, beatings, abusive solitary confinement, and lack of legal representation. These abuses violate internationally accepted human rights in treaties signed and ratified by the US government. More importantly, these abuses have devastating effects on immigrant health. Previous research has mainly focused solely on physical or mental health, and very few take into account the privatization of these detention facilities. However, this study aims to unify these perspectives to provide an overall picture of the effects immigration detention has on immigrant health. Furthermore, this study also discusses how the trauma from experiences in these facilities affects health in the long run, as some immigrants may be hesitant to seek medical care because of their status. The research methods used in this report include interviews and the collection of complaints from organizations discussed above who have investigated the conditions of these facilities. In all, this study sheds light on disastrous immigration policies fueled by the financial motivations of private corporations, how these policies affect immigrant health, and offer cost-effective alternatives free from privatization and that respect human rights.

Torie Ortiz-Jones

OK - Cameron University

Discipline: Natural and Physical Sciences

Authors:
#1 Torie Ortiz-Jones

Abstract Name: Cowden Syndrome and why it matters

Multiple non-cancerous tumor-like growths termed hamartomas and an elevated chance of acquiring specific cancers are two features of the genetic illness Cowden syndrome. Hamartomas are developed in almost all people with Cowden syndrome. These growths can appear everywhere in the body, although they are most frequently found on the skin and mucous membranes (such the lining of the mouth and nose). A higher chance of getting many malignancies, including those of the breast, the thyroid gland in the lower neck, and the endometrium of the uterus, is linked to Cowden syndrome. Kidney cancer, colorectal cancer, and melanoma, an aggressive form of skin cancer, are among the other cancers that have been linked to individuals with Cowden syndrome. persons with Cowden syndrome typically start developing these tumors in their thirties or forties, far earlier than persons in the general population. Contrary to the general population, those with Cowden syndrome have a higher lifetime risk of developing several cancers. In addition, Cowden syndrome frequently involves other endometrial, thyroid, and breast conditions. Other indications and symptoms may include Macrocephaly, an enlargement of the head, and Lhermitte-Duclos disease, a rare, benign brain tumor, are possible additional indications and symptoms. A tiny proportion of those affected have intellectual disability, developmental delay, or autistic spectrum condition, which can impair communication and social interaction.

Martina Ortouste

CA - California State University - Channel Islands

Discipline: Social Sciences

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Abstract Name: Understanding Non-Profit Brand Awareness: The Importance of Establishing a Strong Brand Identity

Non-profit organizations often face the hurdle of establishing a strong brand identity with limited resources. The present study aimed to identify the public's perception and brand awareness of a local non-profit organization (NPO). A total of 13 subscales relevant to the topic were employed: brand awareness, brand associations, familiarity, likeability, inclusion, usefulness, efficiency, affect, dynamism, reliability, brand commitment, sincerity, and excitement. All items selected were based on a thorough literature review. The NPO distributed the completed survey to the community, and 111 valid responses were collected from October to November 2023. A one-way between-groups ANOVA was performed to analyze subscale scores based on how participants learned about the NPO. The responses were split into four groups: (1) social media/advertising, (2) word of mouth/recommendations, (3) special and/or community events, and (4) two or more of the above categories. The independent variable was how the public knew of the NPO, and the dependent variables were the survey's subscales. The results showed a significant difference in brand association, $F(3,86) = 2.976$, $p = 0.036$, $\eta 2 = .094$, and likeability, $F(3,86) = 2.825$, $p = 0.043$, $\eta 2 = .09$, across the four groups based on how participants learned about the NPO. Post-hoc results revealed that respondents who learned about the NPO through two or more sources scored significantly higher than those who learned about the NPO through special and/or community events on both brand association (Mdiff = 0.61, d = 0.71) and likeability (Mdiff = 0.58, d = 0.67). These findings support the idea that NPOs should increase their branding efforts at special and community events and focus on their likeability as a goal for these types of events. Using such surveys for NPOs could support the organization's programming, funding, and future goals.

Chidera Osaji

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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#2 Benjamin Tayo

Abstract Name: Machine Learning for Diagnosis of Traumatic Brain injury and Developing tools for Educating the General Public

Identifying brain injuries in the preliminary stages through machine learning is important to avoid more complex situations in the brain. Long-term effects of brain injury can be associated with an elevated

incidence of Alzheimer's disease and chronic traumatic encephalopathy. Machine learning is important and useful in avoiding the late realization of fatal brain injuries. The increased diagnostic accuracy of MRI (magnetic resonance imaging) technique reduces patient exposure to radiation by reduction of required scans. The goal of this research is to use machine learning techniques to detect traumatic brain injuries from MRI datasets using classification and clustering approaches. The preliminary stages involve importing the labelled dataset using python programming language and visualizing the topographical images. The next step is to convert the image data into numerical data. Then we will build a machine learning model for classifying the images either as normal or abnormal (indicates brain traumatic injury). The final step is to evaluate the accuracy of the model and calculate model's accuracy. We will present the results obtained so far.

Rhythm Osan

PA - Drexel University

Discipline: Engineering and Architecture

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#2 Amir Farnam

Abstract Name: Bio-Inspired Thermal Vascular Self-Responsive Composites for Civil Infrastructure

The ever-increasing global demand for energy-efficient and sustainable building designs has led to the exploration of innovative approaches inspired by nature. This study introduces a novel concept of bio-inspired vascularized adaptive building architecture for thermoregulation, drawing inspiration from the circulatory systems of plants and animals. This groundbreaking approach aims to optimize indoor thermal comfort while reducing energy consumption in buildings. To engineer vascular networks in cementitious composites, a sacrificial polymeric filament is utilized that dissolves upon exposure to concrete pore solution which creates an engineered channel within the matrix. In order to evaluate the effective creation of vascular networks, we conducted 3D X-ray micro-computed tomography (micro-CT) of the composites. Using this technique, we characterized vascular channel topology and micro-cracking. The results revealed the successful creation of architected channels in cementitious composites with no cracks and no dimensional instability. The proposed architecture integrates a network of fluid-carrying channels within the building envelope, emulating the vascular system found in nature. Within these channels, phase change materials (PCMs) are strategically placed to store and release thermal energy as they undergo phase transitions. The system's adaptability is viewed through real-time monitoring of temperature of the samples using infrared thermography (IR) that underwent cyclic thermal conditions. During PCM phase change, an autonomous gradual heat release was observed, increasing the temperature around the vasculature. The results acknowledged the ability of PCM fluid to enter/leave vascular channels as well as its ability to remain inside the channels. The integration of bio-inspired vascularized systems with PCMs for thermoregulation represents a promising paradigm in sustainable building design. This research not only contributes to a more sustainable built environment but also opens avenues for further exploration and practical implementation of nature-inspired solutions in architectural design and sustainable construction practices.

Victoria Osborn

AZ - Northern Arizona University

Discipline: Health and Human Services

Authors:
#1 Victoria Osborn
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#4 Taylor Yazzie

Abstract Name: Stress Coping Strategies for High School Students at Summit High School

Project Purpose: The purpose of this project was to educate Summit High School students on stress and provide them with stress-coping strategies to overall improve their resilience.Background: Our intervention targeted high school students in Flagstaff to teach them about the effects of long-term stress and introduce them to various stress-coping strategies. 75% of American high schoolers and 50% of middle schoolers described themselves as "often or always feeling stressed" by schoolwork. Additionally, 45% of high school students admit to being stressed nearly every day while at school. As an alternative high school, Summit High School students may face adversity more often than other students which impacts their daily stressors, further increasing the importance of stress management skills.Methods: We worked with Summit High School's second period, 11th grade English class over the course of 4 days for approximately one hour each day. We plan to implement a range of activities that include a health education lesson, arts and crafts, physical activity, and mindfulness practices. Conclusions: Nearly 78% of students increased their knowledge on stress after the health education lesson. The class's overall perceived stress remained the same from the beginning and end of the intervention at a moderate level according to the Perceived Stress Scale. It is important to note that class sizes and participants consistently changed throughout the intervention questioning the validity of results. This intervention demonstrates the need for continued work with Summit High School students to build on stress management skills in order to build resiliency and support health equity.

Liah Osborne

PA - Villanova University

Discipline: Engineering and Architecture

Authors:
#1 Liah Osborne
#2 Sean Down
#3 Jacob Elmer

Abstract Name: Engineering a Recombinant Hemoglobin-Based Oxygen Carrier Made From Earthworm Erythrocruorin

ChatGPTThis study explores the potential of utilizing earthworm-derived erythrocruorin (Ec), an extracellular protein, as a novel oxygen carrier, distinct from the red blood cell (RBC)-based system. Unlike RBCs, which have a limited shelf life of 42 days when refrigerated, Ec remains functional at 40ºC for up to 6 months, presenting an intriguing alternative for oxygen transport. The objective is to engineer Chinese Hamster Ovary (CHO) cells to express LtEc, creating a hemoglobin-based oxygen carrier suitable for mass production and extended storage without refrigeration.Various molecular biology techniques, including PCR, Restriction Digest, Gibson Assembly, Golden Gate Assembly, plasmid cloning, and sequencing, were employed to develop LtEc-expressing CHO cells. Currently, hemoglobin is extracted from earthworms for replication in the lab, but this method is unsustainable due to the finite number of earthworms. The aim is to produce only the protein responsible for oxygen transport and express it in CHO cells at any desired scale.Results indicate successful expression of LtEc plasmids, both with and without secretion tags. Secretion-tagged plasmids form disulfide bonds and glycosylation, with the Ec protein located outside the cell membrane. In contrast, non-secretion-tagged plasmids protect the Ec protein within the cell membrane but lack disulfide bonds and glycans. Ongoing research is focused on determining the optimal approach between these two options for an effective hemoglobin-based oxygen carrier.The significance of this research lies in the potential to address the limitations of current oxygen carriers, leading to improved efficiency, mass producibility, and prolonged storage without refrigeration. Successful outcomes could pave the way for future clinical trials, ultimately seeking FDA approval for the developed oxygen carrier.

Ade Osineye

GA - Morehouse College

Discipline: Natural and Physical Sciences

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#3 Damini Khera
#4 Harmit Malik

Abstract Name: The Role of Nuclear Localization on MxA Super Restrictors Against Orthomyxoviruses

Evolutionary arms races occur when two genes place positive selective pressure on one another to evolve fitness advantages over each other. These evolutionary arms races can be identified in the context of viruses and their corresponding hosts. We are interested in the evolutionary arms race between MxA, an interferon-induced antiviral restriction protein, and its target in orthomyxoviruses, the nucleoprotein. Despite the overall amino acid sequence of MxA being conserved, several sites are under positive selection; in particular, the MxA L4 Loop includes five rapidly evolving residues important for the restriction of orthomyxoviruses including H5N1 and H1N1 influenzas and Thogotovirus (THOV). Combinatorial mutagenesis of the five rapidly evolving residues of loop L4 allowed for the creation of MxA super-restrictors which restrict H5N1 minigenome significantly better than wild-type MxA. However, H5N1 super-restrictors did not provide increased restriction of other orthomyxoviruses like THOV and H1N1. Based on data from previous experiments using wild-type MxA and nuclear localized wild-type MxA, we predicted that adding a nuclear localization signal (NLS) to the H5N1 super-restrictors would achieve super-restrictor levels against THOV and H1N1. We tested this hypothesis in 3 minigenome assays (H5N1, H1N1, and THOV) with five H5N1 super-restrictors with and without NLS. With the addition of NLS, these H5N1 super-restrictors were able to achieve super-restrictor levels against THOV and H1N1. These findings provide the basis for future experiments testing for co-localization and binding affinity of NLS-tagged H5N1 super-restrictors and their targets.

Stanley Ossyra

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

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#1 Stanley Ossyra
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#3 Alex Walsh

Abstract Name: Design, Analysis, and System Identification of Novel Lift-Cruise e-VTOL Aircraft

Current electric vertical-takeoff-landing (e-VTOL) solutions are limited in endurance and range due to their reliance purely on vertical lift motors. This presentation discusses the development, design, manufacturing, and testing of a novel eVTOL tandem-wing Unmanned Aerial Vehicle (UAV) tech demonstrator for long-endurance flight. The UAV is of a vertically staggered tandem wing configuration, incorporating two motors for horizontal flight, as well as 8 motors to enable vertical takeoff, hover, and vertical landings. With an architecture that combines the mobility and versatility of a traditional multicopter vehicle along with the high

ranges typical of fixed-wing aircraft, the developed vehicle has a designed flight time of 1 hour. Design methodologies, software-in-the-loop (SIL) and hardware-in-the-loop (HIL) simulations, flight testing results, and system identification and handling qualities will be discussed. Derived equations of motion for rotorcraft-wingborne flight dynamics will be presented. This architecture holds significant promise in enabling longer-range flight, coupled with the versatility of a vertical take-off capability. Potential applications include long-range medical evacuation services, search and rescue, and infrastructure inspection.

Onyedikachi Oti

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Onyedikachi Oti

Abstract Name: PCL HA bioabsorbable scaffold and 3D printed interlocking nail delivery system for Long bone defect

O, Oti, H. Alizereej, S. Nikfarjam, M. KhandakerThe primary objective of this study was to create a tibial interlocking nail system that is suitable for a rabbit model that has a critical-sized segmental long bone defect. Our goal was to engineer both scaffold and interlocking nail systems using biocompatible and biodegradable materials, particularly PCL embedded with hydroxyapatite (PCL-HA). Our research focused on three key objectives: 1. To produce a scaffold with suitable porosity and which are bioabsorbable enough for Stem Cell addition and growth. 2. To produce an interlocked nail system for a rabbit tibia large bone defect model using phase separation casting methods. 3. To create a delivery jig for the interlocked nail system using stereolithography (SLA) 3D bio resin printing and evaluate the efficiency of this jig in securing the scaffold. 4. To conduct a mechanical characterization of PCL-HA. The bioabsorbable PCL-HA scaffold was intentionally designed to be porous, promoting faster degradation and facilitating early weight-bearing capabilities. Our prototype targeting jig demonstrated the ability to deliver nails and securely fix screws and bone scaffolds in a rabbit tibia model, marking a significant advancement in addressing critical-sized segmental long bone defects.

Amarachukwu Oti

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Evaluation of 3D-PCL-PEGDA scaffold for cartilage repair with Stem Cells

The exploration of biologics like bone marrow stem cells (BMSC) for cartilage repair has progressed rapidly, aiming to boost native biology. This is a primary focus in current clinical research. However, the absence of a supportive scaffold that could house both cellular and growth factor elements, while also permitting early weight-bearing, has proven to be a limitation. This investigation successfully created a multilayered three-dimensional (3D) scaffold using polycaprolactone and Poly(ethylene glycol) diacrylate (PEGDA) hydrogel, which was then tested in vitro for its effectiveness in repairing rabbit knee cartilage. This innovative 3D PCL-

PEGDA scaffold architecture demonstrated its capacity to safeguard any potential hydrogel-based chondrogenic material, including PEGDA. We noted the unique degradation properties of our composite scaffold in cell culture media, and witnessed its increased rate of degradation (% of dry weight change) after a fortnight of immersion in each media. This confirms its superior biodegradation profile in vitro, which hypothetically suggests optimal in vivo performance, subject to further testing. We also recorded a drop in cell viability on day 7 of culture, followed by a steady rise until day 21. Ultimately, our nanofiber coating on the PCL-PEGDA scaffold significantly enhanced BMSC attachment on the scaffold surface. This ongoing research aims to identify a dependable solution for long bone defects.

Danylle Otteni

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
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#2 Jessica Lopez
#3 Erin Harberts

Abstract Name: Antibody Production in TLR4 Knockout and Wild-Type Mice

Toll-like receptors (TLRs) are a class of membrane-bound receptors that play a key role in linking the innate and adaptive arms of immunity. Toll-like receptor 4 (TLR4) detects lipopolysaccharide (LPS) from Gram-negative bacteria, upon recognition an immediate response is initiated that leads to the activation of immune cells and the release of pro-inflammatory chemokines and cytokines. To investigate if TLR4 is necessary to generate a robust adaptive immune response, TLR4-/- mice and wild-type mice were used to compare magnitudes of antibody production in response to intramuscular administration of the model antigen ovalbumin (Ova). 10μg of Ova was administered on Day 1 to initate immune responses to the Ova antigen, a similar injection was administered on Day 14 to boost the antigen-specific adaptive immune response. Mice were bled on days 1, 14, and 28 before Ova injections were administered. Amounts of Ova-specific antibodies, isotypes IgG1, IgG2c, and IgGE, were measured using an indirect enzyme-linked immunosorbent assay (ELISA). Results indicate that wild-type mice produced a significantly higher magnitude of Ova-specific IgG1 as compared to TLR4-/- in the day 28 serums. Isotypes IgG2c and IgE Ova-specific antibodies were not produced above the level of detection by ELISA in any of the samples tested. Our study provides evidence that TLR4 is required to generate a complete adaptive immune response. Understanding the contribution of TLR4 activation in antibody production and affinity maturation is necessary to be able to initiate protective immunity in all populations of people. Results of this study support the development of modified vaccine adjuvants that are maximally effective in driving the production of antibodies in immunosuppressed individuals

Carter Ottley

UT - Utah State University

Discipline: Social Sciences

Authors:
#1 Carter Ottley

Abstract Name: Exploring Book Banning Conversations on Social Media

The resurgence of book banning has become a prominent topic in both traditional media and social media discourse throughout 2023. Many parents, school board members, and government officials have taken steps to limit the books offered to students in their schools. Numerous librarians, teachers, and parents have also fought against these bans. Recognizing the rapid and frequent evolution of the media landscape, it is critical that our research methodologies also adapt and incorporate newer forms of communication. This study expands our understanding by inspecting the conversations happening on social media — which has often been overlooked in the literature on banned books.By analyzing the most influential users and prevalent words/phrases used by social media participants in YouTube videos on banned books, the study can teach what online conversations consist of and how they impact the book-banning process. The study will also discover the common sentiments of the most popular words and comments. This research plays a critical role in expanding the current scholarly conversation by using social media to learn why people seek to ban books, how book banning is perceived, and the role social media plays in these conversations. It can also inform decision-makers, such as legislators or school board members, on the sentiments of book-banning online.

Hongyi Ou

CA - Pasadena City College

Discipline: Natural and Physical Sciences

Authors:
#1 Hongyi Ou

Abstract Name: Explaining LIGO's discovery of gravitational waves through college-level physics

Through LIGO's successful detection of a gravitational wave (GW150914) in September 2015, the space-time we live in was experimentally confirmed for its elastic qualities. ^1 Itself may expand, contract, swing and bend just like matter. This is promising as human's curiosity of the universe echoed a hundred years after a conjecture. ^2 The interest among the public and college students prompted this pedagogical study. ^3We dive in by analyzing the three stages of the coalescence of black hole, which is the main event caused the GW150914. Initially, the by using Newtonian mechanics e.g. Kepler's Third law, we described the two black holes on the initial state of adequate separation. In the second stage, we develop a rate equation of the gravitational radiation by analog the gravitational field to the electromagnetic field. In the third stage, instead of introducing Black Hole Perturbation Theory, we are using knowledge of underdamped oscillations, Schwarzschild radius and event horizon, which explained on introductory physics books, to give more sense to the most complex period, ring-down, when the merged object relaxes into its equilibrium state called a Kerr black hole. ^3By parameter estimating of the coalescence events, we may inferred the key features of the event like masses of the black holes, the distance to earth, and the total gravitational radiation emitted. With a dozen of applied problems related to data obtained by and operation of LIGO, we gave college students an remarkable example for quantitative and qualitative understanding to the gravitational wave era.

Astrid Ouolo

CA - Mount Saint Mary's University

Discipline: Natural and Physical Sciences

Authors:
#1 Astrid Ouolo

Abstract Name: Effect of Noni drink and Noni extract on hIAPP aggregation in type 2 diabetes

Type II diabetes is characterized by insulin resistance and β-cell destruction caused by human islet amyloid polypeptide within the pancreas. Natural remedies such as noni fruit (Marinda citrifolia), which is traditionally found in Asian and the Pacific islands, have been used to treat diseases such as cancer, joint pain, and diabetes. In this study, noni fruit powder and a dietary noni drink were used as an experimental agent to investigate their potential influence on pancreatic cell viability. To achieve this, various amounts of noni fruit extract were introduced to cells alone or in conjunction with hIAPP, to evaluate their impact on cell viability. Noni fruit powder was extracted using ethyl acetate and added to RIN-m cells to determine their viability using an MTT assay. The results revealed that increasing concentrations of noni yielded decreasing cell viability. The tested concentrations of noni were excessively potent to pancreatic beta cells. The cells exhibited a robust health and vitality in isolation; however, the cells viability declined once exposed to nNoni fruit extract. Future research will involve lower concentrations of noni fruit extract and determination of active compounds responsible for this potent effect on pancreatic beta cells and its impact on cell viability in type II Diabetes.

James Overly

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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Abstract Name: Beyond Polyamines: SSAT1 Unveiled as a Novel Tau Acetyltransferase in Alzheimer's Pathogenesis

In Alzheimer's disease (AD) and tauopathies, Tau, a microtubule-stabilizing protein, undergoes post-translational modifications, like hyperphosphorylation, aggregates, and ultimately contributes to neuronal death. Polyamines are aliphatic polycations with diverse physiological functions. In disease states, there is an observable flux of polyamine concentrations. Though this short-term increase may be beneficial in states of acute stress, chronic stressors result homeostatic dysregulation, termed a polyamine stress response (PSR). This research investigates the intricate role of the polyamine stress response (PSR) and the enzyme Spermidine/spermine-N(1)-acetyltransferase (SSAT1) in Alzheimer's disease progression, with a specific focus on their impact on Tau, the major pathological hallmark of neurodegeneration. Interestingly, we have found that SSAT1, an enzyme traditionally known for its role in acetylating polyamines, also acetylates Tau. This significant finding identifies SSAT1 as a novel Tau acetyltransferase via the polyamine pathway, presenting new avenues for understanding and potentially mitigating Tau aggregation in Alzheimer's.We will be employing Tau transgenic PS19 (human MAPT P301S, 1N4R) mice, which overexpress human tau, and novel SAT1 heterozygous and homozygous knockout mice as our primary subjects. Our analysis will aim to identify a broad range of acetylation sites on Tau, utilizing novel antibodies created by our lab via Western blotting and immunohistochemistry (IHC). We plan to conduct detailed measurements of Tau tangle pathology, neurodegeneration, and inflammation, providing a comprehensive picture of the disease state.Underpinning our research is a hypothesis, supported by our preliminary data, that decreasing SSAT1 activity or genetic ablation of SSAT1 will significantly reduce Tau acetylation and subvert the Tau-PSR. This, in turn, is expected to reduce Tau pathology, potentially slowing the progression of Alzheimer's. The anticipated outcome of this study has the potential to greatly enhance our understanding of the role of SSAT1 and the PSR in Alzheimer's disease, possibly leading to the identification of novel therapeutic targets.

Rebecca Overton

MD - Howard Community College

Discipline: Business and Entrepreneurship

Authors:
#1 Rebecca Overton

Abstract Name: The Relationship Between McDonalds and Ronald McDonald House Charities

Have you ever been to a McDonald's drive-thru and noticed the donation box labeled "Round Up for RMHC?" Ronald McDonald House Charities (RMHC) is a non-profit corporation that provides a "home-away-from-home" to families and children in need receiving treatment, supporting and facilitating family-centered care. Their mission statement is to create, find, and support these programs that directly improve the health and well-being of children and their families. Fortunately, technological advancements bring newer healthcare treatments; however, access to these resources is limited, and staying near those things is an added cost to families. RMHC is there to bridge the gap to lessen the burden. Many people expect the multi-billion dollar fast food chain to contribute to their name-sake charity annually; however, this could not be further from the truth. RMHC only gets 10% of its revenue, over $182 million, from McDonald's via donation boxes and round-up contributions. The Round-Up feature allows customers to round up to the nearest dollar to donate to RMHC. In recent years, McDonald's has begun implementing the Round-Up program on their app and self-order kiosk. However, critics claim McDonald's may benefit more from this relationship through promotional and publicity benefits. RMHC has stated they appreciate the awareness behind the cause and believe it reaps positive benefits, but the benefits might be disproportionate. This project aims to bring awareness to Ronald McDonald House Charities, and the audience will learn about the misunderstood relationship between McDonald's and RMHC and specifically how RMHC Baltimore functions without help from McDonald's.

Emely Oviedo

IL - Governors State University Honors College

Discipline: Social Sciences

Authors:
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Abstract Name: Athlete Motivation

Problem or Major purpose: In the world of sports, athletes are guided by the coach's decisions and behaviors. Athlete perception of the coach's interpersonal behaviors has the potential to impact the athletes sport development (Lopez de Subijana et al., 2021). The purpose of this study is to understand how the athlete's perception of the coach's behavior may impact the athlete's basic psychological needs, and how meeting those needs may impact the athlete's overall motivation for sport. Procedure: Through convenience sampling, approximately 200 collegiate athletes ranging in age from 18-25 years old, from the selected minority serving institution will be selected as participants. Researchers will select half identified as female (n=100) and the other half as male (n=100). The collegiate athletes will be participants from the following sport teams: soccer, basketball, cross country, volleyball, track and field, bowling, and golf. This will be a non-experimental, mixed methods design that will utilize a correlational survey to measure coach interpersonal behaviors, athlete basic psychological needs satisfaction, and athlete sport motivation. The majority of the questionnaire items will be close-ended provided with a Likert scale ranging from 1-7, with the exception of the demographic part of the survey. Results: The research team anticipates that athletes who perceive coach interpersonal behaviors as supportive will experience satisfaction of their basic psychological needs resulting in self-determined (intrinsic motivation). Similarly, the research team anticipates that athletes who perceive coach interpersonal behaviors as thwarting will experience dissatisfaction of basic psychological needs resulting in controlled motivation. Conclusions or implications: The research team anticipates that other variables and demographics such as age, nationality, years of sport participation, accredited competition

level, and the duration of coach-athlete relationship will be significant in the athlete's perception of coach interpersonal behaviors and basic psychological need satisfaction, overall affecting the athlete's motivation for sport.

Zachary Owen

KY - University of Kentucky

Discipline: Social Sciences

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Abstract Name: Homeownership and Mortgage Loans: How Important is a Conventional Loan?

Communities across the United States face a housing crisis that stems in part from a scarcity of conventional home mortgage loans. In 2020, the Urban Institute reported that when applying for a mortgage, Black applicants were denied 27.1% of the time, yet White applicants were denied only 13.6% of the time. These denial rates are highly correlated with homeownership rates. Today, despite policy efforts, the difference in White and Black homeownership rates is higher than in the 1960s when the government enforced discriminatory housing policy.Because lenders often cite credit score concerns and high debt-to-income ratios as rationales to deny someone's mortgage application, policy alternatives must address these barriers while improving mortgage application approval rates and reducing the mortgage denial gap by race. While various legislation has attempted to ameliorate the concerns above, progress has been muted and slow. After considering how numerous alternative policy options advance equity, improve effectiveness, and minimize implementation costs, I make following recommendations to the United States government: Enact regulations that mandate credit reporting agencies include 12 months of positive rental payment history when computing someone's credit score. Increase access to free educational resources regarding the homebuying process. Conduct further research to investigate the impact of conventional mortgage access on homeownership. Credit scores would rise and assuage the worries of lenders. Information would be more available to uninformed borrowers. The importance of conventional mortgage access would be known, and the need for change would be illuminated. By putting these policies into place, evidence suggests that conventional mortgage access would increase to create more positive outcomes for people across the United States.

Oreoluwa Owoseeni

TN - Fisk University

Discipline: Natural and Physical Sciences

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Abstract Name: Artificial Intelligence tool Optellum outperforms traditional lung cancer prediction model BRODERS

Lung cancer claims more lives than any other malignancy, with 127,070 annual deaths in the United States. While improvements in lung cancer screening have led to decreased mortality in high-risk populations, it has also led to a dramatic increase in the detection of indeterminate pulmonary nodules (IPNs). Analysis of IPNs leads to morbid and costly complications derived from biopsies and invasive procedures. The development of an accurate non-invasive risk predictor such as radiomic tools would help primary clinicians through artificial

intelligence (neural networks and machine learning) to classify patients at higher risk depending on clinical characteristics, exposures (tobacco, air pollutants), and images from low dose computed tomography scans (CTs). Characteristics such as nodule texture, density, location, and volume are being developed as one such noninvasive predictor. In the present study, radiomic analysis was applied to a cohort (N = 450) of patients with nodules posing significant diagnostic challenges. Previously validated traditional radiomic tool BRODERS (Benign versus aggRessive nODule Evaluation using Radiomic Stratification) and novel AI-based Optellum analyses were performed on patient CT scans with Optellum (AUC = 0.68) performing significantly better than BRODERS (AUC = 0.52). Optellum's performance is unprecedented, being the first predictive model applied to this cohort to produce accurate predictions. These results indicate that Optellum and other related AI tools may provide the most predictive value for clinicians, especially when examining clinically puzzling cases.

Brook Ozier

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

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#6 Thomas Canam

Abstract Name: Exploring Medicinal Polysaccharide-K (PSK) Production from Trametes versicolor used for Biofuels

The white-rot fungus, Trametes versicolor, has been examined as a potential pre-treatment agent for biofuel processes as a means to increase biomass digestibility while improving sugar yields. Although this technology has the potential to reduce biomass-to-bioenergy costs, the overall economic viability of using lignocellulose for biofuels remains a concern. An effective method to overcome low profit margins is to create a co-product that adds value to a process. To that end, Trametes versicolor has been used as a source of a macromolecule called polysaccharide-K (PSK) that has clinically-demonstrated health benefits. Although the fungi used for bioenergy purposes should be able to produce PSK as a co-product, the strain of Trametes versicolor used for lignocellulose pretreatment (52J) is different than the strain used for PSK production (CM-101). In the present study, the CM-101 strain was grown in liquid culture before being applied to chopped miscanthus straw and allowed to grow for five weeks in a biomass pretreatment scenario typically used with strain 52J. The resulting treated material was milled and examined for lignin degradation, fermentable sugar yield, and calorie content. Meanwhile, to examine PSK production from the 52J strain, it was grown in liquid culture for approximately one week before being filtered from the media. The filtered fungal material was then milled in liquid nitrogen and proteins were extracted to detect the presence of PSK. The results from these two experiments indicate that T. versicolor strain CM-101 is as effective as strain 52J for treatment of the miscanthus straw, with comparable biofuel metrics between the two strains. Additionally, early results suggest that T. versicolor strain 52J is an effective source of PSK, although further research is required to compare yields and examine potential differences in the carbohydrate content of this medically significant macromolecule.

Hailey Packard

UT - Utah Valley University

Discipline: Engineering and Architecture

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#1 Hailey Packard

Abstract Name: Beyond Blueprints: A Comprehensive Exploration of the Impact of Rendering Methods on Architectural Communication

In the vast landscape of architectural mediums, the key to capturing clients' attention and ensuring a comprehensive grasp of a proposed project lies in the choice of rendering methods. This research endeavors to pinpoint the most effective communication medium through an experiment employing various rendering techniques. Four renderings of a single exterior façade will be crafted, each utilizing diverse media methodologies. To convert the renderings into quantifiable data an innovative approach involves subjecting the renderings to AI-driven algorithms, predicting where the human eye is drawn to in the images in the first 3-5 seconds superseding the influence of cognitive bias, and aiming to identify which of the images inherently captures the most attention. The research results will be examined and the significance of differences between rendering methods addressed. This research delves into the implications for architects, exploring how these findings may influence presentation strategies, considering potential impact of passing fads, taking into account the alignment of media style with architectural subject matter, and noting whether the experiment requires diverse architectural styles for optimal effectiveness. The current hypothesis regarding these results is that the images with contrast and hierarchy in the composition, such as watercolor renderings, will outperform the other methods. The overarching objective of this research project is to discern the most effective medium for capturing the client's attention when presenting architectural projects. Due to modern advancements that increase our access to an abundance of knowledge and techniques, architects and designers must make informed choices about how they present their ideas. By comparing these mediums and formats through these methods, this research will attempt to identify the most effective strategy for engaging clients and enhancing their comprehension of projects which will also aid in contributing to a clearer understanding of visual communication in the architectural field.

Srihitha Padamatinti

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: The Association of Limited Health Literacy with Frailty and Mortality among Older Adults with Cancer- The CARE Registry

Background: Health literacy is the ability to obtain, process, and understand health information. Limited health literacy can lead to poor identification and management of comorbidities. Frailty is a state of vulnerability from age-related decline impairing one’s ability to handle stress, is common among older adults with cancer, and is a risk factor for death. Older adults have high rates of poor health literacy and frailty, but

the role of health literacy on frailty and death among older adults with cancer is understudied.Methods: We included 850 older adults ≥60y with cancer from the Cancer & Aging Resilience Evaluation (CARE) Registry completing a selfreported geriatric assessment at first visit to medical oncology. Self-reported health literacy was the exposure. Outcomes were frailty and death. We used modified Poisson regression to examine the association of limited health literacy on outcomes adjusting for age, race-ethnicity, sex, and cancer type/stage.Results: Median age at enrollment was 68; 57.5% were male; 20.1% were non-Hispanic Black. The most prevalent cancer types included colorectal (27.4%) and pancreatic (18.5%) at advanced stage (46.1% Stage IV). Those with limited health literacy were older (70 vs. 68, p: <0.001), male (62.5% vs. 55.2%, p: 0.043), non-Hispanic Black (28.4% vs. 16.2%, p: <0.001), less educated (≤HS: 62.1% vs. 28.5%, p: <0.001), and retired/disabled (86.4% vs. 71.2%, p: <0.001). In multivariable analysis, limited health literacy was associated with higher prevalence of frailty (PR: 2.63, 95% CI: 2.12-3.26) and death (PR: 1.27, 95% CI: 1.02, 1.58), compared to those with adequate health literacy.Conclusions: Older adults with cancer and limited health literacy had higher adjusted prevalence of frailty and death. Interventions to address limited health literacy should be explored as potential prevention for poor outcomes in the vulnerable and growing older adult population with cancer.

Jada Paden

MO - University of Missouri - Columbia

Discipline: Social Sciences

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Abstract Name: Exploratory study in Attitude, Behavior, and Motivation to Cosmetic Dentistry Between Generation X and Z

The purpose of this study is to compare the effects of social media on the perceptions of cosmetic dentistry between Gen Z and Gen X. This study proposed the following research questions 1) What are the differences in the attitudes and motivations between Generation Z and Generation X regarding cosmetic dentistry and oral health? and 2) How does social media play a part in those differences? Two theoretical perspectives were employed to guide this study: Theory of Reasoned Action and Self-Determination Theory. A qualitative method study with semi-structured interviews was implemented. With IRB approval, 16 interviews were conducted consisting of 11 females and 5 males between the ages of 18 and 58. The participants were located in the Midwest and Southeast regions of the United States. Gen Z resulted in higher positive and negative attitudes than Gen X who presented more neutral attitudes. Results were consistent with Gen Z and Gen X characteristics. Overall, Gen Z was more motivated toward caring about their oral health and cosmetic dentistry compared to Gen X. Gen Z was more influenced by their strong opinions, intrinsic and extrinsic motivation, and previous knowledge of the subject of cosmetic dentistry and oral health due to their high involvement in social media. Gen X experienced a slightly higher social influence compared to Gen Z. However, when considering the values of Gen X, being that they are more concerned with their status symbols and image in the eyes of others, this finding coincides with the introjection aspect of extrinsic motivation as Gen X individuals tend to perform actions to avoid anxiety or enhance their ego. This study implicates industry practitioners in implementing dentistry cosmetics digital and social media marketing and branding strategies. This study suggests further investigation on assessing the border sample and quantitative hypothesis testing social media and generational effects.

Irina Padilla

GA - Kennesaw State University

Discipline: Health and Human Services

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Aamna Aijaz

Abstract Name: Un-Masking Hidden Phenotypes for PA14 Ivyp1 and Ivyp2 Knockout Strains by Observation of Tetracycline Sensitivity and Restoration of Resistance

Pseudomonas aeruginosa (PA) is a gram-negative bacteria that has been known for its adaptive resistance to antimicrobial agents. Inhibitors of vertebrate lysozyme protein (Ivyp1 or Ivyp2) are periplasmic proteins that have been linked to the resistome of PA, with previous findings demonstrating a tetracycline-sensitive phenotype for Ivyp1 knockout under growth conditions in parallel with the cystic fibrosis lung environment. However, the resistivity of Ivyp1 and Ivyp2 knockouts has not been tested under standard laboratory conditions. This study investigates the tetracycline sensitivity of knockout strains of PA deficient in Ivyp1/Ivyp2 proteins linked to PA's resistance. The Kirby-Bauer and MIC assays were used to determine the minimum inhibitory concentrations for the wild type, Ivyp1-, and Ivyp2- strains of PA14. Ongoing studies focus on complementing Ivyp1 inactivation loop using exogenous peptide and evaluating its sustainability using a six-amino-acid cyclic peptide. The aim is to assess the restoration TetR phenotype and establish Ivyp1's necessity and sufficiency for LT regulation.

Ram Rishi Pagadala

CA - Aspiring Scholars Directed Research Program

Discipline: Natural and Physical Sciences

Authors:
#1 Ram Rishi Pagadala
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Abstract Name: Advances in Molecular Approaches for Improving Shoot Proliferation and Organogenesis/Somatic Embryogenesis in some Fruit Species

This study aims to evaluate the shoot proliferation and organogenesis/somatic embryogenesis potential of nine fruit species. The primary objective is to contribute to the immediate regeneration of genetically modified crops after gene transformation. The emphasis on the role of phytohormones and organic supplements in these molecular breeding processes adds a unique dimension to existing literature and advances our understanding. The methodology involves assessing shoot proliferation potential in semi-solid MS media enriched with phytohormones and organic supplements. Organogenesis is conducted using leaves from in-vitro grown shoots, cultured in various types of growing media.Despite challenges faced during research, successful shoot proliferation and organogenesis were achieved in guava, peach, plum, and grapes. Shoot proliferation was most successful in semi-solid MS media with 1.0 mg/L BA and 0.1 mg/L IBA, alongside organic supplements such as 0.1 mg/L Thiamin, 0.5 mg/L Pyridoxine, 2.0 mg/L Glycine, and 100 mg/L Inositol. Preliminary observations on organogenesis were successful by using induction media with phytohormones (5.0 mg/L BA, 1.0 mg/L TDZ, and 1.0 mg/L NAA), kept in dark conditions for 21 days,

followed by media with 1.0 mg/L TDZ and organic supplements as expression media. Finally, regenerated shoots were transferred into shoot elongation media with 0.2 mg/L TDZ, 0.1 mg/L IBA, and 0.2 mg/L GA3, which was effective in forming callus and immediately regenerating adventitious shoots.The identified species hold promise for future research by contributing to understanding the vital role of phytohormones and organic supplements in these processes, addressing the current gap in knowledge, and providing practical insights for improving ex-plant regeneration and somatic embryogenesis techniques in fruit species. The findings have potential applications in genetic modification and molecular crop breeding.

Alayna Palamar

VA - Longwood University

Discipline: Natural and Physical Sciences

Authors:
#1 Alayna Palamar
#2 R. Adam Franssen

Abstract Name: Consequences of Environment and Loss on Maternal Behavior, Anxiety, Boldness, and Memory in Rats

Rodent models have been used for the study of maternal behavior as various factors can be controlled or manipulated to assess their effects. Previous literature has attributed negative life experiences as a primary contributor to deficits in social function and memory. In contrast, other research has pointed to the implications of the environment and that individuals with an enriched environment have better neurological outcomes in comparison to control groups. In this transgenerational study, we identified loss and environmental enrichment as key factors in the effects of maternal behavior. We have assessed these variables through our main research question: can environmental enrichment ameliorate the negative consequences of maternal rats that have experienced loss? We predict that maternal rats suffering from loss will exhibit greater cognitive deficits in comparison to mothers not experiencing loss. In addition, we predict that rats exposed to enriched environmental conditions will have improved cognitive function despite the experience of loss compared to mothers in standard environmental conditions. Female Sprague-Dawley rats across three generations were separated into one of four groups which varied by the conditions of their environment and the keeping or losing of their pups. Several behavioral assays were utilized to measure cognitive function; Elevated Plus Maze (EPM) for anxiety-like behavior and boldness; Novel Object Preference (NOP) for non-spatial memory; and Objection Location Maze (OLM) for spatial memory. Using multiple generations of rats, this study aims to assess the epigenetic effects of these factors.

Srilakshmi Palanikumar

TX - The University of Texas at Austin

Discipline: Natural and Physical Sciences

Authors:
#1 Srilakshmi Palanikumar
#2 Ruth Shear

Abstract Name: Multi-Region Assessment of Fungicide Exposures in USA Wadeable Streams

Fungicides, commonly used in agricultural practices, have been detected in urban streams. These compounds pose potential risks to human and wildlife health. This study examines the prevalence and distribution of 16

fungicide compounds across wadeable streams in the United States. From 2013 to 2017, the United States Geological Survey (USGS) conducted the Regional Stream Quality Assessment (RSQA). This study analyzed 485 sample streams in five different regions of the USA, taking weekly measurements over a twelve-week period. Fungicide compounds were detected in about 93% of all measurements, with the maximum concentration in the entire study being 24 µg/L Myclobutanil found in Alisal Creek, CA. There is a statistically significant difference between fungicide concentrations in the 5 regions (p < 0.01). Upon further analysis, California had the lowest overall concentration levels, likely due to more stringent legislation. Considering the potential effects of fungicides and their byproducts on ecosystems, these results could suggest a need for better regulation of fungicide compounds, and better ways to mitigate fungicide contamination of streams across the country.

Karol Palenik

FL - Jacksonville University

Discipline: Humanities

Authors:
#1 Karol Palenik

Abstract Name: Lacanian Language and Trauma in Toni Morrison's Beloved

Scholars have studied the celebration of communal bonds in the rhetoric of Toni Morrison’s Beloved, particularly in relation to trauma. However, while trauma theory is employed in these studies, few scholars place the novel in a deliberate dialogue with the field of psychoanalysis. This presentation proposes to perform a psychoanalytical analysis of trauma in the novel through the theories of such figures as Freud and Lacan. This presentation argues that Beloved challenges the phallocentric lens of psychoanalysis by deconstructing the gendered binaries inherent in the Lacanian paternal Symbolic order. The novel offers a maternal space which rejects the Symbolic order. Ultimately recognizing the psychological and historical necessity of a Symbolic order, however, the novel advocates for a Symbolic order which itself doesn’t reject the maternal. The novel demonstrates how such an order is possible through healthy relationships among people and through the construction of nurturing and supportive institutions. By employing the Laconian notion of language, this presentation aims to clarify the novel’s conclusion, emphasizing the specific ways in which language (the Symbolic order) both determines and is determined by social realities. The characters of Beloved, deprived of their parents’ African tongues, inherit a linguistic system of racist and psychologically constraining signifiers. The use of language, connected to a traumatic past, also serves as a means to escape the trauma of the past.

Apoorva Palled

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
#1 Apoorva Palled
#2 Suha Saleh

Abstract Name: Knowledge and Risk Perception for Type 2 Diabetes Among College Students with Family History of the Disease

Type 2 diabetes is a chronic disease characterized by the body’s inability to respond tothe insulin that is being

released or not enough insulin is released in comparison to the level of blood sugar (What Is Diabetes?, 2023b). One important unmodifiable risk factor that can lead to type 2 diabetes is a family history of the disease; a family history of type 2 diabetes has been linked to an increased knowledge and a negative risk perception of the disease (Montgomery et al., 2003). Previous literature indicates college students are likely to have knowledge regarding type 2 diabetes but are more likely to have a positive outlook on their perceived risk factors of developing the disease despite this knowledge. This study aims to examine responses from college students who have a known family history of type 2 diabetes on their outlook and perceived risk of developing the disease. This will be accomplished using a cross-sectional study design utilizing data collected from currently enrolled students at UCF using three main survey instrumentations: National Diabetes Survey, the Prediabetes Risk Test, and the Diabetes Knowledge Test-2.

Mellony Palma

CA - University of California - Berkeley

Discipline: Social Sciences

Authors:
#1 Mellony Palma

Abstract Name: "Pipeline to Prostitution": Sex Culture and Taboo Conversations within the California Child Welfare System

This study employs care theory to assess the vulnerability of former foster youth in California's child welfare system, focusing on their inclination towards sex work. Utilizing qualitative interviews with eight individuals aged 25-43 from diverse ethnic backgrounds, it explores their experiences in foster care and the transition thereafter. The research reveals prevalent instability and isolation in foster homes, contributing to their vulnerability. A majority of participants engaged in sex work post-emancipation as a survival tactic due to systemic failings, including insufficient stable environments and basic needs. Care theory, advocated by Engster, Kittay, and Fineman, serves as the study's foundation, emphasizing the necessity of physical, emotional, and developmental support in caregiving. However, significant gaps in the foster care system's application of these principles are evident, especially in stable care provision and sexual health education. The study critically examines the Independent Living Programs (ILPs) and the child welfare system's approach to sexual health education. Despite federal efforts to support youth transitioning to adulthood, these programs inadequately address the unique sexual health literacy needs of foster youth, leaving them underprepared for post-emancipation life. In conclusion, the study highlights the urgent need for comprehensive reform in the child welfare system. It advocates for inclusive sexual health education, improved support systems, and policies targeting the root causes of foster youth vulnerability. By addressing these areas, the study aims to enhance the child welfare system's efficacy, facilitating a smoother transition for foster youth into adulthood and reducing their propensity to consider sex work.

Tamieka Palmer

LA - Baton Rouge Community College

Discipline: Natural and Physical Sciences

Authors:
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Tarry Glover
Rose Dawes

Abstract Name: The Louisiana Freshwater Sponge Project: Examining Changes in Species Richness through a Comparison of two Ecological Studies

Beginning in 2019, the Louisiana Freshwater Sponge Project (LFSP) is a longitudinal study focused on describing freshwater sponge species richness in Louisiana water systems. While very understudied, freshwater sponges have been reported to be environmental health indicators. Tracking any change in species richness over time may provide a picture of the overall health of a water system as well as determine the sensitivity freshwater sponge species have on environmental changes. This LFSP ecological survey compares current freshwater sponge species richness with the defined species richness documented in the previous survey conducted in 1969, “Freshwater sponge taxonomy, ecology and distribution throughout Louisiana,” by Michael A. Poirrier. Using Google maps, and the provided descriptions in the previous survey, the LFSP has resurveyed over 81 sites from the original study. In addition to comparing previous water systems, the study has been expanded to include over 170 new sites and has analyzed over 1,300 samples. Utilizing the same sampling method from the previous survey, submerged substrate from up to six feet from shoreline was collected and examined. Freshwater sponge species are identified through spicule morphology and COX-1 sequencing and analysis. Comparison of the results collected from the two studies, indicates some consistencies and differences. Consistent with the previous study, the most prevalent species are still Trochospongilla horrida and Eunapius fragilis. The most significant difference is the overall decline in species richness across Louisiana.

Santiago Palomino Ochoa

COL - EAFIT University

Discipline: Interdisciplinary Studies

Authors:
#1 María Alejandra Bula-García
#2 Santiago Palomino-Ochoa
#3 Maria Alejandra Lopera-Velásquez

Abstract Name: Bioancestría: A sound exploration of life stories and natural heritage of the townships of Medellín

Colombia occupies one of the first places in cultural and natural diversity, due to its variety of ecosystems that are home to a great wealth of fauna, flora and ethnic communities making up the country. Disseminate this richness is fundamental to conserve our territory during a global environmental crisis; however, it is important to recognize the gap between scientific argot and common language to raise awareness about the importance of protecting our territory. In this sense, Bioancestría seeks to capture through the sounds of nature and the voices of the people, the biodiversity of our territories, specifically from the five townships of Medellin, Colombia (San Antonio de Prado, Altavista, Santa Elena, San Cristóbal and San Sebastián de Palmitas). In addition, to learn about some social problems of the communities that inhabit them, especially those related to the people surrounding and the environment; this will contribute to the research and dissemination of new knowledge, understanding the implications of these problems for the environment and society. Through a microethnography, which includes documentary research, field trips, interviews, recording of the soundscape and observation of the territory; this documentary podcast, which mixes fiction and non-fiction, shows how the narratives, accompanied by bioacoustics, allow the dissemination of multidisciplinary knowledge in the Colombian context, and reach all types of audiences, also serving as a repository of scientific information. From this research, it was obtained that the city, in its rural territory, has a great natural wealth that should be protected, but the accelerated growth, pollution and human activities are affecting it, with species in danger of extinction that are fundamental for the future. Therefore, it is necessary to raise

awareness of these problems to safeguard the legacy of our ancestors and the future generations.Note: This presentation will be in spanish.

Santiago Palomino Ochoa

COL - EAFIT University

Discipline: Humanities

Authors:
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Abstract Name: Study and report on the migration of foreign people through Necoclí, Antioquia —the “other gap”— to realize the dream of going to the United States and Canada

This research/creation project studies the historical and current causes of the massive migration of foreigners through Medellín and Necoclí, located in Antioquia, Colombia, to go to the United States and Canada, and seeks to understand the human drama involved and the social, geopolitical and economic issues that determine it. In addition, it bets on the journalism of solutions, discovering people and institutions to tell the story of migration beyond the tragedy that the mass media have spread.In Necoclí there has been a migration crisis since 2000, when the Darién Gap began to become a route for migrants heading to the United States and Canada. Since then, the number of irregular migrants has been on the rise: between 2010 and 2021, 247.617; in 2022, 248.284; and until October 2023, 458.228.The research was carried out in two segments: one, the study and analysis through the consultation of documentary and testimonial sources of information of authority on the subject to know the historical and current causes of the massive migration of foreign people through this region of Antioquia. Two, the field work of the student reporters to gather testimonies and stories of migrants in transit, using the strategies of immersion and solutions journalism. From the achievements of this project we highlight: first, the knowledge about the causes, motivations, problems and opportunities that migrants who transit through Necoclí or settle in Medellín have; second, the realization of a collaborative, multi-format and multi-platform report through the use of different journalistic inquiry tools and the integration of various journalistic products and, third, the publication of this report in the convergent content laboratory Bitácora of the EAFIT University under the title Ilusiones migrantes: https://bitacora.eafit.edu.co/ilusiones-migrantes/. The presentation of this research project will be conducted in Spanish.

Kathleen Pan

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Kathleen Pan

Abstract Name: “Does the Right to Life, Liberty, and the Pursuit of Happiness Exist for Children?”: Problems and Solutions to Discriminatory Legislation for Low-income in Child Welfare

The failure of state legislation on child welfare disproportionately harms children in low-income communities, as parents who lack adequate welfare support go through investigations and child expulsions while essentially struggling with unresolved material hardship. The study cross-analyzes the rhetoric of broad

abuse definitions with policies that fail to target causes of child abuse, which misrepresents the inability to clothe, feed, or house a child or symptoms of poverty as parts of definitions of abuse. Cross-sectional analysis of national child welfare maltreatment report data in families who lack welfare support helps demonstrate the over-representation of low-income children in the historical trends of child abuse rhetoric. Though some children rely on leaving their biological family to survive from intentional injury, the prevalent removal of children into the foster system due to the causes of poverty resulting in the over placement of low-income children into the traumatic foster system. This study examines solutions to the legislative pendulum effect: a historical lack of preventative support for low-income communities that leads to unnuanced care of low-income children in either biological homes or harmful foster homes. Solutions to the child abuse legislature, such as providing working parents with proper child care and supporting foster children in and out of the system, are the cornerstone to improve the livelihoods of abused children from low-income backgrounds. Through a meta-analysis and cross-sectional analysis, the study of child maltreatment reporting criteria is critical to tailor impactful solutions focused on increasing the quality not quantity of well-addressed child abuse cases from the overrepresentation of the child welfare system due to poverty.

Harmony Panameno

CA - California State University - Long Beach

Discipline: Interdisciplinary Studies

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Abstract Name: Investigating Parental Autonomy Support and Topic Expansion's Relationship with Children's Science Talk and Memory During Informal Science Learning Conversations After a Visit to the Aquarium

Previous studies have shown that parental autonomy support and topic expansion foster children’s motivation to learn, their memory recollection, and how they explain past experiences during everyday conversations. However, there is a gap in research studies investigating parental autonomy support and topic expansion’s relationship in predicting children's STMB talk and memory during reminiscing conversations after visiting an informal science learning environment. This study seeks to bridge this gap and aims to understand parental support and topic expansion’s correlation with children’s STMB talk and memory during at home reminiscing science conversations after visiting an Aquarium. Parent-child reminiscing conversations after visiting an aquarium were collected through audio recording devices. The sample of 13 parent-child dyads from diverse racial and ethnic backgrounds were recruited at the Aquarium of the Pacific in Long Beach, CA. Data were analyzed by transcribing conversations verbatim, the aquarium conversations were coded for autonomy support and topic expansions while the at home conversations were coded for child memory and STMB talk. Research assistants coded the transcribed conversations using a microanalytic approach with coding systems adapted from previous literature including Parental Autonomy Support, Topic Expansion, Science, Technology, Mathematics, Biology Talk, and Child Memory. The Intercoder reliability for child STMB talk

was k = .77 and child memory talk was k = .80. As for the reliability of autonomy support and topic expansion, it will be established on 20% of the transcripts. Upon conclusion of the analysis, we anticipate that parental autonomy and topic expansion at the aquarium will predict children's STMB talk and memory during reminiscing conversations after the visit. Although the analysis is ongoing, the findings have the potential to empower parents to initiate more discussions about science with their children to build STEM learning and reiterate that everyday interactions can encourage science learning in children as well.

Jatin Pandey

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Jatin Pandey

Abstract Name: Investigating the Biological Activation Mechanism of the ROS-Activated Prodrug

Cancer poses a formidable challenge due to its intricate nature, making treatment endeavors complex. The inherent heterogeneity of cancer further complicates researchers' efforts to comprehend the metabolic pathways of therapeutic drugs. The Peng group has recently engineered a groundbreaking H2O2-activated prodrug known as FAN-NM-CH3. This prodrug transforms into a potent DNA alkylator upon interaction with H2O2. Upon activation, it hinders the replication of DNA within cells, inducing apoptosis. Examination of mass spectrometry data indicates that the prodrug undergoes a reaction with H2O2, resulting in the formation of a hydrolyzed-activated iteration of the drug. To delve deeper into the drug's mechanism of action, various ROS quenchers - Catalase, PEGCatalase, MnTBAP, GSH, and Mannitol, were employed to neutralize accumulated ROS or hinder its production, thereby reducing the drug's efficacy by limiting the availability of ROS for activation. Our current data indicates that in vivo, catalase effectively quenches H2O2, albeit with a limited extent. The introduction of this new series of quenchers promises a more comprehensive understanding of the specific ROS types present in cancer cells. Additionally, it serves as crucial evidence to delineate the activation pathway of the prodrug.

Subhiksha Pandiarajan

DC - American University

Discipline: Social Sciences

Authors:
#1 Subhiksha Pandiarajan

Abstract Name: Methods of Political Mobilization and Social Media Usage

In the current technologically advanced age, every click, swipe, and share can impact an individual's behavior in the real world from fashion choices to political engagement. This paper dissects the complex relationship between political mobilization and social media usage. Expanding upon the conventional understanding of social media as a positive catalyst, this paper will undercover the nuanced impact of social media usage on political mobilization which is often dismissed. Additionally, it will focus on how race can influence this relationship. Through extensive research in existing literature, evidence points out that there may be a negative relationship between political mobilization and social media usage specific to different racial demographics.I hypothesize that in comparing individuals, those having higher social media usage will be less likely to engage in political mobilization outside of a digital space than those having lower social

media usage. Controlling for race provides us results on how this relationship can vary by racial demographics. This is important to understand since identity impacts the behaviors of individuals within the digital space and outside.The results indicate that the various social media platforms have influence on political mobilization in various ways. The results support the hypothesis that those having higher social media usage will be less likely to engage in political mobilization outside of a digital space mostly for White Americans compared to other racial demographics. Further research should be done to provide analysis on the variety of social media platforms and modes of political participation. With further research, it can lead to greater understanding of political behavior amongst specific racial groups.

Rhea Pandit

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: Developing Tumor Treating Fields resistance in glioblastoma patient-derived xenolines to explore potential therapeutic mechanisms

Background: Glioblastoma (GBM) is the most common and deadly primary brain malignancy. Standard of care treatment consists of maximal safe resection, chemotherapy (temozolomide), and radiotherapy, followed by adjuvant temozolomide and Tumor Treating Fields (TTFields). Tumor recurrence is universal and potentially mediated by the growth of a robust subpopulation of cells called brain tumor-initiating cells (BTICs). BTICs can self-renew, sustain proliferative capacity, and promote tumor maintenance and therapeutic resistance. TTFields is a treatment modality that administers alternating electrical fields at a 200kHz frequency. However, little is known regarding BTICs resistance to TTFields. Therefore, we developed TTFields-resistant patient-derived BTICs (xenolines). Methods: Xenolines were cultured in serum-free conditions to maintain BTICs in vitro. Xenolines were plated two-dimensionally onto matrix (Geltrex/Laminin) coated 22mm coverslips. Coverslips were transferred to the Novocure Inovitro system ceramic dishes and baseplate 24 hours post-plating. The baseplate was connected to the fields generator and placed into an incubator set at 20% O2, 5% CO2, and 18°C to account for heating induced by the electromagnetic field. Xenolines were exposed to various rounds of TTFields treatment over some time (round 1: 2 days of continuous TTFields and round 6: 7 days of continuous TTFields). Following each round of treatment, xenolines were cultured in control conditions for a week to allow for recovery. Results: Xenolines that underwent round 6 of TTFields treatment (5 days of continuous TTFields) demonstrated a 93% cell viability with a 68.75% increase in growth compared to round 1 of TTFields treatment (3 days of continuous TTFields) with a 45.68% decrease in growth. Conclusions: Ongoing studies focus on validating and optimizing the development of TTFields resistance in GBM xenolines. We can then assess TTFields-induced resistance on a kinomic level to detect downstream signaling pathways associated with resistance mechanisms to identify potential therapeutic strategies to increase the efficacy of TTFields.

Nikafareed Papari

TX - The University of Texas at Austin

Discipline: Social Sciences

Authors:
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Abstract Name: Assessing the Effort of Working Memory Removal

Working memory allows individuals to briefly hold, manipulate, and access a limited amount of information at the forefront of their minds during the completion of cognitive tasks. Research conducted to expand understanding of the brain's capabilities and capacity in working memory proves useful for developing strategies for learning and behavioral health. Novel ways to approach intrusive thoughts in mental disorders such as anxiety, depression, and PTSD can be constructed from the research of working memory and removal processes. More of the brain's potential can be exercised, and childhood education can be revolutionized when its strengths and limitations are understood.The research aims to assess the amount of cognitive effort required to remove information from working memory. Both subjective and objective measurements of distinct removal operations have helped researchers understand cognitive control. Replacing an image in the mind is the simplest removal technique, whereas suppressing a specific image from working memory is the most difficult. Although fMRI, EEG, and self-report survey data can be utilized to gain a better insight into the responses to removal operations, pupillometry may prove to be a better objective index for cognitive effort. Utilizing pupil dilation measurements at different stages of the encoding, operation, and probe processes within a task is useful in learning the amount of effort required to conduct a removal operation successfully.It is expected that after encoding images into the individual's working memory and asking them to perform one of four operations (maintain, replace, suppress, clear), once individuals are probed with the manipulated image again, their response times will be indicative of the success of the operative task. Maintenance suppression or suppressing thoughts of a targeted image after encoding is hypothesized to result in the longest response times, largest pupil dilations, and thus the greatest amount of cognitive effort.

Nikafareed Papari

TX - The University of Texas at Austin

Discipline: Interdisciplinary Studies

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Abstract Name: Using 3D Printing Technology to Build Economical Prosthetics

The loss of a limb can be a life-changing event. Without a hand, the independence they once had to perform simple tasks like typing, picking up objects, and cooking, is significantly impacted. Oftentimes, these individuals must rely on others to help them with basic daily functions and overcome barriers. Aside from the physical repercussions, disabilities like this can damage the individual's self-image and mental health, leading to a dark road of more complex issues. However, a voice-controlled, fully customizable, 3D-printed prosthetic arm could be an effective solution with the ability to change the lives of many individuals. The aim of this research is to leverage 3D printing technology to build more economical prosthetic devices than are currently available. The improved affordability and accessibility of prosthetic limbs for amputees would consequently increase their independence and self-esteem. Prosthetic limbs can cost from several thousand to tens of thousands of dollars and with limited insurance coverage, many amputees have little to no access to

these devices. With the help of 3D printing technology, prosthetic assembly kits can be developed at an affordable cost, increasing access to prosthetics and offering a potential solution for amputees in underdeveloped countries or underserved communities. Created utilizing widely available 3D printers and materials including an Ultimaker S5 3D printer, PLA filament, Arduino electronics, servo motors, fishing line, and a variety of bolts and screws, the arm uses cost-effective materials to build a product operating on programmed commands and a 7.4-volt battery. This fully-functional $100 prosthetic can be sold for over 10 times less than the current market alternative prosthetics. With a short assembly time of 1 to 2 hours, a customized fit, and functional hand movements, this prosthetic limb demonstrates how biomechanical engineering and technological innovation can serve the needs of a wide range of people.

Mabelita Parada

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

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Abstract Name: Antiproliferative activities of native Euphorbia dentata and Euphorbia maculata (Euphorbiaceae) in T47D and MDA-MB-231 cancer cell lines

The utilization of medicinal plants has seen a notable rise over the past few years. Certain plant extracts have been found to have anti-cancer properties and some have been utilized in the development of chemotherapy treatments. This study evaluates the antiproliferative activities of Toothed Spurge, Euphorbia dentata and Spotted Spurge, Euphorbia maculata ethanol extracts on ER-positive T47D and triple negative MDA-MB-231 cancer cell lines, based on the fact that Euphorbiaceae are known medicinal plants. E. dentata is a plant species native to North and South America, while E. maculata is native to North America. Both plant species have been introduced to other continents. E. maculata is known for its medicinal properties but its antiproliferative activity has yet to be fully studied. There has been no research done on the biological properties of this species that we could find in the literature. E. dentata extract has antiproliferative activity in T47D but not in MDA-MB-231 cancer cells. A biphasic effect was observed with T47D breast carcinoma in which the E. dentata extract at low concentrations increased and at high concentrations decreased cell proliferation by 35% at 500µg/ml extract. At 500ug/ml concentration E. maculata reduced T47D and MDA-MB-231 cell viability. Although the reduction was not significant, the decreased cell viability trend implies that higher concentrations of plant extract may have antiproliferative properties. Future work will focus on fractionating E. maculata and E. dentata extracts and characterizing the antiproliferative activities and mechanisms of action of the diterpene and isoflavone fractions, which could lead to the discovery of new therapeutics for breast cancer.

Henna Parekh

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Profiling the Populations of Immune Cells in the Skin of Wild Type and DNMT3a Mice

The DNMT3a gene plays a role in DNA methyltransferase. If this gene mutates, it leads to clonal hematopoiesis and an increased risk for Acute Myeloid Leukemia (AML) development. AML is a cancer of the blood and bone marrow. The DNMT3a mutation can also lead to skin dermatitis, which presents as a painful rash. Most patients with AML develop dermatitis after diagnosis; however, the dermatitis may lead to DNA hypomethylation which suggests a lack of DNMT3a in the skin. This lack of DNMT3a could cause an increase in skin cancers in AML patients. To profile the immune cell population of the skin, DNMT3a mutant mice versus healthy mice were compared. The skin of the mouse was taken and treated with collagenase to prepare and separate the immune cells for study. The cells were stained using fluorescent antibodies and were analyzed using flow cytometry. The initial staining showed populations of B Cells, T Cells, gamma delta T Cells, macrophages, neutrophils, and iNKT cells. The initial analysis showed a decrease in CD45+ cells, B Cells, and T Cells in the skin of DNMT3a mice. The percentage of gamma delta T Cells was unchanged. The percentage of macrophages has increased substantially in the skin of DNMT3a mice compared to that of wild-type mice. As more trials are performed the expected results should be consistent with the initial analysis. In the future, fluorescent microscopy will be used to locate the specific skin populations in the skin of Wild Type and DNMT3a mice to better understanding of how the cells in the skin communicate with one another.

Krisha Parekh

DE - University of Delaware

Discipline: Natural and Physical Sciences

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#3 Jessica Tanis

Abstract Name: Investigating the Role of the ESCRT Protein STAM-1 in Extracellular Vesicle Biogenesis

Extracellular vesicles (EVs) are lipid-bound vesicles that can transport various biological macromolecules and act in communication between cells. In Caenorhabditis elegans, EVs are shed from the primary cilia, organelles that play a role in signal transduction and transmission. They are exposed directly to the environment, making it easy to observe and analyze EV release. Two significant ciliary EV cargoes are released: one that contains the TRP polycystin channel PKD-2, and another that contains the ion channel CLHM-1. The EVs are visualized by tagging CLHM with tdTomato and PKD with green fluorescent protein (GFP). These EV subpopulations are differentially shed, as PKD-2 EVs are released from the ciliary distal tip, while CLHM-1 EVs are released from the ciliary base. I am investigating the effects of the loss of stam-1 on the shedding of CLHM-1 EVs, PKD-2 EVs, or both subpopulations, as stam-1 is a protein that assists in the ubiquitination of cargo, which then goes through vesicle sorting and viral budding by the endosomal recycling complex required for transport (ESCRT) machinery. Along with its role in EV biogenesis, it is involved in the downregulation of PKD-2. Genetic crosses with C. elegans first had to be formed to produce nematodes that are homozygous for the stam-1 mutation and the transgenes that express the EV cargoes tagged with fluorescent proteins. After the desired strain was isolated, EV images were obtained using the Andor Dragonfly microscope and analyzed using Imaris to quantify EV release. Through this, it was discovered that the loss of stam-1 does not significantly affect EV release in C. elegans. Through this research, there may be a greater understanding of the mechanisms that regulate the shedding of EV subpopulations CLHM-1 and PKD-2.

Hyewon Park

WI - University of Wisconsin-Madison

Discipline:

Authors:
#1 Hyewon Park
#2 Ryan Grady
#3 Sarina Strnad
Ryan Grady

Abstract Name: Guiding Brilliance: Empowering First-Generation Scholars with a Group Advising Model for the NCUR Journey

The STEM academic advising unit at the Center for Educational Opportunity (CeO) for Diversity, Equity, and Educational Achievement at the University of Wisconsin-Madison brings together aspiring researchers and provides opportunities for the college community to discover what lies beyond the campus horizon. In particular, the CeO STEM unit strives to holistically support students during their journey through academic commitments, work/financial, and life demands. We do this by encouraging high-impact practices such as undergraduate research. During this presentation, we will share how holistic and high-touch approaches to recruitment and mentorship support first-generation, income-eligible, and/or disabled undergraduates to persist during their pursuit of undergraduate research and serve to build self-efficacy towards engaging in conferences such as NCUR. We will highlight our accountability partnerships that serve as a cornerstone to facilitate regular mentoring sessions, group workshops and community support. Additionally, mentored undergraduate CeO scholars will also share their journey of actively refining their research skills through frequent checkups, workshops with campus experts, and collaborative discussions. Utilizing this group advising model, the CeO STEM advising unit has been successful in cultivating an effective and supportive learning community for engaged undergraduate researchers that extends beyond the academic realm, transforming the entire experience into one that is enriching, enjoyable and balances life and work scheduling.

EunSang Park

CA - University of California - Merced

Discipline: Mathematics and Computer Science

Authors:
#1 EunSang Park
#2 Changho Kim

Abstract Name: Equilibrium Surface Coverage for Reversible Adsorption of Dimers on Various Finite Lattice Structures

Dissociative adsorption of diatomic molecules on metal surfaces (e.g. O2 on Pd) is a pivotal process in understanding surface chemistry and heterogeneous catalysis, fundamental in numerous industrial and environmental applications. We investigate the dynamics of dissociative adsorption and desorption on finite lattice structures, including two-dimensional (2D) square lattice with periodic boundary conditions or terminal sites. To this end, we employ a dual approach to analyze these systems: (1) an analytical approach to use combinatorial expressions for the number of accessible surface configurations for different lattice structures; and (2) a computational approach to perform kinetic Monte Carlo (KMC) simulations to validate the analytical results. One of the focuses of this study is to explain finite system-size effects on the equilibrium surface coverage for different 2D lattice structures. Similar to the 1D cases (i.e. linear lattice) in

the previous study, we confirm that for 2D cases the equilibrium surface coverage can be analytically investigated via the number of accessible configurations, which depends on the specific geometry of the lattice. We present analytic expressions for equilibrium surface coverage as a function of the size of a lattice for various lattice structures and KMC simulation results as validation. The implications of our findings are substantial for the field of surface chemistry and heterogeneous catalysis, where understanding surface interactions and adsorption dynamics is crucial for designing more efficient and selective catalytic processes.

Lindsay Park

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Lauren Cross
#2 Jesse Dillon

Abstract Name: Impact of Sediment-Amendment and Plant Restoration on Microbial Soil Communities in a Southern California Salt Marsh

Salt marshes protect endangered species and preserve a diverse microbial community, but they are experiencing decreased marsh elevation due to human activities, urbanization, and sea level rise. In attempt to restore an impacted salt marsh, Spartina foliosa, a native cordgrass, and sediments were added to portions of the Seal Beach National Wildlife Refuge (SBNWR). We predict that the addition of the sediments will decrease bacterial diversity in the sediment-amended salt marshes without plant (S. foliosa) addition. We also predict that over time bacterial diversity will be restored to what is seen in the unaltered salt marsh (control). Every 6 months over a one-year period, we extracted sediment samples from 3 sites in SBNWR including an unamended control, sediment-amended marsh with no plants and amended marsh with the addition of S. foliosa to determine how sediment and plant addition affects bacterial diversity in salt marshes. Results showed no significant changes in overall community diversity across site or over the 12 months. However, when we examined specific bacterial 16S rRNA sequence diversity the two sediment-amended sites (with and without plants added) were significantly different from the unamended vegetated source sediments. This indicates that like plants and animals, amendment causes long-term detectable community shifts that do not recover after one year of transplanting Spartina. We predict that more time will be necessary to observe any potential impacts of planting.

Hien Park

CA - Vanguard University

Discipline:

Authors:
#1 Hien Park

Abstract Name: Concept Mapping: A Tool to Inform NGO’s Program Outcomes through Empirical Research

The COVID-19 pandemic has heightened the discussion of proper orphan care. The caution and concern over proper care of vulnerable children have been initiated by the NGOs in the field. For three years since 2019, one NGO in Southeast Asia initiated home care program instead of orphanage care in order to improve outcomes via familial connections. This presentation describes the faculty mentorship over a student-NGO partnership that sought to analyze the experiences of 37 children who transitioned to home care. It suggests

ways to utilize concept mapping discussion as a tool that connected the two parties – the NGO that wanted to evaluate the effectiveness of the program change, and student researchers who needed to answer a research question using the findings from an empirical study design. The interview data come from 37 children who have transitioned from orphanage care to home care and remained under the NGOs supervision/subsidies for the past three years. The respondents were 16 years of age at the time of data collection. The student researchers created a set of open-ended questions for semi-structured in-depth interviews. The interviews were conducted in respective native languages by the staff of the NGO, who translated and transcribed the content. The student researchers analyzed the transcriptions to detect patterns, and conducted Chi-square correlation tests on demographic data.This presentation aims to identify ways to make academic research more impactful and practical, particularly in interfacing with the assessment needs of community serving NGOs. Three learning objectives to consider when mentoring an NGO-student partnership include: Identifying the mission of the NGO and how they are related to theoretical framework, Utilizing concept mapping in creating research instrument, and Understanding ways to translate the findings into actionable policy ideas Mentorship over students' data analysis is on-going and will be completed by early 2024.

Min Kyung Park

SD - Black Hills State University

Discipline: Natural and Physical Sciences

Authors:
#1 Min Kyung Park
#2 Zachary Davis
#3 Tara Oren
#4 Teagen Hartley
#5 Alyssa Umphlett
#6 Jessilyn Monahan
#7 Kylie Light
#8 Kaylyn Hunter
#9 Yun-Seok Choi

Abstract Name: A general method for the development of quantitative biosensors enables the measurement of free Nedd8

Nedd8 is a ubiquitin-like protein that regulates cellular signals through conjugation to other proteins. The concentration of free (i.e., unconjugated) Nedd8 relative to conjugated Nedd8 is important for normal cellular function, and perturbations of this balance caused by defects in Nedd8-related enzymes or cellular stress are implicated in various disease pathways. Despite the biological significance of Nedd8, there is currently no method which can directly quantify free Nedd8, which presents a critical barrier to developing a general method of studying Nedd8 dynamics and its associated enzyme activities. Genetically encoded biosensors are well-established tools for directly studying dynamic systems like the free and conjugated Nedd8 pools, but limitations of current biosensor design methods make them unsuited for free Nedd8 quantification. To solve this problem, we have developed a generalizable method of developing genetically encoded biosensors consisting of two reporter domains, which interact to form a functional reporter, attached to a target-binding domain (binder). Target quantification is based on competition between target binding and the interaction of the two reporter domains. To apply our design strategy to free Nedd8 quantification, we used rational design methods to engineer a free Nedd8 binder and combined it with a pair of FRET-based reporters. Our sensor is capable of quantifying free Nedd8 from nanomolar to micromolar concentrations. We also demonstrated that the affinity of the reporter domains can be adjusted to tune the sensor's dynamic range and a detectable concentration range for a target.

Prince Parker

GA - Morehouse College

Discipline: Natural and Physical Sciences

Authors:
#1 Prince Parker
#2 Deangelo Fletcher
#3 Ryan Norris
#4 Michael Thomas
#5 Amir Childs
#6 Chris Markham

Abstract Name: Effect of Predator Odor on Unconditioned and Conditioned Defensive Responses in Syrian Hamsters

Biologically relevant odors, including those related to predators, will induce fear and anxiety-like behaviors, including risk assessment, avoidance and freezing in laboratory animals as well as elicit avoidance to the odorant. In addition, animals previously exposed to predator odors will show conditioned place avoidance. In contrast, animals exposed to aversive, non-biological odors, such as formaldehyde, will also show defensive behaviors, but importantly, they do not exhibit conditioned place avoidance. While there are many studies examining the effect of predator odors on defensive responding in rats and mice, there is currently a dearth of information using hamsters as test subjects. In this study, biological and non-biological odors were used to evaluate both unconditioned and conditioned defensive responses in male Syrian hamsters. Specifically, we examined whether coyote predator odors will elicit unconditioned avoidance behaviors in hamsters using a novel runway box. We compare these effects to formaldehyde, a non-biological odor. We hypothesized that while coyote odor exposure will elicit unconditioned and conditioned avoidance, animals exposed to formaldehyde will only show unconditioned avoidance. These results not only add to the existing literature regarding the neurobiological basis of innate avoidance behavior, it also be the first to examine predatory avoidance behaviors in hamsters.

Zoe Parker

TX - Lubbock Christian University

Discipline: Natural and Physical Sciences

Authors:
#1 Cary Chisholm

Abstract Name: RT-PCR to Determine Genetic Mutations in In-Situ Melanoma

Melanoma in-situ is a non-invasive form of melanoma that could become invasive. Assessing negative margins of these melanomas is crucial to patient management and outcome. Molecular and genetic analysis has greatly improved our understanding of melanoma and its biologic behavior including novel drug development. However, less has been studied in melanoma in situ lesions. The aim of this study is to identify common mutations in melanoma in-situ samples compared to their negative margins using reverse transcriptase polymerase chain reaction (RT-PCR). 30-50 melanoma in-situ samples and their negative margins were collected from the tissue archives at the Epiphany Dermatology Dermatopathology Laboratory. DNA will be extracted from these samples and run through RT-PCR to isolate melanoma-associated regions. The negative margin DNA sequences will be subtracted from the melanoma in-situ sequences to isolate the DNA mutations found in the melanoma in-situ regions. The mutated sequences will be analyzed and compared to look for commonalities between the various melanoma in-situ samples. Common mutations will be gathered to further understand the progression of melanoma in situ particularly if there are any that can be

associated with recurrence of melanoma in situ after complete excision. These findings could have a significant impact on the treatment and prognosis of patients with melanoma in-situ. Knowing specific genetic identifiers in melanoma could allow for a deeper understanding of melanoma in-situ progression and treatment options.

Tyler Parker-Rollins

VA - Virginia Polytechnic Institute & State U

Discipline: Social Sciences

Authors:
#1 Tyler Parker-Rollins
#2 E. Scott Geller

Abstract Name: Psychological Safety in Higher Education: Evaluating Perceptions of Personal Engagement the Classroom

Psychological Safety or the degree of personal inclusion, contribution, and engagement one experiences in a given situation has lately become a topic of extreme interest in industrial settings (Clarke, 2020). Empirical research indicates that in the workplace, psychological safety can increase creativity (Castro et al., 2018) and engagement (Frazier et al., 2016), and reduce distress (Obrenovic et al., 2020). While research on psychological safety has increased dramatically in recent years, this concept has seldom been studied beyond the workplace. Because increasing creativity, improving engagement, and reducing distress are all critical factors for improving education, an empirical examination of psychological safety in the college classroom warrants systematic investigation. The present study has been examining student perceptions of psychological safety in various courses at Virginia Tech through an innovative 36-question survey. At this point, 134 students have provided answers to this survey, each responding with reference to a particular university course they have taken recently. This questionnaire measures psychological safety with an eight-question “Psychological Safety in Education” scale, adapted from psychological safety scales created for industrial settings. Additional questions in our survey assess variables that might impact a student’s perception of psychological safety, including the student’s academic year, the number of students in the course, the course subject, as well as other related contextual factors. While a larger sample is needed for confidence in these results, the current data indicate that psychological safety is influenced significantly by the number of students taking a course, the student’s success (i.e., grade) in the course, and the subject matter of the course. Following the evaluation of additional survey results, we will document our findings and recommendations for cultivating psychological safety for college/university applications. This study is ongoing, and with additional data we expect to reveal barriers and facilitators of psychological safety in various educational settings.

Caroline Parrish

AL - Auburn University

Discipline: Natural and Physical Sciences

Authors:
#1 Caroline Parrish
#2 Deepika Goyal
#3 Richard Bird

Abstract Name: Investigation of the tumor promoting characteristics of MSK1 and STK11 in canine breast

cancer

MSK1 and STK11 are key regulatory genes in the signal transduction cascade controlling cell proliferation in cancer cells. The open reading frames of the genes encoding MSK1 and STK 11 expressed in mammary cancers of domestic dogs, Canis lupus familiaris, were analyzed to find highly conserved sequences for designing an rtPCR reaction that can specifically amplify the targeted region of each of the coding sequences, as well as using gel electrophoresis to verify the results. To optimize the PCR protocol for amplifying the targeted sequences, first, rtPCR primers were created by using the genomic sequences of the MSK1 and STK11 genes in Canis lupus familiaris. The canine genome was then analyzed to identify primer pairs also conserved in Homo sapiens that were within protein coding sequence and spanned an intron-exon junction. Once the successful primers were synthesized, they were utilized in an rtPCR reaction to find the targeted sequences. The rtPCR protocol was optimized by analyzing the amount of RNA and MgSO4 added to each reaction, then changing these amounts based on the results obtained when the bands were observed through non-denaturing agarose gel electrophoresis. When the MgSO4 concentration was changed from 1 mM to 1.5, this resulted in a brighter and sharper band when analyzed. The addition of DMSO allowed the primers to be more specific in this binding. The theoretical length determined from the sequence of the MSK1 gene is between 203-230 nucleotides and for STK11 is between 230-336 nucleotides in length. The gel electrophoresis results showed this length of nucleotides for each gene sequence. This approach has produced a highly optimized rtPCR protocol that will allow specific amplification of the target sequences to then be used further for gel extraction and sequencing to verify the results.

Grace Parrott

IA - Luther College

Discipline: Natural and Physical Sciences

Authors:
#1 Grace Parrott
#2 Ayers Aguiar
#3 Nicole Hayes
#4 Ethan Kalin

Abstract Name: Horizontal and Vertical Spatial Symptoms of Cyanobacteria Blooms

Cyanobacteria harmful algal blooms (cHABs) develop in high nitrogen and phosphorus conditions caused primarily by agricultural runoff. They are a growing threat in freshwater lakes, as they release the liver toxin microcystin, which causes abdominal pain, nausea, and liver damage in humans and has been shown to cause death in animals. Past studies have measured toxin levels at a limited number of lake sites, which fails to adequately assess ecological and recreational risks for swimmers, boaters, and anglers throughout entire waterbodies. This study, however, aimed to address variation in microcystin concentration throughout a lake and to determine if surface blooms of phytoplankton corresponded to elevated microcystin concentrations. Twenty-six locations on Lake Menomin in Menomonie, WI were sampled for microcystin at the surface two times in July to analyze its spatiotemporal variability. Phytoplankton pigments, phycocyanin and chlorophyll, were also measured at the surface and 2-meter depth at each site to examine the development of surface blooms of cHABs. Toxin concentrations varied throughout the lake, most likely due to prevailing wind patterns and water currents. As the summer progressed, the amount of toxin increased, indicating greater health risks later in the summer. The development of surface cHABs was also observed, evidenced by the greater dominance of phycocyanin in the phytoplankton community at the surface versus depth at the later sampling date. These findings suggest that assessing total human exposure to toxins requires sampling not only at beaches where people recreate but also at deep points of lakes, as these areas show high levels of microcystin. Additionally, measuring phytoplankton pigments can be an effective and relatively cost-effective way for health officials to predict cHAB growth and public health threats.

Nina Parvin

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Nina Parvin
#2 Mario Borunda
#3 Rosty Martinez

Abstract Name: Ab initio calculations of the threshold displacement energies in lead free inorganic halide perovskites

Perovskite materials have gathered significant attention in recent years due to their exceptional properties and potential applications for solar cells. Certain environmental risks, including toxicity and ground leaching, associated with lead-based perovskites have raised concern. Our research focuses on the investigation of tin-based perovskites as a promising eco-friendly alternative. We are particularly interested in understanding the radiation resistance of these emerging tin-based perovskites, a critical aspect of their long-term viability in space photovoltaics and agriculture. In space, materials are exposed to high radiation levels, affecting their performance. Therefore, predicting the radiation damage in such materials is desirable. Most currently available models that predict radiation damage in materials depend on their constituent atoms' threshold displacement energies (TDE). The TDE is the minimum amount of kinetic energy that must be given to an ion in a solid to create a stable defect in the material's lattice. In this work, we use ab initio Molecular Dynamics (AIMD) to simulate the early radiation interaction stage and calculate the TDE in the halide inorganic perovskites $CsSnI_3$, $CsSnBr_3$, and $CsSnCl_3$ in their cubic phase. The purpose of these calculations is to provide TDE values for these materials to improve the accuracy in posterior radiation damage simulations, and to compare our results among the three different perovskites to better understand the role of the anion in the radiation damage process of these materials.

Mariana Pascua

TN - Trevecca Nazarene University

Discipline: Natural and Physical Sciences

Authors:
#1 Fred Cawthorne

Abstract Name: Maximization of the Conductivity of Poly(lactic acid) 3D Printing Filament for 3D Printed Circuits

3D printed circuits have been attracting a lot of attention recently because they are cheap, easy, and fast to design and make, and produce less waste than other traditional methods to make circuits. PLA, or poly(lactic acid), is a conjugated polymer plastic that when infiltrated with a conductive material such as graphite or carbon black becomes a conductive filament. PLA is compatible with many if not all 3D printers, which makes it an ideal candidate for 3D printed circuits. Using SQUID microscopy, we can image the current going through the 3D printed circuit, which allows us to track and maximize the conductivity of the filament. Some ways we attempted to maximize the conductivity of the filament was to try different extruding patterns, temperatures, and areas and shapes. Electroplating the 3D printed parts was also an area of research in order to maximize the printed part's conductivity. By maximizing the conductivity of PLA, the performance of the circuits could get closer and closer to traditional circuits and they can start to be used in some applications.

Nicholas Pasquarello

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Karen Resendes

Abstract Name: Bortezomib disrupts nuclear transport by increasing nuclear import and decreasing export

Bortezomib is a chemotherapy used for multiple myeloma and lymphoma that inhibits the 26S proteosome inhibitor leading to an accumulation of certain proteins. However, when bortezomib causes protein accumulation, it can also lead to mislocalization. For example, p53, a key protein for triggering apoptosis, is localized in the cytoplasm upon Bortezomib treatment, which makes p53 incapable of transcribing pro-apoptotic genes in the nucleus. Therefore, we asked if nuclear transport is disrupted by Bortezomib treatment. Nuclear import is carried out by importin-α,β binding to a cargo protein in the cytoplasm, transporting it through the Nuclear Pore complex and into the nucleus; whereas, nuclear export requires the transporter Exportin. Hela cells were treated with 2.5, 5, and 10 uM Bortezomib, and a MTT Assay was used to determine cell viability before observing nuclear transport. We then observed the effects of 2.5 and 5 uM Bortezomib localization of Importin-α,β and Exportin using immunofluorescence, because these concentrations had the largest impact on viability. Neither 2.5 or 5 uM Bortezomib had an impact on nuclear localization of Importin-α. 2.5 uM slightly increased nuclear localization of Importin-β, while 5 uM led to a doubling of Importin-β in the nucleus. The increase of importin beta, but not importin alpha in the nucleus likely means nuclear import was decreased. 2.5 uM had no impact on nuclear localization of Exportin, while 5 uM led to a reduction in nuclear localization of Exportin, indicating that nuclear export was increased. Because Bortezomib disrupted nuclear transport by increasing nuclear export but decreasing import this likely contributes to the mislocalization of p53 to the cytoplasm. This result will be used in the future to combine bortezomib with another drug or supplement that restores nuclear transport to help retain p53 in the nucleus and improve its function.

Raphaella Pastos

MA - Bridgewater State University

Discipline: Education

Authors:
#1 Raphaella Pastos

Abstract Name: An International Analysis of Bilingual Education and its Role in Achieving Universal Quality Education: Spain, Colombia, and the United States of America

As of 2022, 60% of the global population are considered multilingual. Multilingualism is defined as the act of learning two or more languages, and is attributed to cognitive benefits such as increased development of executive function skills, test performance, and empathy. Although most of the world population has this advantage, a global disparity exists in access to resources and equitable education for many students contributing to an achievement gap. According to the United Nations (UN), in 2020 only 83% of primary and secondary school teachers were formally trained and nearly 258 children did not attend school. In response to this, the UN has named one of their Sustainable Development Goals (SDG 4) to ensure inclusive and equitable quality education worldwide. This research focuses on the progress of bilingual education in three distinct countries, the United States of America, Spain, and Colombia, and the role bilingual education has in achieving the UNSDG of universal and equitable access to quality education. The three countries chosen to be analyzed for this research were decided by each country's distinctive histories and educational reforms.

Data was analyzed across the three countries after collecting data through in-person observations and interviews from teachers in the U.S., Spain, and Colombia. Data was compared to analyze lesson design and content, classroom academic resources, teacher preparations, teaching practices, and uses of bilingualism across the three countries in terms of addressing the UNSDG 4. International approaches to bilingual instruction prove there are many ways to promote bilingualism. Despite the accessible materials observed, students were still gaining a bilingual education through their teacher's well-structured quality lessons. The results from this study reveal that effective teaching strategies persist despite varied access to resources. Through continued research in the field of advancing quality education and teacher training, quality education could be achieved internationally.

Anita Patane

CO - University of Northern Colorado

Discipline: Social Sciences

Authors:
#1 Anita Patane
#2 Marian Hamilton

Abstract Name: Australopithecus afarensis: We're weak in the talus for you

Obligate bipedal locomotion, mandatorily walking on two legs, is vastly important as it is the fundamental precursor to the human lineage; it precedes tool usage and language. Chimpanzees, our closest living ancestors, according to recent DNA analyses, are often the proxy and are the dominant subject of human bipedalism studies. However, there are additional species, such as arboreal Japanese macaques (Macaca fuscata), who habitually travel through the trees bipedally. Including arboreally facultative bipedal primates (FBP) introduces a new lens to how our talus and calcaneus mobility has adapted to environmental shifts such as the transition from arboreal habitation to terrestrial habitation. Studying ankle and heel morphology across multiple species with varying levels of bipedalism allows us the opportunity to better understand how lower limb mobility and stability differ as primates become more terrestrial. Therefore, I propose quantitative and comparative analyses of tarsal morphology in three early hominins: Australopithecus afarensis, Australopithecus africanus, and Homo habilis along with FBP (chimpanzees, M. fuscata) and obligate bipedal primates (Homo sapiens sapiens) by using a visual quantitative method known as geometric morphometrics (GM). GM is a standard in the field of comparative functional anatomy and allows researchers to identify patterns in variation of morphology. This research seeks to delineate the relative shape of important muscle attachments between these different primate lineages. We hypothesize that the morphology of the ankle joint will be more similar between early hominins and modern humans than that of FBP. This research will improve our current understanding of how paleoenvironmental changes in the past 3 million years have influenced the evolution of bipedalism of primates. We also hope this work will facilitate further inclusion of FBPs in studies of hominin functional morphology.

Shiv Patel

CA - Irvine Valley College

Discipline: Mathematics and Computer Science

Authors:
#1 Shiv Patel
#2 Kaveh Malekzadeh
Kaveh Malekzadeh

Abstract Name: Exploring the Effectiveness of AI-Driven Algorithmic Trading Through Sentiment Analysis

Artificial intelligence (AI) has been rapidly evolving, giving rise to AI-based algorithmic trading, which allows financial instruments to be purchased and sold programmatically[1]. AI models can scrape sources such as social media, news articles, and financial forums and decide whether the sentiment is bullish or bearish[1][2]. This information gives an extra edge for an investor or trader to buy or sell with higher conviction. This study aims to break down the structure and effectiveness of using AI to algorithmically trade based on sentiment analysis. We will be dissecting multiple sentiment analysis models to find which is the most effective and comparing the models' stock picks with the S&P 500[2]. These indicators include the public's opinion on the company/instrument, various trends on social media, and consumer feedback across online platforms. Through the results and backtesting on historical market data, we can see the effects of using sentiment analysis on real-world investing scenarios[3]. This research project shows the advancements in AI models for investing along with how mass public opinion plays a pivotal role in shaping the market. This project provides additional insight for retail and institutional investors alike by diving deeper into tools all investors can access[3]. Through a deeper understanding of market sentiments, investors can make more informed decisions. This project's goal is to increase awareness of the potentially revolutionary impact that AI-based sentiment-driven trading strategies can have on the profitability of algorithmic trading.

Ria Patel

NC - University of North Carolina at Chapel Hill

Discipline: Social Sciences

Authors:
#1 Ria Patel

Abstract Name: Using FreeSurfer to Quantify Cortical Thickness and Surface Area in Young Children

FreeSurfer, developed by researchers at Harvard University, has become a key software used by multiple neuroimaging labs, including UNC's Child Imaging Research on Cognition and Life Experience Lab, for the analysis of brain data. Freesurfer can be used to acquire measurements of brain structure, such as cortical thickness and surface area. By utilizing images acquired by Magnetic Reasoning Images (MRIs), FreeSurfer identifies white and gray matter and uses a template to mark those gray and white matter boundaries. Additionally, FreeSurfer is able to assign "names" to subcortical and cortical areas. However, FreeSurfer is not always able to provide accurate white and pial matter boundaries, so multiple rounds of edits have to be done, utilizing control points, skull stripping and white matter edits. Each type of edit either works to extend, adjust or rein in boundaries. Making the boundaries as exact as possible provides the most accurate measurements of cortical thickness, making data analysis more precise. FreeSurfer is utilized in a variety of research projects to investigate associations between cortical structure and behavioral outcomes. For example, a study published just this year (Machlin et al., 2023) measured associations of deprivation and threat with alterations in brain structure in early childhood and utilized FreeSurfer to ensure that measures of cortical thickness were as close to their actual values as possible. The study found that threat was associated with widespread decreases in cortical surface area across the prefrontal cortex, and deprivation was associated with increased thickness in the occipital cortex, insula, and cingulate.

Kahini Patel

NY - New York University

Discipline: Health and Human Services

Authors:
#1 Kahini Patel
#2 Brittney Francis

Abstract Name: Assessing the Efficacy of Perinatal Care for Black Women: A Review of the QI Tools, MADM, PCPC, and PREM-OB By Constructs

Low-quality perinatal care, a growing public health crisis associated with rising maternal mortality, disproportionately affects Black women in the U.S. Existing perinatal care protocols lack patient-centricity for Black mothers, leading to less effective care. Quality improvement (QI) tools, such as the Mothers Autonomy in Decision Making Scale (MADM), Person-Centered Maternity Care Scale (PCPC), and Patient-Reported Experience Measure of Obstetric Racism (PREM-OB), constructed with patient perspectives, aim to address this issue. Despite their potential, these tools are underutilized due to limited awareness.To aid understanding, this study aimed to conduct a comparative analysis of perinatal care QI tools to investigate how patient-centered constructs are measured. We conducted a literature review to identify papers describing the existing use of the aforementioned QI tools with a focus on Black mothers. Common themes relevant to each tool and patient experience were extracted and reviewed. Definitions for identified constructs were gathered by reviewing each tool. Finally, the tools were compared for each construct. Results show that autonomy, time, and communication are prevalent constructs assessed by QI tools. PREM-OB provides a comprehensive measurement for each construct, while PCPC offers more evaluative constructs with broader definitions. The MADM scale, despite its name, measures respect in addition to autonomy.The study suggests integrating these tools into routine QI initiatives to address persistent structural issues Black mothers face in patient-provider interactions. Additionally, further research where the QI tools are embedded in a clinical trial or test of an intervention is necessary to understand the connections between the constructs measured and patient experience.

Deep Patel

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Deep Patel
#2 Abigail Myers
#3 Lauren Richardson
#4 Jecenia Duran
#5 Dr. Scott Bowen
#6 Dr. Susanne Brummelte

Abstract Name: Effects of Transitioning from Morphine to Buprenorphine (Medication for Opioid Use Disorder) During Pregnancy on Maternal Care and Offspring Neurodevelopment in a Translational Rodent Model.

The number of Opioid Use Disorder (OUD) diagnoses during pregnancy has increased by a factor of four from 1999 to 2014. Pregnant women who are diagnosed with OUD are often prescribed medications for opioid use disorder such as buprenorphine (BUP). Clinical evidence suggests that BUP treatment results in better outcomes for exposed infants as compared to discontinuation of illicit opioids or the continuous use of illicit opioids during pregnancy. In the current study, we utilized a translational rodent model to investigate the effect of transitioning from morphine to BUP during pregnancy on maternal care and offspring neurodevelopment. Female rats were randomly assigned to one of five experimental groups: Vehicle (VEH), BUP continuous (BC), morphine continuous (MC), morphine to BUP (MB), or morphine to vehicle (MV). Drug administration was initiated 7 days prior to breeding. The MB group switched from morphine to BUP

on gestational day 5 (GD5) and continued BUP exposure until postnatal day 2 (PN2). The MV group switched from morphine to saline on GD5 and continued saline exposure until PN2. These groups simulate real-world scenarios in which women are either already taking BUP before conception (BC), switched to BUP once they become aware of their pregnancy (MB), or continue using an illicit opioid (MC). MV serves as a control group for MB to account for early morphine exposure during gestation. Maternal care behaviors were observed, and offspring mortality and neurodevelopment were recorded. Dams and litters were sacrificed on PN2. The BUP groups elicited deficits in maternal care behaviors, increased pup mortality, lower pup body weight, and increased pup withdrawal as compared to our control groups. These findings suggest that BUP exposure during gestation still carries a risk for dam and offspring, warranting further investigation into the underlying mechanisms that contribute to these outcomes.

Deep Patel

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Jakub Famulski

Abstract Name: Observing the Potential Function of Tfap2d in the Ocular Anterior Segment

The vertebrae eye has two main components the anterior segment (AS) and the posterior segment, including the retina, with both being essential to proper vision. The AS includes the cornea, lens, iris, ciliary body, and iridocorneal angle. It functions to properly collect and project light onto the retina. Anterior Segment Dysgenesis (ASD), a potentially blinding disorder, occurs when there is an abnormality in AS formation. The gene family tfap2 is essential for the development of the vertebrae eye. The tfap2 gene family encodes the protein Transcription Factor AP-2. Expression of this protein occurs in premigratory Neural Crest and associated derivatives the Neural Crest Cells (NCC). NCCs are vital for the formation of the Periocular Mesenchyme Cells (POM cells). POM cells are necessary for the formation of numerous AS structures. In zebrafish there are 5 orthologs of tfap2, tfap2a-e. One, tfap2a, is an established marker of the zebrafish AS. It is crucial for proper AS development in mammals and the absence of tfap2a results in Branchio-Oculo-Facial syndrome. The tfap2d transcription factor, being a crucial modulator in the heart and central nervous system, was absent in the NCCs during murine eye development, but Tfap2d has not been well explored in zebrafish AS targeting mesenchymal cells. We hypothesize based on our Wholemount In-Situ Hybridization and cryosectioned data, in 4 days post fertilization zebrafish embryos, that tfap2d expression is functionally present in the AS specifically, the angle mesenchyme. To test this hypothesis our goal is to use two color Wholemount Fluorescence In-Situ Hybridization and Immunohistochemistry to compare the presence of the tfap2d mRNA and protein with established angle mesenchyme markers. Through these analyses we will determine the function of tfap2d to elevate knowledge upon already known genetic markers during zebrafish ocular development which will help establish better clinical outcomes for rare congenital ocular disorders.

Vraj Patel

CT - University of Connecticut

Discipline: Natural and Physical Sciences

Authors:
#1 Rajkumar Verma

Abstract Name: Modeling Encephalomyosyangiosis After an Ischemic Stroke

Ischemic strokes make up 87% of all strokes causing potential long-term disabilities for patients. The discovery of a novel treatment is imperative especially because there is no effective treatment for stroke patients. The brain's ability to recover and self-heal from an ischemic stroke is limited by discontinuous blood supply to the impacted area. Encephalomyosynangiosis (EMS) is a neurosurgical procedure that promotes angiogenesis in patients with moyamoya disease. This procedure consists of a craniotomy where the temporalis muscle that surrounds the skull is grafted onto the ischemic part of the brain. By conducting a histological assessment using immunofluorescence techniques, we hypothesize that EMS promotes angiogenesis around the infarcted area and creates an enriching environment that allows the brain to quickly recover from an ischemic stroke. We can study the effects of EMS by conducting Middle Cerebral Artery Occlusion (MCAo), a surgery that replicates an ischemic stroke environment in mice. After 60 minutes of MCAo, mice were randomized into two groups, MCAo only and MCAo + EMS treatment. EMS was performed 3-4 hours after MCAo. Mice were sacrificed at either 30 or 60 days after MCAo only or MCAo + EMS treatment. Immunostaining showed increased levels of angiogenesis and blood vessel maturity providing evidence that this procedure is an effective treatment option for acute ischemic stroke.

Vidhi Patel

AL - University of Alabama at Birmingham

Discipline: Engineering and Architecture

Authors:
#1 Vidhi Patel
#2 Vaishali Bala
#3 M.K. Sewell-Loftin

Abstract Name: Quantification of Cadherin Expression in Pro-Vasculogenic Human Fibroblasts

Fibroblasts are an essential cell type associated with connective tissue growth and matrix remodeling. They also play a significant role in the maintenance, regulation, and growth of blood vessels. Cadherins are important in cellular communication through cell-cell junctions; two common cadherins associated with fibroblast mechanobiology are neural cadherin (N-Cad), and vascular endothelial (VE-Cad). Recent work has suggested that cadherin signaling may regulate mechanobiological crosstalk between cell types through heterotypic cadherin interactions. Advancing our knowledge of how cadherin signaling between fibroblasts and endothelial cells in blood vessels regulates vascular structure and function will help us develop novel tissue-engineered scaffolds or treatments for cardiovascular diseases. We hypothesize that fibroblast cadherin signaling can support vascular growth and that this is related to the level of contractility exhibited by the fibroblasts. Our objective was to quantify the VE- and N-Cad expression of normal cardiac fibroblasts (NHCF), normal human dermal fibroblasts (NHDF), and normal human lung fibroblasts (NHLF), all of which have been previously shown to support blood vessel growth in 3D microtissue models. Using immunofluorescence staining, our results show microtissue models with NHCFs had significantly higher N-Cad levels than NHDFs and somewhat higher levels than NHLFs. Levels of VE-Cad were similar in all three cell lines. The Pearson’s correlation coefficient (PCC) was calculated for N-Cad:VE-Cad for each cell line; results show moderate correlation (0.3-0.5) in all lines, suggesting limited co-localization. This may mean that N-Cad and VE-Cad are expressed on neighboring cells but not forming heterotypic bonds in our studies. In future studies, we will investigate how the contractile events or matrix distortions generated by NHCF, NHDF, and NHLF regulate cadherin signaling in co-cultures with endothelial cells and how these behaviors affect vasculogenesis.

Parthkumar Patel

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Amanda Horton
#2 Michael Springer

Abstract Name: The Enduring Influence of Bradbury Thompson on Graphic Design

This essay provides an in-depth analysis of the life and career of Bradbury Thompson, shedding light on his remarkable contributions to the field of design. Thompson's passion for design and dedication to his craft allowed him to rise above challenges and succeed in the industry. His work significantly impacted the design world, generating interest and captivating audiences. It examines his designs and his significant role in shaping the design field. It also explores his involvement in creating the US Postal Service stamp and exploring different languages, showcasing how he bridged communication gaps between cultures. Thompson's legacy in the design industry is highlighted, showcasing his hard work and achievements throughout his career. Despite facing numerous challenges, he persisted through dedication and hard work, communicating knowledge to audiences through his designs. This essay also emphasizes how he gained a large following in the design world, becoming an influential figure in the industry. Overall, Thompson's work became essential to the world of design and education, making him a significant contributor to the field.

Minhaz Suleman Ibrahim Patel

IL - Northern Illinois University

Discipline: Interdisciplinary Studies

Authors:
#1 Minhaz Suleman Ibrahim Patel

Abstract Name: Should Academia Thrive for Research Citation in Policy? A Case Study on Five Universities in Illinois.

Academics and policymakers are seen as operating separately, which limits the potential impact of research on society. The influence of university research on policy documents is frequently underestimated, given that cutting-edge research is being conducted at universities. Therefore, it is crucial to unveil the role of academic research in fostering evidence-driven policymaking across various public service domains. In this study, we conducted an in-depth exploratory data analysis and statistical summarization to comprehensively understand the level of academic research present in policy documents. We chose five public universities from the state of Illinois and collected research and policy citation data for those universities from Overton between 2011 and 2022. We found that, for all universities, most of the research articles cited in the policy documents were not funded, and the average minimum policy citation lag ranged from 2 to 3.5 years. Moreover, the research articles primarily received citations from government policy documents published by the USA and the UK.

Khushi Patel

SC - University of South Carolina - Columbia

Discipline: Health and Human Services

Authors:

#1 Khushi Patel
#2 Phyllis Raynor
Phyllis Raynor

Abstract Name: Customizing a digital support intervention for mothering women with substance use disorders

Background: Evidence suggests digital technology may be leveraged to promote social connectedness and access to meaningful substance use disorder (SUD) recovery support networks. Positive social connectedness has been strongly associated with improved health outcomes among patients with chronic diseases, particularly SUD. Pregnant and early-parenting people with SUD are at an increased risk for continued SUD related to decreased peer support and an inability to balance parenting and recovery needs.Purpose: To explore meaningful themes of parenting and recovery supports for pregnant and early parenting people initiating recovery from SUD that will inform the development of a tailored digital platform.Method: Using a community-based participatory approach, pregnant and early parenting women (n=30) were recruited from a women's residential drug recovery support facility in a Southeastern state. After informed consent, participants were interviewed in person and online using a semi-structured interview guide. The interviews were digitally recorded and transcribed. Themes regarding tailored supports were identified using thematic analysis and results were integrated in the digital application.Results: The five broad themes from participant interviews were (1) guilt and shame, (2) limited access to recovery supports in rural areas, (3) lack of social support for recovery, (4) lived grief and loss experiences, and (5) parenting and recovery-related educational supports. Tailored supports included parenting resources, parenting skills, parenting education, housing supports, recovery supports, childcare resources, occupational supports, and spirituality.Conclusion: Visual examples of the digital application's customization will be demonstrated and discussed.Implications: Future research will need to examine the extent to which the use of community-guided and theory-based tailored digital technology can provide the level of parenting and recovery support needed for pregnant and early parenting people seeking recovery from SUD.

aashka patel

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Aashka Patel

Abstract Name: Internalized Fear Response in Chinese Undergraduates: Collectivist Cultures and Academic Procrastination

Academic procrastination is a global factor that may impede academic success among undergraduate students of various ethnicities, races, and genders. However, the specific relationship between academic procrastination and collectivist cultural upbringing in Chinese undergraduate students has not yet been thoroughly researched as this group of students is often overlooked in a global context. This review specifically explores the psychosocial causes of academic procrastination in undergraduate college students of Chinese ethnicity to determine if their internalized fear response to failure may be due to a collectivist cultural upbringing, which may further examine the relationship between cultural upbringing and student success. This study analyzed various articles discussing the relationship between academic self-concept, fear of failure, and procrastination in collectivist cultures. This comprehensive literature review found Chinese undergraduate students raised in collectivist cultures or with collectivist values were more likely to create their academic self-concepts based on the opinions of other individuals, resulting in anxiety that may translate into a fear of failure. These students often employ avoidant coping mechanisms to manage their fear of failure, which is correlated with increased levels of academic procrastination. The relationship between this collectivist cultural upbringing and overall academic procrastination displayed the need for further research

to determine how academic success and mental health can be improved for Chinese undergraduate college students through the possibility of targeted counseling and mental health resources.

Alleyna Patterson

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Alleyna Patterson

Abstract Name: Hemolysis of Blood Samples: Best Practice for Inpatient Lab Draws

Hemolysis of blood samples is a common problem in the inpatient hospital setting that can lead to patient harm and increased cost. The review of literature showed a gap in knowledge concerning methods and specific components or devices used in phlebotomy and their effect on hemolysis as well as a lack of knowledge of current research findings among nurses. The literature also provided current guidelines and recommendations in the research for hemolysis prevention, accuracy of laboratory values through different methods of phlebotomy, appropriate waste volumes, rates of hemolysis using different phlebotomy methods or devices, and opportunities for improvement such as incorporating other blood drawing devices. The purpose of this project is to develop a decision-making tool for nurses to supplement clinical decision making when it comes to hemolysis prevention and best practice for obtaining blood samples. The proposal consists of creating an evidence-based decision tree for nurses to use in practice that will be presented with an educational in-service for nurses on specific units in the inpatient setting. Evaluation of the project would include baseline hemolysis rates for the unit with data collection continuing for a few months after the project. Qualitative data from the nurses regarding the effectiveness of the education material and their experience using it in practice will also be collected. This project will provide nurses with the knowledge to determine best practice with their patients when it comes to phlebotomy. Keywords: Hemolysis, PIV catheter, butterfly, phlebotomy, blood draw

Ayana Pattison

ID - Boise State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ayana Pattison

Abstract Name: What's in the Water? Detecting Chlamydia and Gonorrhea in Treasure Valley Wastewater

Wastewater-based epidemiology (WBE) gained prominence as a reliable method for predicting SARS-CoV-2 outbreaks and trends during the COVID-19 pandemic. We modified the technique to detect Chlamydia (C. trachomatis) and Gonorrhea (N. gonorrhoeae) in wastewater sourced from four wastewater facilities in the Treasure Valley (West, Lander, Meridian, and Nampa) using variations of two extraction methods, the AllPrep PowerViral DNA/RNA Mini Kit and paper filtration (0.22µm and 0.45µm). Both pathogens were detected in samples from both Boise, Idaho facilities (West and Lander) on three of the six days tested (N. gonorrhoeae 6/14/23, and C. trachomatis and N. gonorrhoeae 6/19/23 and 6/28/23). Neither pathogen was detected in samples from the Meridian and Nampa facilities. Pathogens were detected in 25% of all treatment facilities sampled. The 0.22µm filter paper produced positive results in 3 of 4 tests (75%), while the 0.45µm paper did not produce any positive results. Surprisingly, Nanotrap A, designed for viral detection, was more effective in detecting the bacteria than Nanotrap B, designed for bacterial detection (50% vs 33%).

Relena Pattison

CA - Pepperdine University

Discipline: Mathematics and Computer Science

Authors:
#1 Relena Pattison

Abstract Name: Mathematically modeling how trapping regimes that target specific crayfish life stages impact removal efficacy

The red swamp crayfish, Procambarus clarkii, is an invasive species introduced into several streams within the Santa Monica Mountains (SMM) in California. Crayfish predation decimates native aquatic species. The Mountains Restoration Trust (MRT) has worked to remove crayfish through regular trapping in Malibu Creek. To aid conservation efforts, former student Dev Patel developed a mathematical model of crayfish removal efficacy. His discrete model of the crayfish life cycle newly accounted for cannibalism but was not yet parameterized to stream data. We expand Patel's model to better predict the efficacy of crayfish removal efforts in the SMM. We separate crayfish based upon life stage and total length: eggs, two monthly juvenile stages, small non-reproductive adults, medium adults, and large adults. We construct and parameterize this preliminary predictive model of crayfish population levels with and without trapping. We use literature and crayfish removal data provided by MRT to fit the model to the Middle Las Virgenes portion of Malibu Creek. We numerically simulate how the crayfish population changes over time and find that the model dynamics are highly sensitive to juvenile monthly survivorship. We determine the best crayfish life stages to trap to most efficiently decrease crayfish population size; specifically, model predictions suggest that a smaller mesh size that traps juveniles in addition to adults is necessary to reduce crayfish populations to local extinction.

Sidney Paulson

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Sidney Paulson
#2 Elizabeth Peacock

Abstract Name: How Working Students (Don't) Balance Work and School

As the number of college students who work while attending school continues to grow due to the rising costs of college and the defunding of higher education at the state level, the working college student makes up a significant sector of college students. Although these students have jobs and could drop out of college and just work, they are getting college degrees in order to improve their future job prospects and develop skills to help them in their future careers. Understanding the experiences of these students is crucial to finding ways to support their success. Using online surveys and semi-structured interviews we have found that many working college students feel invisible to their university institutions, which often assume their full-time students are supported in other ways, and isolated from their peers due to their competing responsibilities. Most students who work during the school year are doing so to meet their basic living needs and in an attempt to reduce their need to take on hefty student loans. Because of this, many working students have little opportunity to reduce their work hours when courses become more demanding. Oftentimes, work interferes with a student's ability to attend class, study, or complete assignments on time. While the experiences of working college students are unique to every individual, many feel that the resources available to them on campus are insufficient for their needs or inconvenient for them to access. Greater discussions around the experiences of working college students could increase the visibility of these issues and potential solutions. Government reinvestment in higher education is crucial to the university system, and working college students in particular, so that tuition is not such a burden on students and so that they can better apply themselves to their coursework and future career goals.

Helena pavlovic

NC - University of North Carolina at Wilmington

Discipline: Health and Human Services

Authors:
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#2 Tristen Dolesh
Tristen Dolesh

Abstract Name: Prevalence of Normal Weight Obesity Amongst College Students

Background: Normal weight obesity (NWO) is an individual exhibiting low body mass index (BMI) or normal BMI but has high percentage body fat. Identifying individuals with NWO is clinically relevant given the link between adiposity and hypokinetic diseases. Purpose: To determine the prevalence of normal weight obesity amongst a young, non-sedentary population. Methods: Two hundred and fifty-four apparently healthy volunteers (Age = 22.2 ± 7.2 yrs; Height = 171.5 ± 9.6 cm; Body Mass = 69.9 ± 13.4 kg) provided informed consent prior to participation. Body mass index was calculated by dividing body mass (kg) by height squared (m2). Percentage body fat was quantified via the BODPOD® G/S. Class I Obesity and Low/Normal BMI categorizations were defined by the American College of Sports Medicine. Results: Data revealed that 12.2% of the overall sample exhibited NWO, with a higher prevalence among males (17.2%) compared to females (9.8%). Conclusions: Of interest is to determine if the identified NWO individuals have elevated health risk(s) compared to individuals with similar BMI. From a practical perspective, identifying individuals with

NWO is an opportunity for clinicians to proactively educate their clients regarding the health risks associated with hypokinetic disease(s).

De'vonte Payton

GA - Fort Valley State University

Discipline: Natural and Physical Sciences

Authors:
#1 De'vonte Payton Payton
#2 Qiang Huang

Abstract Name: The Pursuit for Safer Batteries

Today's Li-ion batteries are unsafe for public use due to their flammability and toxic components such as cobalt, graphite, and lithium. They are also harmful to the environment when disposed of improperly. Ion solutions with high conductivity would eradicate the problems Li-ion batteries pose while maintaining their effectiveness as a battery. In order to understand the ion solutions as battery fluid, it is important to note the relationship between the solutions' viscosity, conductivity, and pH level.

Lian Peach

MD - Salisbury University

Discipline: Interdisciplinary Studies

Authors:
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Maggie Atherton
Abigail Potter

Abstract Name: Period Power: Addressing Period Poverty in Wicomico County - Pesidential Citizen Scholars

Period poverty and insufficient access to menstrual resources and education is a global issue that impacts millions of people who menstruate (United Nations, Sustainable Development Goals). Menstrual hygiene products are a basic human right and necessary to be able to live with dignity and security. A negative stigma exists surrounding menstruation, labeling menstruation as dirty, unclean, or shameful. Addressing period poverty among youth is especially vital in reducing the educational gap and breaking this stigma and discrimination surrounding menstruation. Compared to the Maryland state average of children in poverty at 12%, Wicomico County, MD has a rate that is 7% higher at 19% of children living in poverty. Additionally, 49.5% of students in Wicomico County qualify for the free and reduced lunch program, through which we assume some of these students have had inadequate access to menstrual resources and education. According to the State of the Period report (2021) commissioned by Thinx and PERIOD, 70% of students aged 13-19 say that they are self-conscious about their period due to the school atmosphere. Furthermore, 62% believe that society has made it difficult to confidently navigate their menstrual cycle, and 58% have been negatively affected by the stigma that exists. Through Period Power, we are researching the stigma surrounding menstruation and addressing it by starting conversations around the community, partnering with the Wicomico County Board of Education (WCBOE) to provide menstrual products and educational materials to

middle school students in the Wicomico County Public School System (WCPSS), specifically piloting our project in Salisbury Middle School and Wicomico Middle School, and connecting the WCBOE and WCPSS with Aetna Health Insurance, who will provide the necessary resources for our project. Through these efforts, we hope to reduce discomfort and shame that may exist when discussing menstruation as well as combat period poverty at its core.

McKayla Pearce

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 McKayla Pearce

Abstract Name: Feelings of Loneliness in the Older Adult Population

Background: Older adults are those 60-65 or above and make up around 16% of the United States population. This population can face challenging transitions such as retirement, change in living situations, new diagnoses of chronic health conditions, hospitalizations, and loss of loved ones. These changes put older adults at an increased risk for experiencing loneliness. Loneliness can be caused by emotional or physical separation and can lead to physiological or psychological distress and even mortality. Animal assisted therapy has been shown to greatly reduce feelings of loneliness in the older adult population. Aim: This research aims to show the correlation between assisted animal therapy and decreasing feelings of loneliness in older adults. Method: The anticipated population for this project is 30 participants who live in a long-term care unit in a metropolitan retirement community. Loneliness will be measured using the 20-item Revised UCLA Loneliness Scale (RUCLALS). Participants will then spend 45-minutes in animal assisted therapy and then loneliness will again be measured using the RUCLALS. Conclusion: Older adults experience life changes that make them more susceptible to experiencing loneliness. Over 30% of older adults experience loneliness. Animal assisted therapy has been shown to decrease feelings of loneliness in the older adult population by 85%. Nurses can use the evidence found to advocate for and support older adults in moments of distress. By doing this, nurses can help decrease feelings of loneliness and increase the well-being of this rapid growing population. Keywords: older adults, elderly, loneliness, mental health, animal assisted therapy

Meghan Pearce

TX - Texas Woman's University

Discipline: Humanities

Authors:
#1 Meghan Pearce

Abstract Name: Nineteenth Century Collegiate Secret Societies and Their Roles Within the Female World of Love and Ritual

This paper uses records of women’s collegiate secret societies to expand on the origins and manifestations of nineteenth century female companionship as described by historian Carrol Smith-Rosenberg in her 1975 seminal work, “The Female World of Love and Ritual: Relations between Women in Nineteenth-Century America.” By analyzing the emergence of collegiate secret societies in the nineteenth century and subsequent member correspondence, organizational documents, and society publications, this paper will argue that these collegiate societies were instrumental in the development of what Rosenberg has termed the “Female World

of Love and Ritual.” Careful and meaningful comparisons are made of primary source evidence used by Rosenberg (primarily letters), and the archival materials of female-only collegiate societies founded in the nineteenth century. This study will reveal that multiple phenomena discovered by Rosenberg’s analysis such as lifelong friendship, an exchange of passionate language with each other, taking extensive getaways together, and a system of generational mentorship were also present in the organizational context of collegiate societies. This paper will definitively show that women’s collegiate secret societies created a cultural space where the intimate female friendships of the “Female World" could thrive. At a time when women lacked political and legal rights, nineteenth century women’s collegiate societies were instrumental in creating a “Female World" in which women found both intimate friendship and a collective sense of purpose. Connections between Rosenberg’s “Female Word” and collegiate societies have been hitherto unnoticed in historical literature. As a result, this paper makes a significant contribution to understanding the dynamics of female relationships in the nineteenth century.

Emily Pedersen

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Emily Pedersen
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#3 Auriel Willette
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Makayla Dove

Abstract Name: Gene Editing Using PiggyBac Transposon to Study APOE and TOMM40 in Alzheimer's Disease

While mitochondria are central to theories of aging and a significant biomarker in Alzheimer’s disease (AD), their connection to APOE and TOMM40, the high-risk genes of AD, has not been elucidated. AD can be characterized by a drastic decline in mitochondrial health compared to the natural decline in most aging individuals. This disease leads to impairment in brain function, including memory loss, confusion, and difficulty in completing activities of daily living. APOE and TOMM40 potentially contribute the AD pathology through regulating cholesterol metabolism and membrane pores. Such changes could result in declined ATP synthesis, elevated reactive oxygen species (ROS), and dysregulated cell homeostasis. This project is designed to assess the impact of two genetic risk factors for Alzheimer's disease, APOE ε4 and TOMM40 rs2075650, on mitochondrial function and integrity. PiggyBac transposon plasmid is used to construct the homology-directed repair sequences to achieve foot-print-free editing. To ensure homozygous editing, a PiggyBac transposon plasmid carrying GFP, puromycin, and hsvTK genes is the template vector for one allele, while another contains RFP, geneticin, and hsvTK genes. Primers then join the APOE ε4 and TOMM40 SNPs into the homology arms. After amplifying this region, restriction enzymes and ligation are used for plasmid cloning. Cells edited with CRISPR cas9 permit the transfection of the transformed template vector containing the SNPs of interest. Top 10 possible off-sites are sequenced to ensure minimal off-target effects. Mitochondrial ATP synthesis and ROS are quantified using assay kits. Mitochondrial morphology will be evaluated using fluorescent microscopy. Off-site evaluation will confirm the fidelity of the gene editing. Evaluating mitochondrial health through ATP synthesis, ROS generation, and morphology will provide quantifiable biomarkers for AD progression. The overall project will provide insight into therapeutic interventions mitigating AD genetic risk factors through the regulation of mitochondrial function.

Alyssa Pedicino

CA - Pomona College

Discipline: Humanities

Authors:
#1 Alyssa Pedicino
#2 Kenneth Wolf

Abstract Name: Late Antique Irish Hymnology: A Study of Saint Brigit of Kildare Through Brigit Bé Bithmaith

The arrival of Christianity to Ireland in 400s CE began a process of Christianization unique to the island itself. Celtic Polytheism, a faith that involved the worship of deities through nature, moved from the dominant religion to influencing Irish Christianity. The version of Christianity that emerged was Celtic Christianity, a Roman Christianity with a monastic system and mysticism of Celtic culture and Polytheism. A number of figures traversed this unique landscape in their Christianization efforts, including Saint Brigit of Kildare. As abbess at Kildare in the late 400s and early 500s, she played a significant role in reaching the local community through agrarian miracles and Celtic mysticism. After her death, a number of hymns and writing pieces such as Brigit Bé Bithmaith, “The Hymn in Praise of Saint Brigid of Brogan-Cloen”, Cogitosus: Life of Saint Brigit, and Bethu Brigte were composed by different authors. Each emphasized different themes to Christianize in different manners. Using a historical methodology focused on religion and theology, one can learn more about the image of Saint Brigit that was based on her life and the historical events in Late Antique Medieval Ireland. This crossover of late antique medieval history, religious studies, and theology allows for a unique niche of research on a saint that has been predominantly studied for her relationship to the Virgin Mary and Celtic Polytheism. Looking closer at Brigit Bé Bithmaith, one can learn more about Saint Brigit’s portrayed identity of goodness and humility, learn about the author of the piece of Saint Ultan, and understand more about the Celtic Christian and broader Irish culture and its value of intercession.

Eline Pellicano

PA - Lafayette College

Discipline: Interdisciplinary Studies

Authors:
#1 Eline Pellicano

Abstract Name: "The Babel Problem: Brexit, Nonprofit Cross Cultural Communication, and Underserved Refugee Women in the UK"

In today's increasingly transnational world, Migration and refugeehood continue to be leading topics of international political discourse. Existing scholarship often lacks an intentional focus on migrant women and girls’ engagement with the state, and where private third sector refugee organizations fall in the geography of resettlement and rebuilding. This project investigates the ways that societal internalizations of Brexit impact refugee third sector practitioners and their interactions with the migrant women they serve. Through a thematic analysis of interviews with UK-based refugee third sector workers, as well as firsthand experience working for a women’s refugee organization in London, this research examines the institutional pressures that shape London-based third sector organizations’ work with women, and the ways that the state is able to extend itself into the private advocacy sector. This project engages literature of border internalization, translation violence, migrant vulnerability, and nonprofit gap filling. It finds that women’s refugee nonprofit spaces in the UK are now often reverberations of post-Brexit political imagination, and identifies a need for more informed advocacy.

Victoria Peltonen

PA - Westminster College

Discipline: Natural and Physical Sciences

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#1 Victoria Peltonen
#2 Kerri Cornell Duerr

Abstract Name: An investigation of incubation behavior in the American Kestrel (Falco sparverius)

Incubating birds face an evolutionary tradeoff between survival and maintaining the thermal requirements their eggs need for normal embryonic development. Thus, incubation schedules are adaptations that reduce the effort needed to maintain the tradeoff. We investigated incubation behavior as it relates to temperature in nesting American Kestrels (Falco sparverius) in west-central Pennsylvania. Our objectives were to measure variability in frequency of egg rotation, feather adjustment and preening related to time of day and ambient temperature. We predicted that females altering their incubation behavior would increase overnight when ambient temperatures are lower due to the need for continuous incubation and more attention to maintaining critical egg temperatures. We monitored nesting activity of breeding kestrels in a nest box system (n=50) in June-July 2023. Clutch size ranged from two to five (mean= 4.18). We used camera systems in 2 kestrel nest boxes during late stages of incubation (day 10-20 of 30-day nestling period). On average females rotated eggs 18.7 times during overnight incubation bouts and 11.7 times during daytime bouts (t=-0.527, df=1.42, P=0.668). Females adjusted their feathers on average 23.7 times during the night and 6.7 times during the day (t=-1.25, df=1.19, P=0.404). Lastly, females preened on average of 25.3 times during the night and 4 times during the day (t=-11.3, df=2, P=0.008). Ambient temperature varied by 20° F between overnight and daytime. Our results are important for understanding how life history behaviors may influence reproductive success of kestrels. Kestrels are experiencing population declines in our region, which may be related to climate change. Understanding whether kestrels can alter incubation behaviors in response to changing environmental conditions is important for maintaining populations and directing future conservation.

Carlos Pena

CA - California State University - Fullerton

Discipline: Engineering and Architecture

Authors:
#1 Carlos Pena
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Dzung Doan

Abstract Name: Energy Harvesting from Suspension Systems to Enhance the Battery Performance of Electric Utility Vehicles

In response to the growing demand for sustainable transportation solutions, this research project explores the innovative concept of harnessing energy from suspension systems to enhance the performance of electric utility vehicles (EUVs). The research background highlights the pressing need to optimize energy efficiency and extend the driving range of EUVs as a crucial step in reducing greenhouse gas emissions and promoting

electric mobility. The primary goal and objectives are to design, implement, and evaluate a regenerative suspension system that can capture and store energy generated during vehicle motion. The research methodology combines mechanical and electrical engineering principles to develop and test the system. Preliminary results indicate that energy harvesting from suspensions has the potential to significantly enhance the energy efficiency and battery performance of EUVs, potentially extending their range and reducing the frequency of recharging. This study not only addresses an urgent need in the field of electric vehicles but also contributes to the broader effort to create more sustainable and environmentally friendly transportation solutions. In conclusion, the findings of this research project hold promise in advancing the capabilities of electric utility vehicles and pave the way for more energy-efficient and eco-friendly transportation systems.

Nathaly Pena

CA - California State University - Monterey Bay

Discipline: Natural and Physical Sciences

Authors:
#1 Nathaly Pena
#2 Supreet Gandhok
Supreet Gandhok

Abstract Name: Ionic Liquids: Determining the Polarizability and Chemical Hardness of Ionic Liquids

Ionic liquids are common solvents that exhibit low volatility, high thermal stability, and numerous solubility characteristics. Ionic liquids research is becoming more prominent in numerous domains due to their customizable properties through the selection of cations and corresponding anions. Imidazolium-based ionic liquids exhibit characteristics including non-toxicity, biodegradability, solubility in water, and cost-effectiveness. Using Wolfram Mathematica and GaussView, we constructed a database encompassing over 100 optimized monomers and dimers. Monomers refer to the structures of ionic liquids characterized by the presence of a singular cation and a singular anion. These monomers were optimized through Gaussian using Density Functional Theory with B3LYP functional and 6-31+G(d) basis set. The monomer structure was then used to build dimers, where a dimer refers to sets of 2 cations and anions each. The database containing more than 100 optimized monomers and dimers was constructed through the extraction of SMILES codes for imidazolium cations and anions from a pre-existing compilation of all SMILES codes for imidazolium cations and anions. We performed calculations on the database to determine the polarizability and chemical hardness properties of imidazolium ionic liquids. Polarizability refers to the tendency of a molecule to acquire an electric dipole moment. Chemical hardness describes the resistance of a molecule when exposed to changes in electron density and relates to the energy required to add or remove electrons from the molecule. Understanding the concept of chemical hardness is important, as this can be used to predict the behaviors associated with ionic liquids. These properties comprise a high-quality quantum mechanical set of descriptors that could empower machine learning algorithms to predict the chemical properties of ionic liquids.

Marco Pena

FL - Miami Dade College

Discipline: Mathematics and Computer Science

Authors:
#1 Marco Pena Barrientos

Abstract Name: Development of a Stochastic Differential Equation Model for Traffic Flow Optimization

This paper proposes a new set of stochastic differential equations for modeling and optimizing traffic flow in multi-lane highways as one way of dealing with extensive traffic congestion challenge. To that effect, we develop a model based on stochastic car-following dynamics with variable K representing drivers' sensitivity parameter. Uncertainty is incorporated into the reaction accelerations of vehicles through these values due to human drivers being unpredictable. This is further strengthened by our addition of a lane-changing function based on probabilistic assessments of adjacent lane conditions that captures the decision-making process involved in driver manoeuvres. A function embodies the relationship between vehicle density and velocity consistent with accepted traffic flow principles. This model involves a lot of non-linear and stochastic elements that are navigated using numerical approaches involving Runge-Kutta techniques, as well as agent based modelling. Such techniques are effective for modeling dynamic traffic behavior helping finding appropriate flows and developing practical traffic control decision-making solutions. This framework therefore does the current congestion abatement efforts, and provides a basis to subsequent empirical studies. This study becomes a reference for other studies aimed at improving the traffic flows and may change our approaches towards eliminating traffic problems.

Andrew Peña

CA - Chapman University

Discipline: Education

Authors:
#1 Andrew Pena

Abstract Name: The Experiences of Latinx faculty, staff, and students at a Predominately White Institution aspiring to become a Hispanic-Serving Institution

Over recent years, higher education has experienced an increase in underrepresented racial populations, translating into an urge for institutions' diversity, equity, and inclusion efforts (Gasman & Samayoa, 2019). In an increasingly diverse nation, predominantly white institutions seeking to become Hispanic Serving Institutions must acknowledge the challenges associated with this designation. The experiences of Latinx faculty, staff, and students are interconnected, which impacts their success, access, and retention within higher education. Thus, fostering an inclusive and supportive environment for these populations is critical for their future success. As predominantly white institutions develop better resources for Latinx populations, institutions can create a more diverse, equitable, and inclusive environment. This literature review presents an analysis of existing literature surrounding Latinx faculty, staff, and students. The literature review also aims to explore these populations' interconnected experiences and how predominately white institutions can aim to support these populations better. In addition, gaps in previous research on Latinx staff success and their impact will be examined. Thus, the guiding questions are: What does existing literature tell us about the experiences of Latinx populations in higher education spaces? What do predominantly white institutions need to consider as they aspire to become Hispanic-serving institutions? What are the experiences of Latinx faculty, staff, and students at predominantly white institutions? How can institutional policies and practices be designed to promote diversity, equity, and inclusion for Latinx faculty, staff, and students? This literature review seeks to contribute to the ongoing efforts to create a more diverse, equitable, and inclusive higher education environment for Latinx faculty, staff, and students. For this review, I searched for literature to present the obstacles Latinx populations face within institutions, along with current resources and support that positively impact Latinx populations.

Satvika Penala

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Satvika Penala
#2 Aleksandra Foksinska
#3 Camerron Crowder
#4 Matthew Might

Abstract Name: Using AI-Predicted Therapeutics in Precision Medicine: A Path Forward for GNB1-Related Disorders

GNB1-related disorder is a rare autosomal-dominant disease with less than 100 known cases. Almost all reported cases involve a heterozygous, de novo pathogenic variant in the gene GNB1, which encodes for G-protein β1 subunit (Gβ1).Similar to most rare disorders, GNB1-related disorders do not have an FDA-approved treatment. Therefore, our research goal is to identify potential therapeutics for GNB1-related disorders by exploring the mechanism of the Gβ1 I80T variant and identifying FDA-approved treatment options.The methodology consists of two components: a literature review and an AI-based drug repurposing search.Through a literature review conducted on the I80T variant, the missense mutation was found near a critical binding region with the GIRK channel subunit, GIRK2. Typically, during G protein-coupled receptor activation, the Gβ1 subunit dimerizes with the G-protein γ subunit to form the effector that activates the GIRK channel to regulate neuronal firing. However, in vitro experimental methods have demonstrated the I80T variant causes reduced G-protein βγ-dimer binding to the GIRK channel, resulting in loss of GIRK activation, leading to reduced hyperpolarization and decreased inhibition of CNS neurons. Utilizing the NCATS Biomedical Translator AI tool, potential therapeutic approaches, such as GIRK activators, have been identified that may compensate for the loss of GIRK activation caused by the I80T variant. Many therapeutics target an alcohol-binding pocket within the GIRK channel which has been reported to be an alternative method of GIRK activation.As part of the research consultation service offered by the Hugh Kaul Precision Medicine Institute for rare disease families, the next steps involve refining the selection of FDA-approved compounds identified by AI with emphasis on those well-tolerated in pediatric patients. A formal report on our findings will be submitted to the patient's treating physician, who then can facilitate clinical decision-making on treatment application.

Ivy Pennekamp

NC - Elon University

Discipline: Education

Authors:
#1 Katherine Baker

Abstract Name: The Perceptions and Awareness of Trauma-Informed Education in Religiously Affiliated Schools

This research project addressed a gap in the literature of equity-based, trauma-informed education by examining the awareness and perceptions of this educational movement from educators in religiously affiliated schools. Past research has shown that trauma and toxic stress can negatively impact almost every aspect of a child's school experience, but that trauma-informed education and trauma-sensitive approaches can mitigate the impacts of trauma. The research on trauma-informed education is usually centered in general education and public PreK-12 settings, so this project contributes by specifically investigating educators' awareness, perceptions, and insights about trauma-informed approaches within the context of religious-affiliated schools. We aimed to add this additional layer of educators' voices and experiences to better understand if and how trauma-informed approaches are being interpreted and integrated into religious-affiliated schools. This study was mixed methods in design, utilizing an explanatory sequential design with

two distinct, yet interconnected phases, undertaking a survey phase and interview phase to provide both breadth and depth to findings. The first phase was a Qualtrics survey distributed to and through administrators at two religious schools to their corresponding faculty. The survey yielded 14 responses to 80% completion or more, six of which were completed to 100%. At the survey closure, educators had the opportunity to provide identifying information to be contacted for interviewing. Phase two of the study consisted of interviews of consenting participants to provide in-depth details regarding their perceptions of trauma-informed education and its role in their practices and schools. Of the 14, one participant consented to be interviewed to share insights to better understand the religious school context in relation to trauma-informed care. Implications of the findings will guide future research design to further explore this topic in religiously affiliated schools, and inform education policy and trauma-informed education professional development within the religious-school arena.

Varsha Penumalee

VA - Virginia Commonwealth University

Discipline: Education

Authors:
#1 Varsha Penumalee

Abstract Name: Shifting from Zero Tolerance Policies to Address Substance Use among Black High School Students: Disrupting the School-to-Prison Pipeline Using a Whole-Child Approach

Black high school students are significantly more likely to be incarcerated as adults than their White counterparts, presenting the question of how current policies in public schools may increase the racial disparities of the school-to-prison pipeline. In order to understand how to mitigate future incarceration of Black high school students, this comprehensive literature review investigates how zero-tolerance policies and whole-child policies may impact substance use and racially disproportionate suspension rates in high schools in the United States. Unlike whole-child policies, zero-tolerance policies fail to address reasons for maladaptive behavior, often weaken student-teacher relationships, and neglect academic success. Zero-tolerance policies often inadvertently increase substance use and academic disengagement rather than ameliorate these issues. Zero-tolerance approaches increase suspension rates while whole-child approaches decrease the incidence of suspension, indicating that the inclusion of whole-child policies and decreased use of zero-tolerance policies may reduce youth incarceration rates. Black students who use substances are also more likely to be suspended than their non-Black counterparts and those who have been suspended have a higher likelihood of being incarcerated, signifying that a reduction in suspension rates in high schools may decrease racial disparities among incarcerated young adults. Thus, the use of whole-child policies may mitigate the incidence of substance use and racially disproportionate suspension practices among Black students, reducing incarceration through the school-to-prison pipeline.

Rachel Perez

WA - Central Washington University

Discipline: Health and Human Services

Authors:
#1 Rachel Perez
#2 Andrew D’Lugos
#3 Jared Dickinson

Abstract Name: Interval Exercise Stimulates a Greater Transcriptional Response than Continuous Exercise within Aging Skeletal Muscle

Exercise is one of the most effective strategies for preserving skeletal muscle health and function with advancing age. However, the molecular mechanisms behind these benefits are less established, and thus to what extent various modes of exercise can be utilized to target impairments in aging muscle is not fully understood. The purpose of this study was to identify the transcriptional response of older adult skeletal muscle to acute high-intensity interval (HIIE) or moderate-intensity continuous (MIC) cycling. Eight older adults (5M, 3F; 67±2yr; BMI: 26±2kg･m-2) completed two exercise trials separated by ~1 week. One trial consisted of HIIE (ten, 1-min intervals, 85-95% heart rate max, 1-min rest between intervals) and the other consisted of MIC cycling (30-min, 65-70% VO2peak). Muscle biopsies (vastus lateralis) were obtained before and 4h post exercise. Whole transcriptome next-generation sequencing was performed on cDNA synthesized from skeletal muscle RNA. Sequencing data were analyzed using HTSeq and differential gene expression from pre-exercise was identified using an adjusted P value of ≤0.10. A total of 55 genes were responsive to both HIIE and MIC. Regarding the unique response to each exercise mode, 264 genes were only responsive to HIIE whereas 149 genes were only responsive to MIC. Interestingly, TNFRSF12A, a gene that has been linked to muscle growth, was upregulated by HIIE but not by MIC. These data highlight that despite less total work, acute HIIE stimulates a greater transcriptional response within the skeletal muscle of older adults as compared to MIC, at least in the immediate hours following exercise. While future work is necessary to determine how these transcriptional responses correlate with specific skeletal muscle adaptations, HIIE may provide a stimulus to promote muscle growth/delay muscle loss in older adults.

Katelyn Perez

TX - St. Edward's University

Discipline: Natural and Physical Sciences

Authors:
#1 Katelyn Perez
#2 Camila Miranda
#3 Emily Holecheck
#4 Ariadna Salinas
#5 Andrea Holgado

Abstract Name: C. elegans axonal anchoring complex plays a role in transporting cellular waste for degradation

Autophagy is the process in which cellular components are degraded and recycled. The ternary complex, composed of the microtubule-associated proteins (MAPs) UNC-33, UNC-44, and UNC-119 contributes to the development and stability of axons by anchoring microtubule bundles to the cortex, and facilitating transport along the axonal cytoskeleton. Defects in the ternary complex proteins have been linked to various neurodevelopmental and neurodegenerative diseases. In our laboratory, we recently began investigating the autophagy process in C. elegans mutant lacking the components of the ternary complex: UNC-33, UNC-44, UNC-119 and those lacking motor proteins UNC-104, and UNC-116. We hypothesize that the lack of these functional proteins will result in defects in autophagy due to microtubule instability or defects in autophagosome transport. To test this hypothesis, we monitored the location of autophagosomes and autolysosomes in C. elegans AIY neurons using fluorescent markers and confocal microscopy. Results from confocal microscopy show a significant increase in autolysosomes present in neurites of ternary complex mutants unc-33 and unc-119. This accumulation of autolysosomes in neurites mimics the one found in the motor protein mutants unc-104 and unc-116. Conversely, autophagosome count in the soma was significantly decreased in unc-33, unc-44, and unc-116 mutants. These results suggest that the ternary complex proteins together with axonal motor proteins may contribute with transporting autophagosomes to the soma for waste degradation. Microtubule sliding, a phenomenon seen in MAP mutants, may lead to mislocalization of

autolysosomes in the neurite and has a negative impact in the process of autophagy. Taken together, these findings support the role of the ternary complex proteins in autophagy in C. elegans neurons.

Joanna Perez

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Joanna Perez

Abstract Name: Asian and Latino Second-Generation Students and their Sense of Belonging

My research will focus on the experiences of second-generation Asian and Latino students residing in New York and how they understand their sense of belonging in their families. I define a sense of belonging as how students' perspectives on love, marriage, family obligations, heritage, and morals match or don't match with their parents. While there has been an ample amount of research done on the sense of belonging of second-generation students with their families, there has not been a strong comparison among Asian and Latino children. This research will allow us to better comprehend the relationship dynamics between each generation and the obstacles and experiences second-generation Asian and Latino students encounter with their immigrant parents. I will explore the similarities and differences among these two groups concerning their experiences with their extended/immediate family. I will use semi-structured interviews with demographic questions about the participants and their families and 15 questions regarding their personal experiences. In addition, I will use snowball sampling to recruit 20 participants: 10 Asian second-generation students and 10 Latino second-generation students. Interviews will be manually coded for themes, similarities, and differences among participants' responses. I propose that individuals whose parents are closely tied to their heritage and culture and individuals who are the oldest children will feel closer to their parents' perspective and have a stronger sense of belonging at home. However, individuals whose parents are more strayed from their culture and individuals who are the youngest children will feel a lower sense of belonging at home and a stronger belonging with friends and in other social settings. In addition, I believe that Asian and Latino students will produce similar levels in their sense of belonging in their families, and there will be fewer differences in their answers.

Elvis Perez Galarza

NC - Western Carolina University

Discipline: Natural and Physical Sciences

Authors:
#1 Elvis Perez Galarza
#2 Ava Greene
#3 Peyton Price
#4 Channa De Silva

Abstract Name: Microwave Assisted Synthesis of Strontium Fluoride Nanoparticles.

Metal-containing fluoride materials have been around for many years. Particularly, calcium fluoride (CaF2) is abundant in nature and serves as one of the primary sources of fluoride for the world. CaF2 has been found to have many useful thermal and optical properties used in chemical industry. These properties have been found to be especially useful in the nanomaterial field. CaF2 nanoparticles exhibit many favorable optical

properties. Our preparation methods use microwave radiation to assist the synthesis of the nanoparticles under controlled reaction conditions including the temperature and radiation power. Strontium has very similar properties to calcium and strontium fluoride (SrF2) has the same cubic structure found in calcium. Since it has the same outer electron count as calcium, it has also been synthesized in a variety of ways. Our goal is to optimize the synthetic process of SrF2 nanoparticles using the CEM Discover 300W microwave to be able to control the size and the yield. Size is also controlled with differing concentrations of starting reagents. The X-ray powder diffraction pattern confirmed the cubic crystal structure of the nanoparticles. Dynamic light scattering (DLS) studies of the SrF2 nanoparticles confirmed the particle size ranging from 120 nm to 260 nm. The nanoparticle size was measured using scanning electron microscopy and found to be 85 nm.

Daniela Perez Laguna

AR - Arkansas State University

Discipline: Natural and Physical Sciences

Authors:
#1 Daniela Perez Laguna
#2 Jianfeng Xu
#3 Uddhab Karki

Abstract Name: Engineering “designer” biomolecules in planta for enhanced biomass processibility

Plant cell wall biomass represents the most abundant renewable carbon sources on the earth. However, efficient conversion of lignocellulosic plant biomass to biofuels and biobased chemicals is plagued by high production costs associated with biomass pretreatment and enzymatic hydrolysis. In-planta expression of lignocellulose degrading enzymes presents a promising strategy for reducing production costs. This approach harnesses biomass feedstocks to simultaneously act as enzyme suppliers and substrates for biofuel production. However, many in- planta-expressed enzymes targeted for secretion were mainly retained inside the cytoplasm membrane instead of being secreted into the apoplast/cell wall, which failed to exert the expected role in reconstructing the cell wall matrix. This project leveraged an innovative in planta enzyme engineering strategy, which involved optimizing the expressed enzyme by adding two unique posttranslational modification modules: hydroxyproline (Hyp)-O-glycosylated peptide (HypGP) and glycosylphosphatidylinositol (GPI) anchor. This will not only create the enzyme with improved stability but also facilitates the deposition of the enzyme macromolecules into cell wall matrix and modify the cell wall structure. The well- studied E1 endoglucanase from thermophilic bacterial strain Acidothermus cellulolyticus was expressed in both model plant tobacco and dedicated bioenergy crop switchgrass with the HypGP glycomodule composed of 30 tandem repeats of “Ser-Pro” peptide and a C-terminal GPI anchor. The engineered HypGP module and GPI anchor facilitated the accumulation of E1 in the apoplast/cell wall of plants, which increased the biomass saccharification efficiency by 3.5-fold without affecting plant growth.

Yesenia Perez-Velazquez

WI - Alverno College

Discipline: Natural and Physical Sciences

Authors:
#1 Yesenia Perez-Velazquez
#2 Caitlin Weiss
#3 Jenna Coss

Caitlin Weiss

Abstract Name: Titrimetric Fresh Water Analysis: Monitoring Salinity and Total Water Hardness in Locations along the Kinnickinnic River

The salinity and total water hardness of three sites on the Kinnickinnic River near Alverno College in Milwaukee, WI in parternship with Milwaukee RiverKeeper were monitored weekly for salinity and total water hardness. The locations were Zablocki Park, Wilson Park, and Jackson Park. Samples were collected and analyzed weekly for four weeks during the month of June in 2023. The water at all three sites were determined to be very hard (219-478ppm) and salinity levels (150-566ppm) to be considered fresh throughout the four collection dates. River water is expected to be soft and fresh. Samples were analyzed by titration with standardized titrants of silver nitrate for salinity and EDTA for total water hardness. Four replicates were collected for each sample, with percent errors being less than 5%.

Kendall Perssico

TN - Middle Tennessee State University

Discipline: Social Sciences

Authors:
#1 Kendall Perssico
#2 Isabela Ramos
#3 Steven Brown
#4 Caitlyn Wells
#5 Tiffany Rogers

Abstract Name: “Determining Oxytocin’s Role in Social Motivation of Mice"

Oxytocin is a neuropeptide that is associated with social behaviors such as pair bonding, social exploration, and social recognition. Oxytocin has been found to influence some psychiatric disorders such as schizophrenia and autism. It also has been suggested that oxytocin may play a role in shifting motivation towards other social stimuli. However, our preliminary data in the lab indicates, have suggested that oxytocin, which typically increases social behaviors like sniffing, actually decreases motivation to seek out social stimuli. Dopamine is a neurotransmitter that is linked to motivation and natural rewards. There is also evidence to suggest that oxytocin acts on dopaminergic pathways. Because of this potential interaction, we examined the effects of both oxytocin and dopamine on social motivation. Male and female C57BL/ 6J mice (n=30) were dosed intranasally with saline, oxytocin, or dopamine (6M per nostril). All mice were subjected to each drug condition with washout periods in between each round. The mice then performed a series of behavioral assays including a weighted doors task, ladder task, FDSI, EPM, and siCPP. These tasks measure behavior such as anxiety, sniffing, and social motivation. The social motivation tasks, weighted door and ladder task, increase in effort needed per trial to reach a social stimulus. Noldus Ethovision XT and lab members will code the behavioral assays. We expect our findings to show dopamine has a significant difference on social motivation, while oxytocin and saline do not. The findings of this project can lead to further investigations of the neurochemical pathways in social motivation.

Kendall Perssico

TN - Middle Tennessee State University

Discipline: Social Sciences

Authors:
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Abstract Name: Novel Tasks to Measure Social Motivation in Mice

While behavioral measures for general social exploration in mice are established, few measurements exist for social motivation. We have created novel behavioral tasks to measure social motivation by requiring mice to perform a task that requires increasing effort to access a social stimulus. The first task, the weighted doors task (adapted from Borland et al., 2017), requires mice to push open a one-way door to access a social stimulus. The task starts with no weight and increases per trial. The second task, the ladder task, requires mice to climb a ladder to access a platform containing a social stimulus. The height of the platform and angle of the ladder is successively increased with each trial. All social stimuli used in our tasks were matched subjects. To validate the novel social motivation behavioral tasks, we measured behavioral outcomes across multiple measurements of social motivation, correlated outcomes across these measures, and compared these social motivation measurements with classic social behavior tasks. Additionally, we compared behavioral outcomes across sex and three mouse strains (C57, DBA, and BTBR). We found statistically significant positive correlations within social motivation tasks ($r = 0.58$, $n = 31$, $p < 0.001$). Social motivation measures were not correlated with sociability as measured by the three-chamber task (ladder task: $r = -0.11$, $p > 0.05$; weighted doors: $r = -0.29$, $p > 0.05$). A mixed methods ANOVA indicated that sex was not a significant variable in social motivation variability as measured by the ladder task or weighted doors task, but that strain had a significant effect on social motivation in both tasks (ladder task: $F(2, 45 = 19.02$, $p < 0.001$; weighted doors: $F(2, 41) = 13.08$, $p < 0.001$). These novel measurements of social motivation allow for the investigation of unique neurochemical and pathway contributions to social motivation.

Lorenzo Pessi

CA - Chapman University

Discipline: Natural and Physical Sciences

Authors:
#1 Marco Bisoffi
#2 Cecilia Lopez

Abstract Name: Substrates Methylated by PRMT7 and The Effects of Cellular Stress on PRMT7 Expression

Our research focuses on understanding the role of protein arginine methyltransferase 7 (PRMT7) in mediating breast cancer aggressiveness. PRMT7 is a monomethyl transferase that plays a key role in various intracellular processes. Overexpression of PRMT7 has been associated with epithelial-to-mesenchymal (EMT) transition in breast cancer cells and increased metastatic aggressiveness, both in vivo and in vitro. Multiple pathways by which PRMT7 induces EMT have been proposed. However, there has yet to be a defined mechanism of action. Our investigations include the following: (i) Assessing PRMT7 expression levels and cellular localization upon cellular stressors, including alterations of pH and temperature in cancerous and non-cancerous breast epithelial cells by qRT-PCR, Western blotting, and immunocytochemistry. (ii) Identifying a proteome-wide profile of substrates methylated by PRMT7 by mass spectrometry. (iii) Determining the expressional regulation of oncology-associated proteins upon PRMT7 over-expression using antibody arrays. Results from these investigations will reveal how PRMT7 promotes cancer metastasis and identify downstream mediators of metastasis that could be therapeutic targets.

Understanding the function of PRMT7 is thus crucial in preventing metastasis, which is the cause of over 90% of tumor-associated deaths.

Victoria Peter

OK - Southern Nazarene University

Discipline: Natural and Physical Sciences

Authors:
#1 Caio Franca

Abstract Name: Phylogenetic Analysis of West Nile Virus Isolates from Oklahoma

West Nile Virus (WNV) is a virus that is spread through the bite of an infected mosquito and can cause West Nile fever or, in severe cases, West Nile neuroinvasive disease. In Oklahoma, a total of 852 human WNV infections and 1,364 equine WNV infections have been reported between 2002 and 2022. The virus has undergone adaptive evolution, allowing it to be endemic across the continental U.S. The most well-known amino acid substitutions that have emerged in WNV are the E-V159A in the envelope protein of the WN02 genotype, and NS4A-A85T and NS5-K314R in the SW03 genotype. The goals of this study were to report whole genome sequences of WNV from OK, perform a phylogenetic analysis of isolates, and characterize variants. Mosquitoes were collected using Fommer gravid traps, carbon-dioxide-baited Biogents, and CDC light traps. RNA that is positive for WNV by RT-qPCR TaqMan assay was used to synthesize cDNA to amplify WNV genomes via a multiplex targeted amplicon PCR. We analyzed 99 WNV genomes, including 21 sequenced from mosquitoes collected in Oklahoma between 2019 and 2023 as part of this study. Phylogenetic clustering revealed that WNV variants circulating in central Oklahoma form 5 clusters with isolates from Louisiana and New York. We detected 54 nonsynonymous consensus mutations with 92% on nonstructural genes, predominantly in NS3, NS4B, and NS5. Amino acid substitutions C139S, R204C, and S172G appeared in over half of the 21 isolates from this study. Here we report preliminary information on the genomic structure of WNV and the lineages circulating in Oklahoma. Further investigation is needed to determine how the amino acid substitutions contribute to the transmission and prevalence of WNV in Oklahoma.

Kacie Peters

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Kacie Peters
#2 Kate Leger
#3 Jessica Maras

Abstract Name: A Brief Mindfulness Intervention and its Effect on Stress Response and Recovery: Rumination as a Moderator.

It’s inevitable that every human will encounter stressors in their life. Therefore, research on this topic is generalizable and carries a heavy weight. While facing one stressor may not have a significant impact, it’s the degree of the stressors and the response to them that can dictate if it leads to serious consequences. Mindfulness has been shown to be effective in stress recovery specifically from negative affect. Additionally, some people have higher tendencies to ruminate, and high trait rumination has been linked to prolonged

negative affect and stress responses. The current study examines mindfulness intervention as a technique for stress recovery while also seeing how an individual's rumination level affects stress recovery. Participants were asked to fill out a questionnaire at the baseline of the study measuring trait rumination. Participants completed the Trier Social Stress Task where they were given two minutes to form a 5-minute speech about why they should be a candidate for their ideal job. Following, they presented their speech to a panel of judges acting harshly. For the recovery period, they were assigned to the mindfulness condition or the control condition. For the mindfulness condition, participants were instructed to listen to a five-minute audio of a guided meditation. For the control condition, participants were instructed to rest for five minutes. Stress recovery was measured through participants' negative affect and blood pressure, which was measured throughout the study. Participants in the mindfulness condition showed better stress recovery specifically for negative affect than those in the control. Participants rating high on trait rumination showed worse stress recovery specifically for negative affect than those in the control. The findings imply that mindfulness serves as a useful tool to lessen negative affect and emotional stress while experiencing stressors, and that rumination can have a negative impact on these experiences.

Craig Peters

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Craig Peters
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#3 HaoSheng Sun

Abstract Name: The role of lin-41 in the neuronal maturation and synaptic connectivity of C. elegans

Developmental disorders are largely associated with mutations in the molecular pathways involving the maturation of the brain during development. Considering the importance of these pathways, maturation of the post-mitotic nervous system is understudied, especially the intrinsic heterochronic and molecular targets controlling such events. The model organism, C. elegans, is ideal for studying such questions due to their fast and stereotyped post-embryonic development, invariant cell lineage, transparency, and well-understood compact nervous system. The regulatory pathway involving the evolutionarily-conserved let-7 microRNA and its downstream target, the RNA-binding protein lin-41, are of particular interest because they are implicated in the temporal progression of mitotic cell types in C. elegans. We aim to understand the role of lin-41 and let-7 in post-embryonic, post-mitotic neuronal maturation, specifically focusing on its role in synaptic connectivity. Using transgenic fluorescent reporters, expression patterns of lin-41 and let-7 across post-embryonic development were observationally characterized and quantified in the AIB interneuron, which plays a crucial role in forward/backward locomotion. To examine the functional role of lin-41, we examined the locomotory behavior of transgenic worms, in which the activity of lin-41 was manipulated in the AIB interneuron, using the worm tracker. We found that the downregulation of lin-41 was important in the maturation of the AIB interneuron resulting in juvenile behavior when manipulated. Next, we are investigating whether the potential downstream target cdh-5 is being regulated by this pathway. Cdh-5 is a cadherin protein that is important for inhibiting and promoting the formation of synapses between neurons. Preliminary data suggests lin-41 is playing a downstream regulatory role based on expression quantification and imaging. Additionally, we have identified the synaptic formation of the AVA and AIB neurons that may be regulated by cdh-5. Understanding these mechanisms will allow us to better understand neurodevelopmental processes and potentially identify novel therapeutics for neurodevelopmental disorders.

Austin Petersen

UT - Weber State University

Discipline: Humanities

Authors:
#1 Austin Petersen

Abstract Name: Loyalty to The Mountains

This paper delves into the contributions of three extraordinary mountaineers—David Brower, Paul Petzoldt, and Bob Bates—and their profound impact on American outdoor recreation. In the historical narrative, skiers from the 10th Mountain Division of World War II gain more attention, overshadowing the less-explored realm of climbers' contributions. Brower, a stalwart conservationist, zealously advocated for land preservation as the Executive Director of the Sierra Club; Petzoldt, a mountain of a man with a personality to match, imparted essential climbing skills, and created the National Outdoor Leadership School (NOLS); and Bates, a scholar, and high mountain expert, played a pivotal role in advancing mountaineering equipment.Contrary to the prevailing emphasis on skiers, this paper argues that the climbers within the 10th, armed with a unique combination of mountaineering expertise and military training, wielded a significant influence on the landscape of outdoor recreation in the United States after World War II. Historically, the legacy of these climbers has been overshadowed, with scholars primarily focusing on the exploits of skiers. By analyzing their individual pursuits and collective impact, this paper seeks to rectify this oversight and shed light on the instrumental role climbers played in shaping the nation's recreational landscape.As climbers, Brower, Petzoldt, and Bates navigated terrains both vertical and strategic, skills honed during their service. Beyond the military context, their post-war endeavors paved the way for an outdoor revolution. By standing on the high peaks, these climbers left an enduring legacy that surpasses military history, because their loyalty was not to the military, but to the mountains.

Catherine Petersen

UT - University of Utah

Discipline: Health and Human Services

Authors:
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#4 Julio Facelli

Abstract Name: Understanding the Relationship Between Environmental Exposures and the Risk of Pediatric Obesity using Unsupervised Machine Learning

Obesity is caused by the accumulation of adipocytes in the body. In the US, the prevalence of pediatric obesity has grown rapidly in recent years, with about 19.7% of children and adolescents aged 2-19 affected in 2020. Exposures in prenatal and early life are implicated in development and outcomes of several diseases. The role of how temporal patterns of exposures affect health are not well understood. Characterizing differential and additive effects of continuous low-level and intense sporadic multi-agent exposures require advanced big data and artificial intelligence methods. The objective of this research was to determine the role of transitions from prenatal to postnatal exposure profiles in pediatric obesity risk.To generate exposure profiles from the ISGlobal Exposome data challenge 2021, we will utilize existing methods with the Exposure Health Informatics Ecosystem to generate events that are semantically coherent and available with spatiotemporal attributes. Next, we will use longitudinal unsupervised K-means clustering (kShape) with shape respecting distances on these exposure trajectories. The clustering performance will be evaluated using the Silhouette score and the Calinski-Harabasz score. We will evaluate prenatal and postnatal exposure trajectories associated with the onset of pediatric obesity. Principal component analysis will then be used to

understand contributions of specific exposures and combinations of exposures in relationship to Chemical Entities of Biological Interest. Potential limitations are in the quality of the trajectories which could be addressed by other methods such as shapelet transformations.

Vincent Peterson

SD - Black Hills State University

Discipline: Visual and Performing Arts

Authors:
#1 Vincent Peterson

Abstract Name: The Binding of Isaac Through a Trans Artist's Lens

I am an artist who tells stories through the medium of oil paint. I make art to give myself representation as a trans person and to show others like me that their existence is beautiful. I work with oil paint because I'm inspired by the art of the late renaissance and baroque periods and I'm drawn to the rich history behind them, especially when they reference mythology or religion. My latest series references the Binding of Isaac and personally identifying with Isaac in the Bible. I see the parallels between Isaac and people like me who have been killed or attempted to be killed in the name of loving God. This is what inspired me to reimagine the Binding of Isaac in a modern setting in which Isaac is a trans man and Abraham doesn't take his coming out well. This leads to Isaac's complicated feelings about father figures, his own fatherhood, and masculinity later in his life. When I start creating artworks I begin by drawing them digitally on a drawing app called Procreate. Then I mix a palette using the primary colors against a medium gray background on my palette in order to achieve tone accuracy. I tend to mix a palette suitable to the mood of the painting while keeping color theory in mind. Then, I apply layers of paint at a time with walnut oil mixed to hasten the drying time and to thin the paint while keeping it a silky texture. I know a piece is done when the entire canvas has been touched by paint and I'm satisfied with the transitions of hues and tones.

Vincent Peterson

SD - Black Hills State University

Discipline: Visual and Performing Arts

Authors:
#1 Vincent Peterson

Abstract Name: The Binding of Isaac Through a Transgender Lens

I am an artist who tells stories through the medium of oil paint. I make art to give myself representation as a trans person and to show others like me that their existence is beautiful. I work with oil paint because I'm inspired by the art of the late renaissance and baroque periods and I'm drawn to the rich history behind them, especially when they reference mythology or religion. My latest series references the Binding of Isaac and personally identifying with Isaac in the Bible. In the Bible Abraham, his father, was told by God to kill Isaac as a test of his faith. But I see the parallels between Isaac and people like me who have been killed or attempted to be killed in the name of loving God. This is what inspired me to reimagine the Binding of Isaac in a modern setting in which Isaac is a trans man and Abraham doesn't take his coming out well. This leads to Isaac's complicated feelings about father figures, his own fatherhood, and masculinity later in his life. When I start creating artworks I begin by drawing them digitally on a drawing app called Procreate. Then I transfer them to a canvas by projecting and tracing them. Afterwards I mix a palette using the primary colors

against a medium gray background on my palette in order to achieve tone accuracy. I tend to mix a palette suitable to the mood of the painting while keeping color theory in mind. Then, I apply layers of paint at a time with walnut oil mixed for longevity and to thin the paint while keeping it a silky texture. I know a piece is done when the entire canvas has been touched by paint and I'm satisfied with the transitions of hues and tones.

Kellen Peterson

IL - Illinois College

Discipline: Humanities

Authors:
#1 Kellen Peterson

Abstract Name: Andrew Jackson: Choke with Rage

Andrew Jackson, America's seventh president, is an American icon. He is the founder of the Democratic party and hero of the battle of New Orleans. He also is famous for his less than favorable seminole campaign and the Indian Removal Act. Regardless, the man is on the $20 bill and needs to be understood better. Currently, there's an overwhelming amount of speculation on masculinity in America. Toxic masculinity, ideal masculinity, male violence, and male loneliness are just some of the topics being discussed in the cultural zeitgeist of 2023. Jackson fits in many historic and modern interpretations on masculinity, toxic or otherwise. This project explores the application of some of these themes with Andrew Jackson and answers questions about what an American man was in the early republic of this country and what an American man is today. This project includes insight on Jackson's three duels with Waightstill Avery, Charles Dickinson, and John Sevier as well as several other duels in this time period. Duels were the highest form of expression of masculinity, especially when that masculinity is being threatened.It's no secret that a vast majority of contemporary mass shooters are male, most violent gang members are young men, and that most violence in society seems to be propelled by men. I hope this project will answer questions about male violence in today's society and that the echoes of our past can assist us with understanding ourselves in today's world just a little bit better, warts and all.

Alexis Peterson

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Alexis Peterson
#2 Taufeeque Ali
#3 Xiaohua Peng

Abstract Name: Cancer Studies: Enhanced Activation of ROS-Responsive Prodrugs via Prooxidant ROS Generation

Xiaohua Peng's lab has reported a potent Phenylboronic acid nitrogen mustard containing reactive oxygen species (ROS) activated prodrug, FAN-NM-CH_3. This drug selectively targets cell lines with higher endogenous hydrogen peroxide (H2O2) levels. Due to heterogeneity of cancers and development of resilience against single agent therapies though, these traditional treatments are generally ineffective at producing desired outcomes. Combination therapies have shown greater efficacy in animal models, yet most fail due to

adverse effects. A deeper exploration of combinatorial agents with enhanced efficacy of anti-cancer agents and lower risk of negative effects is essential. Prooxidants have long been investigated for their anti-cancer properties on an individual basis, however various researchers have claimed that these can selectively deliver H_2O_2 to sites of cancer. Integration of insights from these studies, alongside combination of prooxidants with the FAN-NM-CH_3 prodrug has exhibited enhanced toxicity towards TNBC, MCF-7 and U-87 MG cancer cell lines, while sparing MCF10A normal cells. A notable reduction in viability of cancer cells as opposed to with FAN-NM-CH_3 treatment alone has been achieved by the synergistic therapy. This discovery establishes a promising strategy that allows for lower drug dosage while maintaining selectivity and efficacy, paving the way for improved cancer treatment methods and further research.

Lydia Peterson

IN - Indiana University Purdue University Indianapolis

Discipline: Social Sciences

Authors:
#1 Lydia Peterson
#2 India Johnson

Abstract Name: Signaling Safety: The Role of Black Instructors in STEM for White Female Students

Prior research has concluded that Black women and men scientists act as highly effective identity safety cues (i.e., aspects in a setting that signal to minoritized members that their identities are valued and welcomed) among Black female students, attracting Black women students to Science, Technology, Engineering, and Math (STEM) settings. Like Black women students, white female students have been historically excluded from STEM and anticipate gender-based discrimination within STEM environments. Moreover, similar to Black scientists of all genders, white women are stereotyped as incompetent in STEM settings. Despite previous research, there has yet to explore whether Black scientists serve as effective identity safety cues among white women students. The present study utilized an online experiment and we investigated whether a Black instructor in STEM would serve as an efficacious identity safety cue for white women students. White women students were recruited via Prolific (N= 374) and viewed a webpage for a fictitious STEM school. Participants were told to imagine they were a student at the school and were next randomly assigned to learn about a White woman, White man, Black woman, and Black man professor working in the school. Participants next reported their identity safety by answering questions that measured their anticipated belonging, trust, and interest in STEM as a student in the professor's courses. Relative to the other conditions, the Black woman professor produced the highest levels of identity safety.

Amalia Petropoulos

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Amalia Petropoulos
#2 Cullen Vens

Abstract Name: Engineering High Zip-Lignin Conjugates in Sorghum Cell Walls

Sugar alcohols synthesized from digested agricultural biomass provide a viable energy alternative and a means for decreased dependency on fossil fuels. Commercial agriculture produces abundant plant biomass,

making this a renewable source of fuel that could minimize the disastrous anthropogenic effects on the planet. Industrial anerobic digesters have shown promise in breaking down agricultural biomass and converting it into bioenergy precursor metabolites. However, robust plant walls that contain chemically stable lignin act as a current roadblock for maximizing the available energy yield, in these industrial systems. Anerobic digester systems require extremely high temperatures and pressurized environments to break down tightly bonded chemical structures within plant walls. Our experimental approach targets chemically strong ether bonds within the cell wall lignin backbone via point mutations in key Sorghum bicolor lignin biosynthesis genes, generated by CRISPR-Cas9, namely p-Coumaroyl-CoA: monolignol transferase (PMT), feruloyl-CoA: monolignol transferase (FMT), and cinnamoyl-CoA reductase (CCR). These mutations have allowed us to engineer the cell wall to incorporate monolignol conjugates into the lignin backbone via relatively weak ester bonds.We predict that overexpression of FMT, coupled with knocking out PMT and CCR will reduce the abundance of lignin-bound monolignol p-coumarates and increase the abundance of monolignol ferulates. We confirmed the presence of the point mutations in our target genes by DNA sequencing. We are quantifying the effects of these Cas9-mediated point mutations by RT-PCR, qPCR, RNA-sequencing, and chemical analyses of lignin composition by derivatization followed by reductive cleavage (DFRC), base hydrolysis, and mild acidolysis. We hypothesize that these modifications to lignin structure will increase cell wall digestibility, reduce the cost of anaerobic digestion, and increase the energy yield. Preliminary results from our chemical analyses of these modified plants suggest that they may have effects on lignin composition early in development that are less evident in later growth stages.

Gabriella Pfeiffer

FL - University of South Florida

Discipline: Humanities

Authors:
#1 Gabriella Pfeiffer

Abstract Name: ‘Life’s So Fun!’: Positive Representation, Celebration, and Queer Joy as Resistance in LGBTQ+ Popular Music Artists

While the LGBTQ+ community has faced immense amounts of violence and oppression throughout history, music has been an important piece of hope and joy to celebrate queerness in the face of oppression. As popular music has a history of breaking gender norms and bringing queerness into the mainstream, it serves as a space where queer people can express themselves safely with limited consequences. Research continuously shows positive representation of queer people in the media has led to further acceptance by the general public, and literature increasingly examines marginalized communities’ use of joy in media as active resistance to oppression. While literature exists on the impacts of positive queer narration in pop culture and joy as resistance in other marginalized communities, there is a large gap in the literature on queer joy, especially related to popular music, media, and pop culture. Drawing on the theoretical frameworks of queer theory and Muñoz’s queer utopia, this thesis seeks to fill the gap on queer joy as resistance through modern LGBTQ+ popular music artists’ performances and careers. This thesis creates case studies using qualitative content analysis to examine six current LGBTQ+ popular music artists’ expressions of queer joy in their work as resistance to anti-LGBTQ+ rhetoric, creating larger acceptance of the queer community. By analyzing various media channels such as on-stage performances, music videos, interviews, and more, I expect to find queerness used as a celebratory device, switching up the rhetoric of being queer or trans as doomed to a difficult life. This thesis seeks to highlight the concept of queer joy as empowerment, queer celebration in pop culture media as resisting harmful anti-LGBTQ+ rhetoric, and radical queer performance in successful LGBTQ+ popular music artists as working to increase society’s acceptance of the queer community.

Franziska Pflaum

TX - The University of Texas at Austin

Discipline: Natural and Physical Sciences

Authors:
#1 Franziska Pflaum
#2 Allison Seeger

Abstract Name: Isolating the CDR-H3 region from domestic ferret antibodies

The domestic ferret (Mustela putorius furo) pathophysiological response to influenza infection is similar to the human response, which makes the ferret an ideal model to study influenza and other respiratory infections. However, currently the ferret genome is incomplete and there is a lack of ferret-specific reagents, which limit the immunological assays and analyses available for such studies. To better assess the ferret immunoglobulin (antibody) response to influenza, we developed tools to analyze plasma antibodies. We purified immunoglobulin G (IgG) from ferret plasma and sequenced the proteins using mass spectrometry. Our lab optimized this protocol, which involved first optimizing an old method of crude antibody isolation, ammonium sulfate precipitation, followed by affinity chromatography using Protein A. Purified IgG was confirmed with SDS-PAGE and the antibody protein was digested with a panel of proteases in order to determine the best way to generate CDR-H3 peptides. The third complementarity-determining region of the variable heavy chain (CDR-H3) is the region of the antibody protein that is responsible for recognizing antigen (pathogens, like viruses and bacteria). This work advances the ferret immunological information available by uncovering the repertoire of CDR-H3 sequences expressed in ferret plasma during the response to influenza. Furthermore, it allows for synthesis of ferret monoclonal antibodies, which could be used as tools to determine the binding patterns of ferret antibodies to components of the influenza virus or vaccine, which would inform future vaccine design.

Tate Pflum

CA - Cuesta College

Discipline: Mathematics and Computer Science

Authors:
#1 Tate Pflum
#2 Grayson Arellano
#3 Roman Escobar
Grayson Arellano
Roman Escobar

Abstract Name: Energy Efficiency Study of Pool Covers: Reducing Energy Loss of Heated Pools

Our College presented us with an applied question about the efficiency that the pool covers have on heat loss in the pools. Our college has an Olympic-sized pool and a warming pool. Each pool is connected to two different boilers, in a circulating heating system. Our College uses opaque covers that greatly reduce the rate of evaporation and solar radiation compared to transparent and bubble covers. Our task was to figure out if covering each pool for a few hours between activities would reduce the work the boilers have to do to keep the pools heated at a certain temperature in a sufficient amount as to justify the labor of such covering. The work presented here studies the conditions that would affect each pool's heating, including natural heating loss due to outside temperature, evaporation, and solar radiation. The work presents a study of the BTU (British Thermal Unit) loss of both pools as a function of various of those variables and the desired temperature. Our study suggests that the pool cover is convenient at all times with the big pool, due to evaporation loss on such a big surface. The findings of the smaller pool differ. Due to less area and an

increase of solar radiation due to shallower waters, the smaller pool does not benefit greatly from a pool cover in temperatures 5 degrees below or higher than the desired temperature. The methodology presented here could easily be used to study pools in other scenarios, such as at residential areas.

Alvin Pham

TX - The University of Texas at Austin

Discipline: Natural and Physical Sciences

Authors:
#1 Alvin Pham
#2 Gwen Stovall

Abstract Name: Aptamer Selection for an Anti-Superoxide Dismutase 1 (SOD1) Aptamer for Tracking SOD1 Migration and Aggregation in Neurodegenerative Diseases

While it is known that superoxide dismutase 1 (SOD1) is associated with neurodegenerative diseases, there is much to learn about the mechanism of toxicity and migration of this protein in the human body. Mutant forms of SOD1 protein are implicated in the gain of toxicity in neuron cells in neurodegenerative conditions such as Amyotrophic Lateral Sclerosis (ALS). Even though there are about 5,000 new ALS diagnoses each year in the United States, the mechanism behind the formation of mutant SOD1 is still an ongoing area of research. This research aims to create a molecular tool, specifically an aptamer, to visualize the migration of SOD1 proteins in neuron cells. Aptamers bind their targets with high binding affinity and specificity and are composed of oligonucleotides. To study the migration of SOD1, the anti-SOD1 aptamer will be fluorescently labeled so that it will be visualized in live-cell imaging techniques. This work will employ the Systematic Evolution of Ligands by Exponential Enrichment (SELEX) technique to find an aptamer against SOD1. The conditions of each round of selection, such as pH at 7.4 and 37℃ temperate, were kept constant as those mimicked the conditions of the human body. Iterative rounds of SELEX will be conducted to enrich the oligonucleotide pool and ultimately isolate aptamers from the original N71 RNA pool. This research is currently in its fifth round of SELEX out of potentially 5 to 20 SELEX rounds. The enriched RNA pool is currently being sequenced using Next Generation Sequencing. This will determine if the research can move to further developing the aptamer sequence. The further success and development of this study will allow real-time visualization of SOD1 protein and give medical and biomedical researchers a better understanding of the association of SOD1 enzyme in ALS, Alzheimer’s, Parkinson’s, or other neurodegenerative diseases.

Vinh Pham

WI - University of Wisconsin-Stout

Discipline: Mathematics and Computer Science

Authors:
#1 VINH PHAM
#2 Kevin Matthe Caramancion

Abstract Name: Artificial Intelligence in Deception: Unraveling the Role of AI and Large Language Models in Online Financial Scams and Countermeasures

This study investigates the sophisticated role of Artificial Intelligence and Large Language Models in perpetrating online financial scams, such as phishing, identity theft, and investment fraud. The research focuses on the mechanics and effectiveness of AI in these scams, and how AI-driven solutions can be

employed to detect and prevent such fraudulent activities. This research aims to contribute to the fields of AI ethics, cybersecurity, financial technology, and consumer protection, where there is a growing need to understand the role of AI in both enabling and combating financial scams.The research methodology is twofold. Qualitatively, it involves conducting interviews with a diverse group of participants, including cybersecurity experts, financial fraud investigators, victims of online financial scams, and AI developers. These interviews are designed to shed light on the operational mechanisms of AI in financial scams, the psychological impact on victims, and the challenges in effectively combating these scams. Quantitatively, the study will analyze data from financial institutions, cybersecurity firms, and online platforms to identify patterns and characteristics unique to AI-generated scams. This involves statistical analysis to evaluate the current AI-based detection and prevention tools.The study is expected to yield an in-depth understanding of how AI and LLMs are used in online financial scams and provide a critical assessment of the existing AI-based detection and prevention methods. It aims to offer practical recommendations for improving these tools and developing guidelines to help consumers and financial institutions recognize and protect against AI-generated scams. The results will be discussed in the context of enhancing financial security and consumer protection, contributing to the broader dialogue on ethical AI use and the challenges it poses in the financial sector. This research is significant as it addresses the urgent need to understand and mitigate the risks of advanced AI technologies in online financial security.

Danielle Phan

CA - California State University - Long Beach

Discipline: Interdisciplinary Studies

Authors:
#1 Danielle Phan

Abstract Name: The Role of Parent-Child Conversations in Child Emotion Learning During Informal Science Learning

Previous literature suggests that parent-child conversations and informal learning environments play a role in developing children’s science thinking, however, less is known about the relationship between these conversations and children’s emotion learning in an informal science learning context. This study examined how parent-child conversations support child emotional learning in an informal science learning environment. It was hypothesized that parents who used more emotion talk in the aquarium would have children who used more emotion talk. We hypothesized that there would be a higher prevalence of negative emotion talk compared to positive talk for both child and parent.The sample from the previous study included 50 children and parents and the children had to be 3 to 8 years old. Parent-child conversations were recorded and then transcribed verbatim. Audio recordings were coded for emotion and examined for emotion valence; methods adapted from Lagattuta & Wellman (2002). The “Contextualizer” tool in the Linguistic Inquiry and Word Count program was used to find the emotion terms in the transcripts while providing context to the utterances. A second trained coder checked for accuracy in 100% of the transcripts.Results supported the first hypothesis that parent emotion talk was positively correlated with emotion talk at the aquarium when controlling for child age; $p = 0.008$. However, our second hypothesis was not supported. Instead, we found positive emotion was more prevalent among children and parents than negative emotion. This inconsistency between the current study and previous studies may be due to the differences in parents’ socialization goals. Overall, these findings may help educators and parents create stronger learning environments for their students and children as the influence of conversations is explored in the context of informal science learning. Future research could focus on the quality of parent-child conversations to understand how they talk and improve child learning practices.

Ryan Phan

CA - University of California - San Diego

Discipline: Health and Human Services

Authors:
#1 Ryan Phan
#2 Maripat Corr

Abstract Name: Regulation of Murine Arthritis Symptoms by Type I Interferon Receptors

Sterile inflammation associated with autoimmune murine arthritis serves as a model to investigate pathways of mechanical hypersensitivity (tactile allodynia) and nociplasticity. In the murine K/BxN serum transfer model of arthritis, interferon beta is used as a therapeutic agent temporarily ameliorated allodynia. We hypothesized that type 1 interferon receptors (IFNAR1) influence pain-like behavior in this model. To test this theory we used the K/BxN serum transfer model with C57BL/6 wild type (WT), and type I interferon receptor knockout (Ifnar -/-) mice of both sexes. Ifnar1-/- mice were compared to WT mice for clinical inflammation in ankle swelling using a caliper and mechanical allodynia in withdrawal thresholds by the von Frey method over a 28 day time course. The female Ifnar1-/- mice had more ankle swelling than WT males and females and male Ifnar1-/- mice [F(3,29); p<0.0001 two-way ANOVA]. The withdrawal thresholds were similar within strain. Both the Ifnar1-/- male and females had a minimal change in withdrawal threshold from baseline and were significantly different than the WT mice over the time course [F(3,67.18), p<0.0001 two-way ANOVA]. These results indicate that type 1 interferon receptors play a critical role in the onset of inflammation induced allodynia and regulate the level of paw swelling differently in male and female mice. Sex differences in some but not all inflammation related symptoms in the Ifnar1-/- mice may relate to sex differences in the response to therapeutic agents that target the type I interferon pathway currently in clinical use.

Kayla Phan

CA - University of San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Kayla Phan
#2 Cawa Tran

Abstract Name: The Effects of Beneficial and Pathogenic Marine Bacteria on the Sea Anemone Exaiptasia diaphana

In mitigating the effects of climate change, probiotics have become a promising solution for enhancing coral resilience. Corals and the sea anemone Exaiptasia diaphana (a laboratory model for corals) establish symbiotic relationships with dinoflagellate algae, but under environmental stress, the host expels their algal endosymbionts and “bleaches.” Although past research has explored the general effects of bacterial strains on host health, this study sought to further illuminate coral-bacterial relationships by examining the survival of E. diaphana simultaneously exposed to known beneficial and pathogenic bacteria (Ruegeria mobilis and Vibrio alginolyticus, respectively) at ambient and elevated temperatures. Considering the heat resilience of V. alginolyticus, it was hypothesized that this bacterial strain would outcompete R. mobilis under normal and heat stress conditions. In three independent experiments, bacterial cultures were prepared to a density of 8×107 cells/mL in sterile seawater. Anemones were inoculated with (1) both strains simultaneously, either (2) R. mobilis only or (3) V. alginolyticus only, or (4) no bacteria. All anemones were incubated at either 27.0˚C (ambient temperature) or 32.0˚C (elevated temperature). Metrics to quantify host health included survival and algal abundance (to detect bleaching); in healthy anemones, both metrics should be relatively high. According to the data, simultaneously inoculated anemones under heat stress had increased mortality relative

to uninoculated anemones at the same temperature. This suggests that temperature alters the effects of V. alginolyticus and R. mobilis on host health, and simultaneous inoculation may be an additional stressor that synergizes with temperature. Furthermore, R. mobilis may not be a promising probiotic to administer to wild coral populations already exposed to V. alginolyticus and/or heat stress. Together, these results elucidate compatible/non-compatible cnidarian-bacterial and bacterial-bacterial relationships, thus progressing the development of conservation techniques that will help us preserve our coral reefs.

Kayleigh Philip

NH - Southern New Hampshire University

Discipline: Business and Entrepreneurship

Authors:
#1 Kayleigh Philip

Abstract Name: Enhancing Restaurant Service: Implementing Autonomous Robots to Improve Customer Experience at Bowls of Steel in Malaysia

This research determines whether the integration of a social autonomous robot into the restaurant business can enhance customer experience. The overarching idea involves utilizing robots to elucidate menu items, thereby allowing restaurants to run even with a shortage of human staff. Motivated by my experience working at Bowls of Steel, a Malaysian restaurant that closed down after experiencing a detrimental loss of staff, the impetus for this study stems from the challenge of staffing and the subsequent consequences. Although labor shortage, especially in the food industry, has always been an issue, the recent pandemic saw almost 450,000 new job openings in the industry as compared to 2019. Other factors, such as an aging population, childcare costs, and an inability to pay workers, have led to this shortage as well. 62% of operators say they can't staff up to meet demand, and 80% say they have a hard time filling open positions, leading to an uptick in restaurants that are forced to shut their doors. The novelty of employing robot staff, proficient in menu elucidation, potentially could sustain the restaurant's operations. The NAO robot was programmed based on previous experience and corroborating research, leading to a prototyped autonomous robot that could replace front-of-house staff in this global labor shortage. It was demonstrated to a group of peers and members of the public to gather feedback, and should consequently be used in a controlled restaurant setting to test its effectiveness before being deployed to the general public. As the programming currently in this specific NAO robot satisfies the guidelines for BOS, more programming will have to be done in order to work in other environments. Although robots have been used in Malaysia to transport food, this is the first instance of a robot socially interacting with customers.

Ellie Phillips

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ellie Phillips
#2 Gang Li
#3 Keyang Wu

Abstract Name: Cobalt-Catalyzed Carbene Insertion: An Eco-Efficient Route to Construct C-O Bond

The synthesis of Carbon-Oxygen (C-O) bonds is of paramount importance to the development of many

pharmaceuticals, agrochemicals, and natural products. Catalysis by transition metals facilitates the straightforward and efficient insertion of carbenes into O-H bonds, offering a reliable and atom-economic route to the creation of C-O bonds. Although significant progress has been made in this field, previous research has primarily revolved around the utilization of noble metal catalysts, such as rhodium and ruthenium complexes. These noble metal catalysts, while effective, often come with substantially higher costs and produce environmentally harmful byproducts. The exploration of base metal catalysts, especially cobalt, remains notably underrepresented in the existing literature. In this study, we present a highly efficient carbene insertion reaction into O-H bonds catalyzed by a well-defined cobalt complex, employing diazo compounds as carbene precursors.Our research showcases the remarkable versatility of cobalt as a catalyst for this transformative reaction. Alcohols, phenols, and carboxylic acids all undergo smooth and efficient reactions catalyzed by cobalt, with good to excellent product yields. This finding can be extended to the late-state diversifications of natural products and bioactive molecules, underscoring the immense potential for practical synthetic applications using inexpensive cobalt catalysts to catalyze carbene insertion reactions.Cobalt's role as a base metal catalyst opens up new avenues for cost-effective and sustainable synthesis in various chemical industries. Furthermore, the development of efficient and selective transformations of O-H bonds using cobalt catalysis has the potential to significantly impact the field of organic synthesis, enabling the streamlined production of valuable compounds.

Kobe Phillips

FL - University of South Florida

Discipline: Interdisciplinary Studies

Authors:
#1 Kobe Phillips

Abstract Name: Habitecture & Bioreceptivity: Combining Ecology, Engineering, and Art for Enhancing Biodiversity

Bioreceptivity is the ability of a material to be colonized by living organisms and is a new term in ecology to discuss the beneficial applications of building materials for ecological uses. Bioreceptivity is both nature-inspired and nature-integrated where colonization by the microbiome and organisms plays a role in the architectural design of an object or space. Land space is limited due to increased urbanization and the challenge of human dominated landscapes reducing regional biodiversity. To adapt to these challenges, designers are seeking new technologies to identify, describe, and create prime locations to enhance biodiversity. The application of ecology, engineering, and arts towards improving biodiversity could address key climate challenges by reducing urban heat islands, protecting pollination services, and improving food security. However, the combination of these disciplines has not yet been analyzed and discussed for educational or design potential. Hence, expanding on the applications of Bioreceptivity theory for artistic and engineering uses is imperative towards ecological design builds. Habitecture and Bioreceptive design can allow us to create urban spaces that appeal to both natural organisms and humans in the built environment. I explore the use of fabrication techniques such as 3D printing and Laser Cutting for habitat development that can be integrated into the urban environment. I illustrate how pollinator reefs can be created to protect wild pollinator populations through a combination of laser cutting and 3D printing. Additionally, I show how artistic sculptures can serve as habitats, such as bat houses or oyster housing sites, that serve to both enhance city aesthetic and biodiversity. Lastly, I discuss the applications of habitecture education through the creation of Habitat Fabrication Labs (3D HAB-Lab) as student organizations at the university level. Key words: Bioreceptivity, Habitecture, Design, Fabrication, Ecology

Kieli Phillips

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Kieli Phillips

Abstract Name: Uncovering the Unknown Functions of Saccharomyces Cerevisiae Gene ECM13

In saccharomyces cerevisiae nearly 10% of genes are still classified with unknown functions. Ecm13 is a non-essential gene with an unknown function. However, it is induced by treatment with 8-methoxypsoralen and UVA irradiation. Using the database Genemania, we identified a genetic interaction with Ecm13 and Rad27. Rad27 is an endonuclease required for Okazaki fragment processing and evolvement in long-patch base-excision repair and large loop repair. Therefore, we hypothesized that Ecm13 functions with Rad27 to execute cell cycle specific processes. To test this, we used ecm13Δ strains under conditions that are known to challenge the cell cycle. Our positive control was dun1Δ, a cell-cycle checkpoint serine/threonine protein kinase. We found when treating cells with 100j/m2 ultraviolet radiation, relative value averages in all experiments show cells deleted for ECM13, ecm13Δ, did not mimic our positive control strain, dun1Δ. We determined that the growth of ecm13Δ appears to have an increased fitness under these conditions. Since there are multiple repair mechanisms and cell cycle checkpoints, it is possible that ultraviolet radiation is not appropriate to test ECM13's functioning in the cell cycle. Further experiments will be required to rule out its potential cell cycle functioning. Understanding uncharacterized genes, such as ECM13, will provide a wealth of knowledge to the field.

Naya Phillips

GA - Kennesaw State University

Discipline:

Authors:
#1 Naya Phillips
#2 Dr. Evelina Sterling

Abstract Name: "Clearing the Air: Hospital-Reported Airborne Illnesses and Dumpsite Dangers"

Dump sites, a breeding ground for endotoxins and bioaerosols, have become increasingly concentrated over the last decade due to the rise in human population, the mass production of goods, and waste resulting from that. Long term exposure of just small bioaerosols and air pollution from these dump sites have shown an increased risk of diagnosis of asthma, skin irritation, and long term cough. Past studies that focused on connecting dump sites in proximity to residential communities found a direct correlation between air quality and reported illnesses. Therefore, this study aimed to examine if these correlations are relevant in local communities within a ten mile radius from dump sites in Gwinnett and Cobb County. The methodology of this experiment included examining and correlating reported airborne illnesses in those communities and the level of air pollutants. To contrast, cities outside of the 10 mile radius were explored to see if there were decreased illnesses reported with the increased proximity from the dump site respectively. As a result, a positive correlation was found between reported airborne illnesses, air quality, and residential proximity to dump sites. Further analyses would be needed to accumulate more data to continue this agenda. Key words: environment, air quality, pollutants, dump sites, toxins, bio-aerosols, inhalants, asthma, respiratory

Kobe Phillips

FL - University of South Florida

Discipline: Education

Authors:
#1 Kobe Phillips
#2 Audra Nikolajski
Audra Nikolajski

Abstract Name: Rooted in Place: A Classroom Reimagined

This presentation will showcase the structure and impact of a novel ideation of a classroom on eco-humanities taught in a garden. The Judy Genshaft Honors College garden is our classroom. Eager students warmed by the Florida form tactile connections with the plants interlaced in their fingers. They unearth how agriculture, ecology, and human flourishing entwine. We sought a need for community-building in the aftermath of the COVID-19 pandemic. In August 2021, we reimagined the garden as a classroom, where students could learn from the soil rather than the whiteboard, and hence Rooted in Place was born. Rooted in Place was founded on the philosophy that building a sense of place also builds community, drawing on constructivist learning theory and active learning to promote dialogue between students to assimilate new knowledge, while challenging preconceived ideas. We wanted our fellow students to absorb how ecology impacts agriculture, mitigates food deserts, and promotes food sovereignty. In the process, they dig into their own cultural roots and explore individual identities and values as an exercise in narrative empathy. Here, we highlight our course modules and discuss their impact on ecological stewardship and community education: (1) Eco-Community, (2) People, Culture, and Food, (3) Sustainability and the Future, and (4) Reconnecting with our Roots. The students moved forward with a heightened understanding of sustainability, stewardship, community, and culture. It is our prerogative to present this pedagogical model as an opportunity for other schools and universities to establish a culture of learning and stewardship as we have.Key Words: Ecological Stewardship, Community Education, Food Education, Narrative Empathy, Ecology.

Angel Phillips

TX - Tarrant County College

Discipline: Humanities

Authors:
#1 Angel Phillips

Abstract Name: The Invisible Box: How Heteronormativity and Intersectionality Shape Public Sexual Identity

The main purpose of my research is to show how the compounded interactions between heteronormativity and intersectionality shape public perceptions and expressions of sexuality. From my research into these concepts, involving many articles from peer-reviewed scholarly journals and research reports, my main findings reveal the consistent reinforcement of heterosexuality in normative gender roles, perpetuating power imbalances and oppressive societal attitudes. The non-disclosure of non-heteronormative identities emerges as a response to perceived stigma, impacting personal and professional lives, with intersecting identities influencing the decision of how and whether to explore and express one’s authentic self. My research methodology includes a meticulous analysis of studies exploring queer disclosure decision-making, familial influences, and workplace dynamics. The theoretical framework for all of my sources includes queer theory, sociological perspectives, and gender studies. My conclusion clearly states that the widespread effects of heteronormativity ultimately shape how society views queerness and how negative views of queerness

influence individuals' expression or masking of sexual identity. My key findings underscore that perpetuating oppressive social, legal, and political strictures reinforces consequences for queerness, leading to harmful masking being perceived as preferential. Individuals with intersecting identities, including racial, cultural, or gendered dimensions, face compounded difficulties in living authentically. Despite improvements in the public perceptions of non-heteronormative identities, the rise of Christian nationalism and anti-LGBTQ+ legislation, the political weaponizing of queerness/straightness on party platforms, and pervasive hate crimes demonstrate the continued danger of expressing authentic identities, forcing individuals to remain closeted for their own safety. By phasing out heteronormativity and embracing intersectionality, we can create a more compassionate and inclusive society where stigma dissolves, authenticity is established as the norm, and conformity is no longer rewarded.

Truc Pho

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Truc Pho
#2 Fangyuan Tian
#3 Asvapathanagul Pitiporn

Abstract Name: Antimicrobial Hydrogel

Metal organic framework has been a topic of interest for while within the scientific community. Zeolitic imidazolate framework (ZIF-8) has raised many interests with its application as a potential drug carrier. With a similar application, this research focuses on creating a hydrogel with zinc nitrate hexahydrate-derived nanoparticles, namely ZIF-8. Since ZIF-8 has the ability to encapsulate and release zinc, it holds potential as an application on human skin in the form of wound dressing. This study intends to use a water-based production process instead of the conventional methanol method, which can cause health concerns due to its toxicity level. The objective of this project is to enhance the hydrogel's safety profile while preserving its effectiveness. The effects of commercially manufactured ZIF-8 and ZIF-8 nanoparticles made from water synthesis will be extensively compared against the Gram-positive (Bacillus subtilis) and Gram-negative (Escherichia coli) bacteria under the incubation period of 16 hours through multiple of comprehensive tests. The objective of this comparison analysis is to identify any differences in antimicrobial activity and to assess the antibacterial capabilities of the hydrogel, hence illuminating the possible benefits of the water-based synthesis strategy concerning its safety and effectiveness. This finding will open opportunities for creating hydrogel formulations that are safer and more effective particularly to use on human skin. The growing need for antimicrobial materials makes it critical to comprehend the subtleties of nanoparticle manufacturing, particularly when it comes to skin-contact applications. The results of this study could lead to improvements in the creation and manufacturing of hydrogels with specific characteristics, benefiting the consumer and biological healthcare markets.

Nigone Phommachack

NM - University of New Mexico Main Campus

Discipline: Health and Human Services

Authors:
#1 Nigone Phommachack

Abstract Name: Socio-Ecological Factors Associated with an Opioid Use Disorder: Results From a National Survey

OUD (Opioid Use Disorders) is associated with overdose, psychological stress, comorbid chronic pain, and mental illness. The recent opioid epidemic has dramatically reshaped policies regarding substance use and rehabilitation with over 100,000 deaths being attributed to opioid overdose during 2021. Data for this analysis were derived from survey responses from the 2019-2020 National Survey on Drug Use and Health (NSDUH) data set. NSDUH data. Descriptive Analysis of Socio-Ecological Factors Associated with an OUD are sponsored by Substance Abuse and Mental Health Services Administration (SAMHSA) to collect data on drug use, mental health, and overall health among noninstitutionalized populations aged 12 years and older. Persons are systematically recruited across the United States using multistage area probability, weighting, and oversampling of minoritized groups to enhance generalizability. The final sample included 176 individuals meeting the criteria for a current OUD based on the inclusion/exclusion criteria. Overall, the majority of participants met the criteria for a severe OUD N=137 (77.8%), followed by a mild OUD N=27 (15.3%), and a moderate use disorder N=12 (6.8%). Factors including feeling anxiety and a history of substance use treatment were associated with having a severe OUD compared to a mild OUD. Individuals reporting anxiety were more likely to report a current OUD compared to individuals without anxiety (β=1.44; P.<0.001). Participants indicating lifetime substance use treatment were less likely to report an OUD compared to participants with a mild OUD (β=0.25; P=0.014). Factors including reporting anxiety and having previously received substance use treatment were statistically associated with having a current OUD. Interestingly, individual sociodemographic factors were not statistically associated with an OUD in our sample. Potentially suggesting targeting mental health and substance use treatment outcomes may serve as a critical step in reducing the burden of OUD among those meeting the criteria for a severe OUD.

Krista Phommatha

CO - University of Colorado at Boulder

Discipline: Natural and Physical Sciences

Authors:
#1 Krista Phommatha
#2 Emma Lietzke
#3 Kayla Sprenger

Abstract Name: Elucidating Monomeric and Self-Associated Conformations of TREM1 during Disease Pathology and their Relation to TREM2-mediated Microglial Activation through In Silico Methods

Alzheimer's disease (AD) is a devastating and complex disease, with no singular genetic cause identified. Potential therapeutics fail to fully mitigate disease progression, let alone cure the disease. Several genetic risk factors have been associated with the development of AD, including mutations on a family of transmembrane microglial proteins called triggering receptor expressed on myeloid cells (TREM). The role of TREM2 in AD pathogenesis is highly studied, but there is little work regarding TREM1's potential therapeutic impact. Previous studies identified that TREM1's proinflammatory immunological function induces microglial phagocytosis of Aβ plaques, one of the hallmarks of AD, yet the mechanisms underlying TREM1 function in AD are unknown.Understanding how both TREM1 and TREM2 conversely act in the presence of AD-based ligands may help clarify how they can be targeted for AD therapeutics. The application of molecular dynamics (MD) simulations allows for atomistic-level insights on the short-term behavior of protein-ligand interactions. Herein, we describe the use of the MD engine, GROMACS, to provide mechanistic insights on TREM1 and TREM2 behavior and structure due to the presence of AD-risk variants and AD-associated ligands. Comparisons of TREM1 and TREM2 simulations over the span of 1 microsecond, combined with alignment analyses of their amino acid sequences, revealed key differences in TREM1 and TREM2 behavior. Simulations of the homodimeric form of TREM1 provided insight into the function of TREM1's monomeric and homodimeric forms, and how these structures impact ligand binding capabilities. Ultimately, uncovering

these mechanisms will help elucidate how binding causes conformational changes and downstream signaling events that impact microglial function during disease pathology.

Susan Pickett

IL - Eastern Illinois University

Discipline: Health and Human Services

Authors:
#1 Susie Pickett
#2 Nichole Mulvey

Abstract Name: Social Responsiveness Measures of School-Aged Children During Facilitated Conversation

This study aimed to compare social responsiveness skills in school-age children diagnosed with Autism Spectrum Disorder (ASD), other children identified with social communication deficits not related to ASD, and their typically developing peers. Participants included 12 male students between the ages of 10-15 years. Skills were elicited during conversational language sampling tasks that included three standardized prompts followed by intentional socially based bidding and responses from the examiner. Social bidding and responses frequently included the use of mental state verbs, stating preferences, and/or emotional vocabulary. Through video analysis and transcript review, both quantitative and qualitative data were collected and analyzed to determine differentiating patterns of performance. More specifically, for every social bid produced by the examiner, the study measured whether or not the participant provided a response. Quantitative data reflects percent response to social bids. In addition, during observation of the recorded conversation and transcript, the quality of each social response was rated on a scale of 0-3 that reflected the appropriateness and specificity of the response by context. During analysis, challenges to consistent rating were examined, resulting in further refinement of the rubric for more practical clinical use. Preliminary data analysis indicates minimal group differences in quantity of responses, predictably due to children this age with social deficits learning to respond to communication partners through direct intervention targets. Much greater variation has been noted in the quality of social responsiveness and more detailed analysis is being completed to determine if there are group differences. Challenges to eliciting verbal social skills during authentic assessment and finding measurement tools for this purpose will be shared. The importance of assessing social responsiveness to determine intervention priorities for social communication will also be discussed.

Elizabeth Pickford

VA - Virginia Military Institute

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Pickford
#2 Molly Kent
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#5 Courtney Novotny

Abstract Name: Concurrent Use of Nicotine and Fluoxetine: Effects on Aggression and Cortisol Levels

Nicotine dependence is notably higher in individuals diagnosed with mood disorders. Nicotine has been

shown to alleviate symptoms associated with mood disorders, therefore some individuals will take up smoking tobacco in order to self-medicate. On the other hand, there is some evidence to suggest that nicotine use might precipitate mood disorders, with studies showing that smokers have a higher risk of developing depressive symptoms than nonsmokers. 80% of adult smokers started during adolescence, and adolescents who smoke every day have a 70% occurrence of psychiatric disorders, and greater rates of comorbidity in adulthood. Because of the large overlap between nicotine use and dependence and mood disorders, it is essential to understand the interactions between nicotine and commonly prescribed antidepressants, such as fluoxetine (trade name Prozac), and their effects on those who intake both. Betta splendens, commonly known as betta fish, are aggressive creatures which allows them to be ideal candidates for behavioral studies. In several studies, Betta splendens were given fluoxetine in their aquarium's water. These fish proved to be less aggressive than those left untreated. This shows that the Betta splendens have the same serotonin receptors as humans and can be used as a model for mental illness treatment. In this project, betta fish were administered nicotine and fluoxetine and then their behavioral aggression was measured. Each fish underwent an untreated test, and randomly a fluoxetine only, nicotine only, or fluoxetine and nicotine test. A mirror was placed in each aquarium to quantify aggression levels by recording and quantifying frontal displays (erecting the operculae, fins, and tail while facing an opponent), broadside displays (swimming with the side of the body facing opponent accompanied by erection of fins and tail), and average distance from the mirror.

Sachintha Pilapitiya

UAE - New York University - Abu Dhabi

Discipline: Social Sciences

Authors:
#1 Sachintha Pilapitiya

Abstract Name: Swap-Worthy? The Geopolitical Determinants of China's Bilateral Swap Agreements

China's Bilateral Currency Swap Agreements (BSAs) were fueled by its RMB internationalization agenda. Apart from trade and investment promotion, these swaps have also been valued by recipients as backstop liquidity facilities. I theorize that given the benefits to its partners, China weighs economic (RMB internationalization) and political benefits (rewarding its allies) to itself when selecting swap recipients. I hypothesize that geopolitical alliance from a supplier's perspective is an overlooked determinant of BSAs. More importantly, I point out that signing a swap is only the beginning. Scarce attention has been given to factors determining the status (cancellation, renewal and expansion) of these signed swaps. I hypothesize that signed swaps remain contingent on bilateral relations with China. I compare the ideal point distance (in UNGA votes) between countries and China and BRI summit participation (2017 and 2019) as proxies for alliance, both in the extensive and intensive margins to test these hypotheses. This study, if the results confirm our hypothesis, portrays how smaller economies are both rewarded by following China's economic leadership and yet also constrained by China's financial statecraft.

Brooklyn Pilgreen

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Brooklyn Pilgreen
#2 Ashton Burkhead
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#4 Jacilyn Olson
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Ashton Burkhead

Abstract Name: Effect of a 10-Week Employee Wellness Program on Exercise Barriers and Physical Activity

Introduction: University employees' physical activity (PA) levels vary depending on their individual job, but many are sedentary in nature. American College of Sport Medicine (ACSM) guidelines recommends 500-1000 MET-min-wk-1of PA. However, university employees may face numerous barriers to meeting these guidelines due to job requirements and a reduced self-efficacy. Purpose: The aim of this study was to determine if participation in a 10-week physical activity (PA) program has an impact on participant PA level and barriers self-efficacy (BSE). Method: Participants (N=15) were a convenience sample recruited via an e-mail sent to employees at a regional university. Participants completed the International Physical Activity Questionnaire (IPAQ) and the Barriers Self-Efficacy Scale (BARSE) at baseline. The IPAQ is a self-reported questionnaire used to estimate weekly volume of exercise spent in walking PA, moderate PA, vigorous PA, and moderate-to-vigorous PA (MVPA). The BARSE is a 13-item questionnaire scored as an average of 0%-100% confidence to overcome specific barriers to exercise. Participants were then matched with a student trainer to complete individualized exercise programming a minimum of once per week. Data were collected again at the end of 10 weeks. A paired samples t-test was used to determine if changes occurred to PA or BSE. Results: Weekly total PA (MET-min-wk-1) significantly increased from pre- (M=1705.2 ± 2416.23) to post-assessment (M=3030.87 ± 1920.28; p=.05). No other PA variables significantly changed (p>.05). Barriers did not change significantly (p>.05) from pre (M=65.94%±14.65%) to post-test (M=63.07% ±4.79%). Conclusion: While PA almost doubled, BSE was not impacted by programming. More strategies may need to be utilized to impact BSE, but an individualized program may be sufficient to modify PA. Future research should examine PA habits following completion of trainer lead programming to determine if PA habits are sustained autonomously.

Vito Pilosi

PA - Westminster College

Discipline: Humanities

Authors:
#1 Vito Pilosi
#2 Patricia Clark
#3 Angela Lahr
#4 Jamie Kohler

Abstract Name: Vito Pilosi IV Deception Tactics: The Successful Use of Maskirovka for the Soviet Union during WWII

Deception tactics were a widely used strategy during World War II for every country involved in the turmoil. Deception tactics, also known as Maskirovka within the Soviet Union, is the misleading of the enemy in a strategic manner to benefit the army. Deception tactics were used by Axis and Allied Powers on multiple fronts during the war. Fifteen hundred attacks were carried out using deception tactics, and up to five hundred tons of bombs were dropped on dummy airfields. Many scholarly sources discuss deception tactics, but not one looks at how the fight along the Eastern front helped the Allies along the Western front. How did the use of deception tactics during World War II help the Soviet Union win decisive battles along the Eastern front? Primary sources such as Russian photos and diaries from the time explain how successful the deception tactics were. Combining background research on Maskirovka with primary sources demonstrates that the battles won were vital in the Soviet war effort. German troops fought a two-front war. The use of Soviet deception tactics helped the Soviet Union by keeping the Germans occupied on the Eastern front to alleviate pressure on the Western front.

Jose Pineda

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
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#2 Samer Al Nussirat
#3 Meredith Wieber

Abstract Name: Solar Flare Gamma Ray Spectroscopy

The Gamma-RAy Spectrometer and Pointer (GRASP) is a simple and robust instrument design aiming to do spectroscopy and, in high count situations, locate X- and gamma-ray bright sources at the Sun. It includes four high-energy resolution scintillation detectors along with a front-facing aperture. In this poster, we discuss the importance of such an instrument and its reliability. To prove the concept for GRASP, we created a simple engineering design model using Bismuth-Germanate (BGO) Scintillator detectors and a variety of radioactive sources. Using the data from these tests, we then performed a series of Geant4 Monte-Carlo simulations to compare with our lab measurements. Our goal with GRASP is to piggyback on a future high-altitude balloon experiment, supplement the imaging of solar flare bright features, and validate the concept for a possible future instrument to be sent to space.

Manuela Pinheiro

IL - University of Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Adarsh Suresh

Abstract Name: Template-coating pair derived macroscale carbon foams for CO2 sequestration

The continuous rise in carbon dioxide emissions highlights the dire need for additional research in the Carbon Sequestration and Storage (CSS) field. Porous carbons (PCs), a promising class of materials for CO2 sequestration, are lightweight and possess extraordinarily high surface areas. Furthermore, their scalable synthesis and remarkable thermomechanical stability make them suitable for demanding environments. Additionally, their hierarchical porosity helps optimize capacity and kinetics. While PCs have shown great potential, the fabrication of CO2-selective PCs derived from cost-efficient and sustainable starting materials and at industrially relevant quantities has remained a challenge. Using a template-coating pair design, this work demonstrates that PCs can be fabricated using a divinylbenzene-based Polymerized High Internal Phase Emulsion (Poly(HIPE)) as a template and polybenzoxazines, thermally stable, sustainably-derived polymers, as a coating. The carbons synthesized through this method exhibit excellent thermal and mechanical stability, having reached unprecedented atomic efficiency of 98.7%. Scanning Electron Microscopy (SEM) images confirmed the successful fabrication of this material, which can be enhanced for selectivity through the functionalization of nitrogen-rich molecules, enabling carbon capture at ambient conditions.

Adriana Pinheiro Machado

NJ - New Jersey City University

Discipline: Natural and Physical Sciences

Authors:
#1 Adriana Pinheiro Machado
#2 Dr. Meriem Bendaoud

Abstract Name: Antibiofilm and Antimicrobial Properties of Schinus terebinthifolia Fruit Extract

In the past few decades, the misuse and overuse of antimicrobials has led to an increase in the number of antimicrobial resistant infections, which according to the World Health Organization, has become a major worldwide concern and a threat to public health. The need to develop new therapeutic alternatives to address the ineffectiveness of conventional antimicrobial treatments is crucial. The rising field of phytotherapy offers an efficient approach to addressing this global health crisis. In this study, we investigate the Schinus terebinthifolia plant fruit extract as a potential low-cost alternative to antibiotics. This highly available plant is widely used in gastronomy and known in folk medicine for its wound healing and health-promoting properties. In this study, we evaluate the plant's fruit extract antimicrobial and antibiofilm properties against 22 different strains of bacteria and fungi using the broth microdilution, biofilm, and spot assays in microtiter plates. The results show that the fruit extract has a significant antibacterial effect on several gram-positive and gram-negative pathogenic bacteria including Staphylococcus aureus, Enterococcus faecalis, Pseudomonas aeruginosa, Acinetobacter baumannii, Bacillus subtilis, Bacillus cereus, Escherichia coli, and Staphylococcus epidermidis. In addition, the plant extract displays varying degrees of antibiofilm properties at different concentrations against bacteria and fungi. These findings suggest that the S. terebinthifolia fruit extract has the potential to be used as a novel antimicrobial alternative in the treatment of infectious diseases. Future studies will focus on further characterization of the fruit extract.

Manasvi Pinnaka

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Farwa Kazmi
#2 Syed Najafi

Abstract Name: Utilizing a Convolutional Neural Network to Classify the Pathological Patterns of Pneumonia

Pneumonia is a respiratory infection that causes over a million hospitalizations and 50,000 deaths every year, making it the fourth most common cause of mortality overall. Artificial intelligence has provided us with the ability to transition from traditional diagnostic tools to a more machine-driven version through the analysis of patient chest X-ray scans, which can significantly improve diagnoses of pneumonia in terms of cost, time, and accuracy. In the current work, a preliminary model utilizing the convolutional neural network algorithm to analyze chest X-ray images from Kaggle (an open-source database) has been developed for predicting pneumonia presence. Having performed with an accuracy in the high 90s, the model was adapted to differentiate between pneumonia types as well. The diagnostic process for this disease when it comes to analyzing chest X-ray scans includes classification in terms of acquisition setting, severity, and pathological pattern. Previous research studies of this type have primarily focused on attempting to to determine the cause of the pneumonia, which includes a bacterial, viral, or fungal source. However, these different causes can manifest as different radiological patterns, limiting the ability of physicians to make this diagnosis regarding cause directly from chest X-rays. This work focuses instead on improving machine-driven diagnostics based

on the pathological patterns of pneumonia in chest X-ray scans, specifically lobar, interstitial, and bronchopneumonia. After categorizing the previous Kaggle data further into these types, the model performed with a moderately high accuracy of about 78.65%. While differentiating between different pneumonia cases in this manner might not always correlate to a certain type of cause for the disease, this characterization can give doctors a much more comprehensive understanding of what they are dealing with. Furthermore, these categorizations can inform doctors of overall pneumonia severity and progression in patients, thereby influencing and improving treatment plans.

Ryann Piperno

OH - University of Findlay

Discipline: Natural and Physical Sciences

Authors:
#1 Ryann Piperno
#2 Justin Rheubert

Abstract Name: The Equine Industry's Opinion on Bacteriophages as an Antibiotic Alternative

In the last decade, antimicrobial resistance (AMR) has become a large topic of concern across both human and animal medicine. With a dwindling list of effective antibiotics, and a growing list of resistant infections and deaths, the need for alternatives is reaching its peak. When discussing antibiotic alternatives, considering both their efficacy and their acceptance into medical practice is important, especially in veterinary medicine. Physicians and owners must accept the alternatives for them to be a practical and effective replacement to antibiotics. In the equine industry, antibiotics have a complicated history, as many owners opt to treat horses on their own, in a practice known as farm medicine. Practices such as these may perpetuate AMR and be a major obstacle to implementing antibiotic alternatives. To assess perceptions of AMR and antibiotic alternatives (phage therapy), a survey of individuals within the equine industry, including veterinarians and non-veterinarians, was conducted. While this study demonstrated that on-farm antibiotic practices are prevalent in the equine industry, many members of the industry demonstrated a desire for antibiotic alternatives—responding favorably to the use of bacteriophages as a potential alternate therapy. Participants had positive opinions regarding phage therapy, but highlighted the necessity of future research and education. These findings indicate that the equine industry could be ready for, and serve as a leader in, the advancement of veterinary medicine by embracing antibiotic alternatives.

Jamila Piri

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
#1 Jamila Piri
#2 Nathalie Dugas
#3 Krupali Patel
#4 Jessica Bomyea

Abstract Name: Examining Working Memory as a Predictor of Public Speaking Distress

Public speaking anxiety (PSA), a social anxiety subtype, can inhibit speech performance. Severity of social anxiety has previously been negatively associated with working memory (WM) performance. Conversely,

stronger WM capacity may lead to lower levels of speech distress for individuals with PSA. Our research explores whether WM performance predicts changes in speech distress over time in individuals with PSA. We hypothesize that Operation Span (Ospan) WM performance will predict changes in Subjective Units of Distress Scale (SUDS) ratings, with higher Ospan scores associated with lower SUDS scores. Participants (n=25) completed a speaking related behavioral challenge where they performed three speeches while they rated their distress using SUDS. A repeated measures GLM analysis showed that WM scores did not predict maximum SUDS scores across speech trials. However, three trends were observed: 1) a general downward trend of SUDS scores across trials, 2) higher WM scores were associated with lower initial SUDS scores and a smaller change in scores across trials, 3) lower WM scores were associated with higher initial SUDS scores and a larger change in scores. Considering the small sample size of the study, results may be insignificant due to inadequate power. Further research may benefit from a larger sample size to explore the trends present that align with previous literature.

Jamila Piri

CA - University of California - San Diego

Discipline: Social Sciences

Authors:
#1 Jamila Piri
#2 Jessica Ruggieri
#3 Nathalie Dugas
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Jessica Ruggieri

Abstract Name: Evaluating the Moderating Effects of Chronic Alcohol Use on PTSD Symptoms and Working Memory Capacity

Comorbid Post Traumatic Stress Disorder (PTSD) and Alcohol Use Disorder (AUD) is common among Veterans. Previous literature states that PTSD symptoms and chronic alcohol consumption are separately correlated with working memory (WM) deficits, and suggests that novel computerized WM training is effective in PTSD symptom reduction. Considering that AUD and PTSD may impact WM and its malleability with training, we hypothesize that alcohol use will moderate the relationship between the change in PTSD symptom scores and WM over time in Veterans with clinical PTSD. Participants completed the Clinician Administered PTSD Scale for DSM-5 (CAPS-V) (n=43) and Reading Span (RSpan) WM task (n=36) prior to and following eight weeks of computerized WM training. The Timeline Followback was used to assess the maximum number of alcoholic drinks consumed in one day within the past thirty days (AlcMax) to gauge drinking severity as a continuous variable. Using SPSS 28.0.0, we conducted repeated measures GLMs for pre- and post- CAPS-V and RSpan, with and without AlcMax as a covariate. Pairwise comparison analyses wer conducted, with High or Low Drinking groups defined by DSM-V criteria for high alcohol consumption (males: >4 drinks, females: >3 drinks) to categorize AlcMax values. There were significant main effects for PTSD symptoms (F=51.420, p<.001), and RSpan (F=11.417, p=.002) over time. The main effect of WM capacity scores over time was moderated by drinking severity (F=5.146, p=.030), while PTSD symptom change was not. High alcohol consumption was associated with a greater change in WM capacity scores over time (F=21.804, p=.003) than low alcohol consumption (F=4.014, p=.056). The data suggests that chronic alcohol consumption moderates the effect of training on WM capacity change over time. Future research can explore the impacts of chronic alcohol use by including individuals with severe AUD to expand upon drink-wise categorization and analyses.

Giavanna Pitagno

NY - Siena College

Discipline: Interdisciplinary Studies

Authors:
#1 Giavanna Pitagno

Abstract Name: Sustainable Data Collection and Analysis for Nonprofit Applications

Data plays a pivotal role in the operations of every nonprofit- yet the lack of resources and data-focused experience in grassroots organizations often leaves vital data uncollected or underutilized. Proper usage of data can strengthen grant writing, better inform business decisions, and allow organizations to tell the stories of the communities they serve. Through an analysis of current nonprofit data practices and a secondary data analysis for The Food Pantries for the Capital District, this presentation provides nonprofits with the groundwork for sustainable data collection and analysis. Surveys show that the biggest challenges among small nonprofits are collecting appropriate data and having the skills, software, and personnel to analyze it (EveryAction and NonprofitHub 2016). This guide discusses specific nonprofit applications for descriptive statistics, hypothesis tests, and regression- as well as the data that must be collected to do so. With the addition of a practice template, organizations can be equipped to answer questions such as: “How has our clientele changed over the past X years?” and “How do varying clientele characteristics predict service levels?” in an easily replicable manner.

Sierra Plares

CA - Vanguard University

Discipline: Social Sciences

Authors:
#1 Sierra Plares

Abstract Name: Identity Formation of Orphaned and Destitute Children Transitioning from Non-Kinship Care to Family-Based Care

With the rising mental health issues among minors, several studies have shown that children who are separated from their families show clear signs of distress symptoms or even post-traumatic stress disorder. This study worked with an NGO in Southeast Asia that provides shelter, education, and care for orphaned and destitute children. The NGO was hoping to find recommendations in order to create better policies for the program. This study helped with creating in-depth analytical questions for the research instrumentation. This study aims to see: How does transitioning to kinship care after undergoing their program affect the identity formation of vulnerable children? Each respondent was monitored by the NGO. In order to answer this research question, this study analyzed 37 respondents in the form of in-depth interview transcriptions. This study uses chi-square crosstabulation using, to find correlations between the variables included in the data set. Our preliminary interview findings show that many of these children had a traumatic familial history, but overall plan to continue their education, have a positive outlook on life and have set plans for their future careers. One limitation of this study is the language barrier between the data analyzers and the interviewers. This means that some of the language used in the transcriptions could have been lost in translation. Another limitation this study had is that the respondents knew their interviewers personally, so they could have been giving ‘correct’ answers rather than ‘honest’ answers. For further studies, this study proposes continuing the data collection in a longitudinal study design.

Elizabeth Plascencia

CA - California State University - Los Angeles

Discipline: Social Sciences

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Abstract Name: Exploring Social Learning Strategies on YouTube through Sing-along Videos, Active Participation, Social Interactions, and Problem-solving Skills

Bandura's Social Learning theory says children can learn skills and behaviors through modeling. Free media platforms like YouTube have increased children's access to video content and created new ways to learn skills and behaviors via social learning. One type of content children watch is sing-along songs. Songs can enhance learners' listening and speaking skills. Using the modeling theory, do songs encourage children to learn other skills and behaviors, and if so, how? Prior research is conflicting on how effective sing-along songs are in teaching children's skills. For example, because songs do not encourage conversational turns, they may not be as effective for language acquisition. On the other hand, sing-along skills may encourage social interaction and active participation. This study examined the prevalence of three skills among sing-along videos: active participation, social interactions, and problem-solving skills. We hypothesized that sing-along videos encourage active participation and social interactions but not problem-solving skills. An online survey was distributed to parents across the U.S. (N=232, Mage = 4.43 years) asking them to provide the three most recent YouTube videos their children watched. We preliminarily coded 60 videos in ranges of 5-15 minutes. Out of the 60 videos, 52% were sing-alongs, and of these sing-along videos, 12% were active, 69% had social interaction, and 54% had problem-solving. Although somewhat contradictory to our hypotheses, these findings suggest that sing-along videos are recommended for parents who want to encourage social interaction and problem-solving skills with their children. This study is important because it helps parents make informed decisions about the content their children are watching, ensuring it aligns with their educational goals, promotes social skills, teaches them problem-solving skills, and contributes positively to their children's development.

Liliana Plata

FL - South Florida State College

Discipline: Natural and Physical Sciences

Authors:
#1 Liliana Plata
#2 Kim Pham
#3 Kate Calvin
Kim Pham

Abstract Name: Early Studies on the Effectiveness of Industrial Hemp as a Phytoremediator of Polluted Waters

Nitrogen and phosphorus are essential nutrients for plant life, however, too much is detrimental. Fresh water lakes and waterways in Florida are declining as the result of nutrient pollution. Excess nutrients from fertilizer, animal feed, phosphate mine events and human waste have been identified as major contributors to this decline. Industrial hemp (Cannabis sativa) is a well-known soil remediator, shown to remove pollutants such as heavy metals and radioactive chemicals from polluted soil. This project tests the effectiveness of industrial hemp in removing excess nitrogen and phosphorus from polluted water. The goal is to grow plants that will survive in impaired water long enough to pull out some of the excess nutrients. The hypothesis is that the excess nitrogen and phosphorus in the impaired lake or pond will provide nutrients needed for the

plants to survive. The growing strategy used here conditions seedlings to seek water directly and three generations of plants have demonstrated the ability to survive with roots submerged in water for over three months. Established EPA methods were used for segmented flow analysis of Total Kjeldahl Nitrogen (TKN), and Total Kjeldahl Phosphorus (TKP) in the water. Preliminary data show that over a period of 36 days and 12 samplings, five plant setups removed a total of 49.4% of the phosphorus provided and 53.0% of the nitrogen provided. Net contributions by the plants alone accounted for 62% of the TKN removed and 73% of the TKP removed. Additional trials are pending and nitrate/nitrite studies are underway. We also have a subsequent group of four cloned plants grown from cuttings of plants raised in water, which are collectively taking up 1757 mL on average every three days and growing rapidly. We predict that the nutrient uptake by these clones will be higher than the preliminary data reported here.

Robert Pleasants

NC - University of North Carolina at Chapel Hill

Discipline:

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#2 Aaron Pattillo-Lunt

Abstract Name: Welcoming First Year Students into an Undergraduate Research Community through Peer Mentorship and a Course-Based Approach

Many students enter their universities concerned about their lack of research experience, intimidated by older and well-credentialed faculty, and overwhelmed by the lack of clarity about how to get started in undergraduate research, especially at large R1 universities. To enhance and accelerate their entrance into the research community, approximately 200 students a year participate in Accelerated Research, a "Special Opportunity" granted through UNC-CH Admissions and administered through the Office for Undergraduate Research (OUR). The program provides first year students with increased outreach from the OUR, a peer mentor, and access to one of two one-credit courses (“Modes of Inquiry” or "Research Beyond Academia") that both provide them with explicit instructions and assignments for finding and/or creating research opportunities. Each of these classes also provides ~10 guest speakers who are researchers within academia (“Modes of Inquiry”) or researchers who are in industry, the non-profit sector, or governmental organizations (“Research Beyond Academia”). Participants in these courses took surveys to self-report how the courses affected their confidence levels and feelings of inclusion at the university. This presentation will share data from these surveys as well as qualitative reports about students’ reactions to Accelerated Research at the end of their first semester, their first year of the program, and during the spring semester of their final year at the university. Survey and qualitative data both show increased confidence in getting started in undergraduation and increased motivation to work in research-related fields.

Mya Ploessl

WI - University of Wisconsin-Whitewater

Discipline: Education

Authors:
#1 Mya Ploessl
#2 Lauren Haas
Lauren Haas

Abstract Name: Exploring Media for Leveraging the Voices of Families of Students with Disabilities in Teacher Preparation and Research

Family-school partnerships are a high leverage practice impacting student outcomes across academic, social, and behavioral goals (CEEDAR, 2017). In special education, literature on family engagement indicates the critical nature of parent-to-parent support for advocating effectively with schools on behalf of their children (Rossetti & Burke, 2018). This presentation describes the implementation of a common social technology, podcasts, as a pathway to leveraging family voices for the purpose of connection and strategic advocacy for students with disabilities and their families. To do this, we will first synthesize research on family experiences with special education, illuminating barriers and pathways to meaningful engagement. Second, we will present preliminary findings of a study asking, How can online media, such as podcasts, promote knowledge and sharing amongst families of students with disabilities and pre-service educators? By sharing quotes and vignettes from an ongoing analysis of podcasts featuring parent voices, we will exemplify emerging themes such as the importance of early intervention, acquiring assistive technology, and the impact individual teachers can have on students with disabilities and their families. Finally, we will share early stages of a website generated from this project to educate, support, and connect families of students with disabilities. Organized into themes (e.g., advocacy) and categories (e.g., assistive technology), this site will feature parent/family voices that we wish to share at the 2024 NCUR conference. Attendees will leave our presentation with an understanding of the importance of supporting parents and families of students with disabilities, especially those who may be struggling or feeling alone, and the knowledge sharing potential of online access to a community of family voices. In closing, by contributing to a network of families willing to share their stories, needed changes to policy and practice can be better articulated and shared with policymakers, researchers, and other service providers.

Emma Podlich

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
#1 Emma Podlich

Abstract Name: Density Map Estimation for Automated Cell Image Analysis

There are many images in the medical field that require computational processing to speed the process of analyzing images. In the past, scientists have manually counted cells in images which is time-consuming and leads to a risk for mistakes. Cell images are complex in their nature; they typically have a great number of cells which makes manual counting difficult and cells are oriented in a crowded manner, making automated cell detection difficult. Therefore, efforts in automated analysis have been proposed, but there are still problems with detecting cell variation in size, shape, cell crowding, and background noise in images. Recent advancements to count cells have used Convolutional Neural Networks (CNN) models. CNN models are deep learning models in image analysis that use convolutional layers to learn image features for object detection. CNN models such as Fast-RCNN, and Faster-RCNN have been used in general object detection methods, however, in cell detection there are errors in getting accurate cell numbers due to cell crowding. Further research has incorporated the use of density map estimation with CNN models to help with errors in cell crowding. Density map estimation uses the learned image features from CNN models to generate heatmaps of the image, displaying the distribution of cells in images. These density maps can improve the detection of cells by focusing on separating the counts of crowded cell areas. This research aims to create a density map to count cells in a unique dataset of limited microscopic cellular images. This dataset will be used to train and test a density map for generating heatmaps of images. The overall objective of this research is to improve the accuracy of automated cellular image analysis practices to alleviate the workload of biomedical professionals.

Hope Pohlman

FL - The University of Tampa

Discipline: Social Sciences

Authors:
#1 Hope Pohlman
#2 Ryan Welch

Abstract Name: Death and Demilitarization: The Effect of Demilitarizing Law Enforcement Agencies on Police Violence

Does demilitarizing law enforcement agencies (LEAs) decrease police violence? Over the past two decades, police killings have increased consistently, with over 1800 deaths occurring in 2021 alone. In continuing the research of Macdonald, Kaminski, & Smith (2009), and Delehanty, Mewherter, Welch, & Wilks (2017), we theorize that demilitarization, in the form of introducing less-than-lethal weapons usage polic ies and the forced recall of military supplies originally from the US Department of Defense 1033 program, leads to a decrease in police killings. Data was collected from two open-source databases (Fatal Encounters & Puppycides) along with data on use-of-force incidents from Macdonal et al. (2009). Additionally, we received data from Lowande (2021) on recalled 1033 supplies from different LEAs. We ran linear regression models to examine the relationship between recalled 1033 supplies and police killings. We also performed a time series analysis of when different LEAs implemented less-than-lethal force policies and how that affected the number of people killed by police.

Aman Gupta Pokal

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Aman Gupta Pokal
#2 Karim Budhwani
#3 Zeelu Patel
#4 Areesha Charania

Abstract Name: Identifying live solid tumor specimen preanalytical factors to reduce lab test variability

Cancer is a leading cause of death worldwide and research plays a vital role in developing better treatments. For this to happen, preserving tumors specimens until they reach the laboratory is a vital part of cancer research. Preanalytical factors of handling tissue are critical aspects that occur prior to collecting specimen and involves the process of obtaining the specimen. These factors can affect results and accounts for 32 to 75 percent of laboratory errors. The laboratory has no direct control on this process. Handling tissue specimens involves specimen collection, storage, media, storing, ischemia time (hot and cold), packaging, and transportation. The specimen spends most of the time in the transportation part of the preanalytical factors. There is a transport protocol for fixed tissue transport, organ transport, and liquid biopsy transport; however, there is not a set protocol with specific step guidelines for live tumor tissue transport. Our study’s goal is to produce a protocol for preanalytical factors of live tissue collection and handling to preserve the RNA quality and expression before specimen acquisition by the laboratory. To assess the RNA expression and tissue duality, we performed 5 different assays: RNA Sequencing Assay, KI-67 (Kiel 67) Assay, Hematoxylin and Eosin (H&E) Staining Assay, Caspase-3 Activity Assay, and Live/Dead Cell count. KI-67, H&E, caspase-3 staining intensity using ANOVA showed that there is not a significant difference between the two groups. The Cell Titer-Glo (CTG) assay was performed to assess cell viability with a t-test statistical analysis.

The cell viability in the sample before transport was not different from that in sample after transport. These samples are vital for testing new therapies leading into better understanding of the cancer development, progression, and resistance to treatment. To make all this happen, following a strict and proper live tumor tissue transport protocol is crucial.

Tony Polanco

CA - Chapman University

Discipline:

Authors:
#1 Michael Cheng
#2 Tony Polanco
#3 Nasim Estakhri

Abstract Name: Subwavelength Near-field Control with Metasurfaces

This research shows a possible path to creating arbitrary near-field electromagnetic distributions using metasurfaces with 100% transmission efficiency. It has been previously shown that this is theoretically possible using metasurfaces of different local admittances (N. Estakhri et al., 2017 IEEE APS & USNC/URSI, pp. 1723-1724). Our research consists of figuring out a method to generate metasurfaces that produce the prescribed near field (through the implementation of such admittances over different segments of the surface). For this purpose, we first construct a platform in the electromagnetic modeling software COMSOL Multiphysics. Then we used the genetic algorithm optimization tool in MATLAB to generate a series of metasurface segments that are as close as possible to the desired calculated admittances. The final surface consists of an FR4 sheet covered in sections by a thin sheet of copper, in the same fashion as PCB printing is done today. Possible applications of near-field control are sensing, boosting nonlinear effects, and particle trapping, as high-power concentrations can be artificially created in the near field.

Alandria Polk

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Alandria Polk

Abstract Name: Housing Design for Stargardt Disease

Design a single-family house for an adult with Stargardt Disease. Stargardt Disease is a rare genetic eye disease that happens when fatty material builds up on the macula. The small part of the retina is needed for sharp, central vision. Vision loss usually starts in childhood - but some people with Stargardt Disease don't begin to lose their vision until they're adults. This disease has no treatments. The symptom is a slow loss of central vision in both eyes. Gray, black, or hazy spots in the center of vision, Sensitivity to light, and need more time for eyes to adjust between light and dark places. According to the research findings through literature review and case studies, things to consider when designing for the visually impaired are lighting, floor selections, furniture placement, floor plan layouts, materials, colors, and textures. When doing lights for the visually impaired, dimmable and phone-controlled lights are high on the list. Users control their phones without searching the walls by connecting them to the lights. Using different flooring materials or colors on walls creates transition spots in the home for better wayfinding. Going from carpet to tile or changing colors

in other rooms lets users with visual impairment know which room they are entering. Shape using different shades of colors or textures in a room helps them understand what they are touching. Not having a coffee table in the middle of the living room but in the corner helps keep people from tripping accommodate to the furniture placement. Floor plan layouts are straightforward, so they don't get confused and turned around. Using a darker color on the bottom cabinet with a lighter countertop enables them to differentiate between the color tones. Housing design for the visually impaired allows designers to accommodate someone's wants by speaking to their needs.

DaMonika E. Polk

TX - Texas Woman's University

Discipline: Natural and Physical Sciences

Authors:
#1 DaMonika E. Polk
#2 Taylor M. Hickman
#3 Emily Keene
#4 Dayna L. Averitt

Abstract Name: Sex Differences and the Effects of Stress on the Development of Pain Behaviors in a Rat Model of Temporomandibular Joint Disorder

Research has shown that women are four times more likely to suffer from temporomandibular joint disorder (TMD) than men. This can be attributed to the elevated levels of psychological stress experienced by women during this stage of life. Although the link between stress and orofacial pain in women has been established, further research is required to comprehend the mechanisms behind this fully. This investigation aims to employ a clinically relevant rat model of TMD pain using the unilateral anterior crossbite (UAC) method. We hypothesized that females would develop greater TMD and/or widespread pain behaviors compared to males. To test this hypothesis, we attached a dental prosthesis to the front teeth, creating a crossbite. We then measured four distinct pain behaviors every week for four weeks. We detected mechanical allodynia (response to a non-noxious stimulus) at the temporomandibular joint (TMJ), periorbital region, and the hindpaw. Also, we tested thermal hyperalgesia (enhanced response to a noxious stimulus) at the hindpaw. We added a stressor (forced swim test; FST) in a different set of rats as a comparison. We report the onset of TMD pain behaviors at the TMJ at three weeks following prosthesis attachment. Before the attachment, we did not observe pain behaviors in the rat hindpaw or the periorbital region. However, following exposure to the stressor and application of mechanical allodynia and thermal hyperalgesia, we observed increased pain sensitivity in the hindpaw, suggesting the presence of referred pain. Our results also indicate that females develop more significant TMD pain behaviors outside of the primary pain area and that stress may lead to comorbid widespread pain, affecting regions of the body inferior to the TMJ. This research was funded by NIH NIDCR AREA grant DE025970.

Elaine Pollard

GA - Kennesaw State University

Discipline: Interdisciplinary Studies

Authors:
#1 Elaine Pollard

Abstract Name: Reducing Fatalities on the Road: Georgia’s Hands-Free Law and Other Possible Solutions

It is important to know the conditions that make driving deadly. Georgia instituted the Hands-Free law in July 2018 that requires drivers to not touch their cell phone while driving. Did the number of fatal accidents or the number of fatalities in those accidents change after the law? Websites tally fatalities, but do not study how these fatalities are associated with road conditions and structures before and after the law. The purpose of this study is to address this need and to research factors that could decrease fatalities in Georgia and the nation.Data from 10,166 fatal accidents from 2015 to 2021 in Georgia from the Fatality Analysis Reporting System's website were divided into groups before and after the Hands-Free Law. Whether the relationships changed before and after the Law were considered between these two sets of variables: Weekday, Road Type (Interstates, Metropolitan, Lower Density Roads), Collision Direction, and Weather Conditions versus the Number of Fatal Accidents and the Number of Fatalities in those accidents. In addition, 39,508 fatal accidents nationally in 2021 were also considered for the relationships between these factors and fatalities. Chi-Square Tests, Analysis of Variance, and nonparametric methods were performed.Georgia findings for 2015 to 2021 included that there were significantly more fatal accidents per day after the Hands-Free Law was implemented. However, the number of fatalities within a fatal accident was not significantly changed. After the Law, fatal accidents on interstates increased. Some of the national findings for 2021 included (1) most fatal accidents and the most fatalities occur on Friday, Saturday, and Sunday, and (2) head-on collisions on interstates are the deadliest. As a result, drivers should increase caution when driving (1) on Friday, Saturday, and Sunday, and (2) reduce speeds on roads that do not have medians.

Yeraldine Polo

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Yeraldine Polo
#2 Alexis Pope
#3 Patricia Trinidad
#4 Melawhy Garcia

Abstract Name: Can parenting feeding practices influence fruit and vegetable consumption among Latino Children?

Background: According to the Centers for Disease Control and Prevention, during the years 2017-2022 Latino children in the US experienced the highest obesity prevalence (26.2%) when compared to other racial/ethnic groups. Parenting styles can influence the eating habits of children. Learned behaviors on how and what to eat to sustain the body during childhood become habits that remain throughout an individual's life. Unhealthy dietary intake resulting from parenting feeding practices can contribute to the obesity epidemic among children. Purpose: To examine the relationship between parenting feeding practices and the consumption of fruits and vegetables among Latino children. Methods: Cross-sectional baseline data from the Eat, Play, Go! Obesity prevention study was used. The sample consisted of 95 Latino children ages 10-13 years old and their mother's residing in Long Beach, California. Parent and child survey data were collected to assess parenting feeding practices, child consumption of food and beverages, and socio-demographics. Chi-square tests were conducted to assess the relationship between parent feeding practices and children's fruit and vegetable consumption. Results: Findings revealed children's whose parents' provided fruits and vegetables as a snack reported eating significantly higher levels of fruit compared to those who were not provided fruit. However, there were no differences in vegetable consumption based on differences in parent feeding practices. Conclusion: Parent feeding practices can influence fruit consumption but do not have much effect on vegetable consumption. Based on the results of this study, we can conclude that there needs to be more focus on feeding practices regarding vegetable consumption. Children are more comfortable and open to eating fruits than vegetables.

Moani Pomare

HI - Kapi'olani Community College

Discipline: Mathematics and Computer Science

Authors:
#1 Moani Pomare

Abstract Name: Kakau and Mathematics: A Multicultural Perspective on Traditional Hawaiian Tattoos

Kākau (traditional Hawaiian tattoos) use geometrical shapes such as equilateral embeddings of triangles to share and preserve genealogy. It was a rite of passage for Kānaka Maoli (Native Hawaiian) from pre-Western contact until a missionary-led prohibition. In the 1970s, it was revived as a symbolic way for Kānaka Maoli to reconnect to their culture. The symmetry within kākau triangles symbolizes the ideology to live harmoniously with oneself and the world through balance. This project aims to apply mathematical concepts underlying a traditional kākau, including an analysis of symmetry, regularity, induction, and sums, in order to investigate the inherent mathematical principles in indigenous practices.Starting with the smallest triangular structure and then gradually increasing the number of levels, brute force counting methods were employed to find the total number of triangles. Each vertex was coordinate labeled in the overall structure with the number of triangles. Visuals were created to illuminate the pattern of the various sized/oriented triangles. Patterns were determined in the total count for each sized triangle. From this validated data, summations were identified that determined the total number of uniquely sized/oriented triangles per level. A generalized formula was found through the sum of these individual sums, then was tested for fidelity and used for further predictions.Future work includes analyzing 3D tetrahedral embeddings, which are the equivalent regular equilateral shape in a higher dimension. This project highlights how mathematics and indigenous culture can enrich each other and provide agency to indigenous students in mathematics education.

Jazmin Ponce

OK - Southern Nazarene University

Discipline: Social Sciences

Authors:
#1 Jazmin Ponce
#2 Anthony Rodin

Abstract Name: IIRIRA and Undocumented Immigrants Pathway to Citizenship

This research paper examines how the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) affects immigrant’s decisions to pursue citizenship. The IIRIRA, enacted in 1996, introduced the three and ten-year bars under Section 212, which pose significant challenges to undocumented immigrants seeking legal status. This paper specifically explores the perspectives of undocumented immigrants regarding the impact of the three and ten-year bars on their path towards citizenship.To investigate this process, interviews with undocumented Latino individuals were conducted to gain insight into their experience navigating their legal immigration process. These interviews captured the narratives of undocumented immigrants, providing insights into the complexities and hardships they face in their pursuit of legal status and citizenship, including the onerous three- and ten-year bars put in place by the IIRIRA. Findings suggest that the IIRIRA's bars complicate the process of obtaining legal status for undocumented immigrants, create obstacles that lead to prolonged separation from family members, and produce economic hardships, and emotional strain. These findings emphasize the need to reform the three- and ten-year bars to keep families unified and reduce hardships for them. Furthermore, by reforming these bars, undocumented immigrants can

be offered the opportunity to naturalize, enabling them to emerge from the shadows and fully integrate into society.

Jayla Ponce

MN - Augsburg University

Discipline: Business and Entrepreneurship

Authors:
#1 Jayla Ponce

Abstract Name: An Investigation into Factors that Lead to the Most Expensive Transfers in Women's Soccer

What player factors and qualities lead to the most expensive transfers in professional women's soccer today? Eyes are on women's soccer in a way that they have never been before. As viewership increases, the money surrounding the sport continues to increase as well. The highest paid transfer fee in women's soccer history occurred in 2022 when Kiera Walsh transferred to Barcelona for €470,000. What differentiated Kiera Walsh from the thousands of other professional women's soccer players, and what lead to her transfer fee setting the record high? Previous research examined factors that influence the transfer price for men's professional soccer players, but this research has not been pursued at the same degree for women's soccer. This research includes a regression analysis that investigates the effects of matches played, goals, assists, years playing professionally, inches over 5ft, and English nationality on the transfer price. Preliminary results indicate that these variables have a positive relationship with the transfer fee. Goals, assists, and matches played in the two previous years have the biggest impact on the transfer price because the best players play in more matches and goals and assists are quantitative statistics to measure impacts. With more money getting involved in women's soccer, new questions surrounding the transfer process and pricing are bound to arise. This model will assist in predicting the transfer price of a player based on the given variables, so if a player wants to transfer, they will have the power to predict their own price tag.

Phoenix Poole

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
#1 Phoenix Poole

Abstract Name: The Prominence of Book Bans

Books have always been seen as cornerstones of knowledge and ideas. Throughout history however, people have decided for whatever reason to get rid of specific books. In some cases the books reveal knowledge better deemed dangerous. In other cases the books reveal harsh truths that would rather be silenced. The restriction of knowledge is not a thing unique to less democratic countries as it happens frequently in the United states. According to the Office For Intellectual Freedom, 3923 total titles were challenged between January 1st and August 31st across the United States. This was a 20% increase from the same reporting period in 2022 and is the highest number of book challenges since the American Library Association started compiling data over twenty years ago. The ALA notes that the "majority of challenges were to books written by or about a person of color or a member of the LGBTQIA+ community." The purpose of my research would be to preserve some of the most banned books across the United States. I would do this by first looking state by state to find the most commonly banned materials. I would split it into two categories:

materials challenged from being in public schools and materials challenged from being in public libraries. I would purchase these books and preserve them forever in crystals. Preserving the books, and presenting them in a gallery this way prevents them from being lost to time and to censorship. Showing off challenged/banned books also keeps the conversation of censorship at the forefront of conversation. Choosing the most banned materials will help bring the issue to the brains of more people as it could be from a state in which they are from or know someone.

Emma Pope

NC - Western Carolina University

Discipline: Business and Entrepreneurship

Authors:
#1 Emma Pope
#2 Steve Ha

Abstract Name: The Economic Effect of Food and Music Festivals on the Local Economy

Western North Carolina is home to some of the most beautiful views and festivals within the entire state. It contains parts of the Blue Ridge Parkway, the Tuskegee River, and quaint towns. Specifically, Highlands, North Carolina is surrounded by protected national forests that limit land development and has not been impacted by other growing retirement and vacation communities. Highlands is home to two major festivals that participants travel far and wide to. These are the Bear Shadow Music Festival in April and Highlands Food and Wine in November. These two festivals are known to bring in a large influx of tourists, making a significant impact on the local and surrounding counties. This annual boom can be measured by jobs, revenue, and even attendance. The objective of this study is to investigate the economic impact on output and employment attributable to the major festivals on the western North Carolina economy. There has been an increasing need for festival organizers to better understand their attendee profiles and spending patterns to assist in planning, marketing, and managing different types of festival events to ensure their success. This study will analyze the services provided by local businesses to the events, and dollars generated by event attendees visiting the region. Several quantitative methods will be used to collect visitor and administrative/financial data. The data collected from these two festivals will lead statical analysis to conclusions of the proposed objectives, in addition to the role of Highlands Festival Inc. The IMPLAN software and database will be used to estimate the overall economic impact of spending at the festivals. Overall, these study results will provide the regional business and residential community and state and local policymakers with a clear understanding of the Highlands Festivals' influence on the local community.

DeJuwuan Pope

CA - Golden West College

Discipline: Social Sciences

Authors:
#1 DeJuwuan Pope

Abstract Name: Food Deserts: A Look into Food Accessibility in Southern California

Every single day individuals and families are either growing or purchasing food to feedthemselves or others close to them. Unfortunately just based off of where they live, the food theyare consuming could be categorized as either healthy or unhealthy for human consumption. Thisreasoning is controlled by institutions

and local political leaders that control how their countiesare mapped geographically based on social structure, norms, culture, and even economics. Forthe most case, cities are structured and divided into socioeconomic groups and institutions tendto fluctuate their resources to better support what group they are in. There are many factors thatgo into place how someone may get accessed to food; utilizing their own space (i.e. garden),transportation (i.e. car, bus), outside support (family, food bank), and by walking. The level ofthese factors do changed based on environmental concerns in certain zip codes people live. Inthis case, if healthier options are located in a higher socioeconomic area where publictransportation does not exist, an individual that may be affected heavier under transportationcould not have access to those healthier options. This research will outline and address theseconcerns using data collected from locals in Southern California, the 2020 US Census, andvarious descriptive data from outside research. It will address that there are institutional policiesin place that limits people to what they have easy access to. It will end by showing you data fromvarious instruments that supports this hypothesis.

Tiolulope Popoola

GA - University of Georgia

Discipline: Health and Human Services

Authors:
#1 Tiolulope Popoola
#2 Sina Gallo
#3 Yu Chen Lin

Abstract Name: Evidence to Support the Use of Parent-Child Joint Reports to Assess Dietary Intake of Elementary School Children: Data Extraction for a Scoping Review

One in five US children is classified as obese, with this rate rising annually. Obesity prevention and treatment efforts include dietary changes hence the accurate assessment of children's dietary intake is important. A 24-hour dietary recall data is commonly used to assess intake but is particularly difficult among children due to developmental and cognitive immaturity levels. National Surveys such the US-National Health and Nutrition Examination Survey (NHANES) continue to use the 24-hour recall but, have specific age cut-offs for the use of a proxy for children aged between 6-11. Previous literature showed inconsistent use of age cut points for child roles in joint recalls from NHANES 2003-2014. Considering these discrepancies, a scoping review is vital for identifying literature deficiencies, ultimately providing insights to guide children's dietary assessment methodologies. There was a total of 5,868 records; 3,652 were excluded during the first round of screening based on title and abstract. Of the 2,216 full-text articles which were assessed, 1,415 were excluded, 306 were unclear without information to be excluded, 210 were from national studies databases, and 285 were included. Included articles were published in English between 1975 to 2020 with 225 classified as cross-sectional , 36 cohorts, 15 randomized clinical trials, and 9 case control studies. Information was extracted from full-texts of included studies on the rationale for the use of joint reporting as well as references supporting its use. Cited references were identified and reviewed to determine if a validation study (i.e., doubly labeled water or direct observation) was utilized. The ongoing research study so far has revealed lack of consistency on the reporting in the literature on dietary assessments in children. Overall 64% of analyzed articles lack references to validate the use of joint reporting. In those with an associated article, direct observation as a validation method was most commonly cited.

Donya Pordeli

FL - Jacksonville University

Discipline: Visual and Performing Arts

Authors:
#1 Anna Newhoff
#2 Ella McFadyen
#3 Donya Pordeli
Anna Newhoff
Ella McFadyen

Abstract Name: Better Together :Environmental Research and Effective Communication

This creative work explores a year long research collaboration at Jacksonville University. Together, Marine Science, Chemistry, and Communication students are taking an interdisciplinary approach to a research project: Innovative Practices in Environment Research and Communication. Graduate and undergraduates explore the environmental challenges surrounding the waterways of Northeast Florida. This video project integrates scientific research with communication strategies, utilizing video production and strategic social media initiatives to effectively communicate findings and raise public awareness.Qualitative interviews with graduate student researchers serve as the foundation for the video stories, skillfully crafted by undergraduate student journalists. The collection of video narratives showcases the research journey, features in-depth interviews, on-location b-roll and the research process, and strategic social media content. By featuring on-camera interviews and leveraging the creative insight of an advanced undergraduate communication course, this collaborative project showcases interdisciplinary efforts addressing environmental challenges and fostering informed and engaged communities.The goal of these videos is to elevate public understanding of the environmental issues and inspire viewers to adopt small yet impactful changes to enhance the quality of Northeast Florida's waterways.

Sara Porter

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
#1 Sara Porter
#2 Hyunsook Youn

Abstract Name: Examining the Impact of DEI Policies on Gender Equality in Non-profit Organizations in Southern California

This study explores how DEI policies promote gender equality among non-profit organizations. To achieve this, the project will analyze a collection of current diversity, equity, and inclusion (DEI) policies for non-profit organizations in Southern California. The central research question is, "How do DEI policies in non-profit organizations address gender equality, and what is their impact on gender representation in the workplace?"Previous research has found that DEI policies are essential for creating an inclusive and equitable workplace; however, there is a lack of research looking into the specific impact of DEI policies on gender equality in non-profit organizations. This study attempts to bridge this gap by analyzing the effectiveness of DEI policies in promoting gender equality in non-profit organizations in Southern California. The research methodology for this project involves analyzing current DEI policies of non-profit organizations in Southern California. The data will be coded and categorized to capture all relevant information. It is expected that the findings of this research will provide insights into how structural and organizational barriers influence gender equality in non-profit organizations. Furthermore, the project will provide recommendations on how non-profit organizations can address these issues and promote gender equality in the workplace.The findings will be discussed in the context of non-profit management and communication studies, offering insights for practitioners working in these fields. The ultimate goal of this project is to gain insight into how non-profits can promote gender equality at work and reduce structural and organizational barriers in the

workplace. The conclusions and recommendations of this project will be discussed within the context of non-profit organizations in Southern California. They will lay the foundation for further research and policy discussions on gender equality.

Faith Porter

OK - Langston University

Discipline: Natural and Physical Sciences

Authors:
#1 Faith Porter
#2 R. Hal Scofield

Abstract Name: SLE-associated risk alleles, TASL and SLC15A4, show strong genetic synergism among lupus male subjects

Background: Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that predominately affects women, with a female-to-male ratio of approximately 10:1. However, men that develop lupus often present with more severe disease. Slc15a4, Tlr7, and TASL(CXorf21) genes all contain single nucleotide polymorphisms (SNPs) demonstrating genetic association with SLE. The proteins encoded by CXorf21 and Slc15a4 are binding partners on the surface of the lysosome, which control lysosomal pH and regulate IFN production via the TLR7 signaling pathway, a critical driver of the disease. We predict a pleiotropic interaction between these SNPs may contribute to disease risk and/or worsen disease often observed in male SLE subjects. Methods: We genotyped 63 male SLE subjects (34 African American (AA), and 29 Hispanic American (HA)) and 80 unaffected (33 AA, and 47 HA) male subjects from the OMRF Lupus Family Registry and Repository. A case-control association study was conducted on 5 SNPs TLR7(rs3853839), SLC15A4 rs1059312) (rs1385374) (rs10847697), and CXorf21(rs887369) following a qPCR TaqMan-based allelic discrimination assay. Additionally, we identified clinical phenotypes associated with these genetic interactions. Results: All SLE-affected subjects, regardless of race/ethnicity, were more likely to have both Cxorf21 (rs887369) and SLC15A4 (rs1053912) risk alleles than the control group (AA: P=0.0238; HA: P=.0037). We also found that AA were more likely to have both the CXorf21 and Tlr7 SNPs than any other group and it was associated with anti-dsDNA (P=.0486) and anti-chromatin (P=0.0007) Conclusions: Collectively, these data suggest, that SLE-affect men with both CXorf21 and Slc15a4 alleles have increased relative risk of lupus, interferon production, serositis. Add to this, in AA men, CXorf21 and Tlr7 are associated with elevated autoantibodies, thus the combinations of these alleles may contribute to worsening disease in male lupus patients.

Odalys Portillo

CA - California State University - Long Beach

Discipline: Interdisciplinary Studies

Authors:
#1 Odalys Portillo
#2 Nicholas Alvarez
#3 Brooke Diaz
#4 Jeremy Burrola-Woodard
#5 Sandra Arévalo

Abstract Name: Intersectional Effects of Pell Grant Eligibility, Race/Ethnicity, and Gender on Academic

Performance.

Evidence shows various factors, including socioeconomic status, gender, race, and ethnicity, can impact academic performance. However, research is needed to examine how these factors intersect and affect academic performance. This study utilizes an intersectional approach to investigate how socioeconomic status, race/ethnicity, and gender intersect to influence students' academic performance. Participants (22.4 ± 4.5 years; 70% women, 28% men, 2% LGBTQI; 42% Latinx|e, 15% white, 37% Asian, 2% black, 4% Indigenous, PI, and mixed race) were N=412 students from a public, urban university who completed an online survey between the spring of 2022 and the spring of 2023. Descriptives, bivariates, and multivariate linear regression were run to examine differences in GPA (academic performance measure). Next, a linear regression model was used to predict GPA using a multiplicative indicator (Pell Grant*Race/Ethnicity*Gender) to investigate the intersectional effect of Pell Grant eligibility, race/ethnicity, and gender after controlling for students' age and perceived financial situation and parents' education. In bivariate analyses, we found significant differences in GPA by race/ethnicity ($F=6.95$, $p=0.0001$), perceived financial situation ($F=5.13$, $p=0.0063$), and no significant effect of gender or Pell Grant eligibility. However, an intersectional effect was evident from the multivariate linear regression model. Compared to white males, with no economic disadvantage (Pell Grant recipients), Latinx|e males who received a Pell Grant had significantly lower GPAs ($\beta= -0.66$, $p=0.045$). The intersectionality framework posits the need to examine the multiplicative effect of various socially disadvantaged positions and identities to identify more effective interventions to improve academic outcomes and reduce inequities in education. Results from our study support these claims and highlight the need for such analysis to identify specific groups needing additional services when entering college. Our results suggest that targeted services to Latinex|e male students who are Pell Grant recipients may reduce inequities in higher education.

Zion Posey

PA - Westminster College

Discipline: Humanities

Authors:
#1 Zion Posey

Abstract Name: "Missing Education: A Critical Analysis of the Systems influencing Public Education"

Philosopher and psychologist John Dewey accurately identified the pivotal role education fulfills in maintaining a democracy. Yet, as many have noticed, our schools do not appear to be preparing children to be responsible members of our society. Why do our schools fail us and our communities? This research examines the elements of public education systems that hold schools back from preparing students for college and career success. Such elements include Common Core, teacher training, teacher expectations, and distribution of resources. Using insights from John Dewey, Maria Montessori, and Jean Piaget, I argue for the de-standardization of individual schools as a means of allowing greater exploration in education with the goal of meeting the needs of diverse communities. If we want the next generations to be responsible members of our society, we have an obligation to prepare them for that role.

Neha Potla

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Neha Potla

Abstract Name: Effects of Green Projects on the Rate of Suburban Gentrification in the BIPOC Community

Marginalized community members a part of the BIPOC community struggle in inner urban and suburban settings. From a lack of political to socioeconomic representation, BIPOC members are overshadowed by new projects proposed by politicians who advocate for the priceless benefits of sustainable ecodesign. The question is at what cost do these projects overshadow the voices of the surrounding community. There are five key categories to respond to the question using a combination of case studies, political studies, and scoping literature reviews. Already historically marginalized community members are being pushed from their inner city homes to the outskirts in suburban towns where they have to reestablish their roots. Using a combination of input from community members, responsible politicians, and these green projects, urban communities can balance the onset of modernization and culture that makes a community so strongly knit. The intersectionality between green urbanization and the marginalized has gone long unaddressed. The potential of green projects to help the community and the environment exist as long as marginalized members are included in the conversation and decision making process. The goal three fold: to achieve social sustainability when maintaining or improving the wellbeing of people and future generations; to achieve economic sustainability by practices that support economic growth without negatively impacting social or environmental aspects through deception; to access environmental sustainability or “green” status by ensuring that the environment is looked after by reducing waste and increasing biodiversity for the long run. Reversal of the damage is impossible yet community members deserve their earned space. Acknowledgement and accountability are important to reestablish trust within the BIPOC community and to save mother nature.

Carissa Potter

NC - Elon University

Discipline: Mathematics and Computer Science

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Abstract Name: Mathematical Modeling of Immune Response to SARS-CoV-2

In response to the profound impact the COVID-19 pandemic has had on society, the mathematics and broader scientific community has focused considerable research efforts to understand the spread of the virus. Despite a tremendous volume of research in this area, how the human immune system responds to SARS-CoV-2 has not been yet fully understood due to limited analysis of the experimental or clinical information to date. Mathematical models that account for the interaction between SARS-CoV-2 and the human immune system will improve the scientific community's ability to analyze the vast amount of data available. We develop a mathematical model for the immune response to SARS-CoV-2 to investigate the role of various molecular pathways in successful viral clearance and the key mechanisms responsible for disease severity exhibited by some patients. Specifically, our in-host model explicitly represents the interactions between the virus, innate immune cells, and selected cytokines. These interactions are formulated in a system of coupled ordinary and delayed differential equations. We conduct parameter estimation based on experimental data from literature and investigate model behaviors via computational simulations. Using this model, we use sensitivity analysis to determine the implications of variation of parameters. Our model demonstrates key aspects of the immune response to SARS-CoV-2, specifically its sensitive pathways, which might be responsible for disease severity exhibited by COVID-19 patients. This could be used to identify several therapeutic targets that would provide

hypotheses to be tested clinically, thus, serving as a foundation for the development of evidence-based therapeutic strategies.

Carter Potthoff

MN - College of Saint Benedict/ Saint John's University

Discipline: Natural and Physical Sciences

Authors:
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#2 Kristina Timmerman
Connor Veldman

Abstract Name: African Lion (Panthera leo) Affectionate Behaviors in the Ngorongoro Crater and Serengeti National Park, Tanzania

We were interested in affectionate behaviors displayed by the African lion (Panthera leo) in the Ngorongoro Crater and Serengeti National Park, Tanzania. We hypothesized that there will be a difference in frequency of affectionate behaviors in African lions living in the Ngorongoro Crater and Serengeti National Park. Based on this hypothesis, we predicated that lions living in Serengeti National Park will display more affectionate behaviors due to the lack of food-related stress. Data was collected over the course of five days (May 24th to May 29th, 2022) by driving through the parks and observing lion prides for a 30-minute observation period.Behaviors observed included rubbing, licking, head-butting, head-resting, and nestling. In total, 11 lions in Ngorongoro Crater and 15 lions in Serengeti National Park were observed. A Chi-square Goodness of Fit test was performed, and the data suggests that there was a significant difference in the frequency of affectionate behaviors in African lions in Ngorongoro Crater and Serengeti National Park ($x2 = 4.67$, $p = 0.03$). These results suggest that prey scarcity influences affectionate behaviors displayed by lions. Overall, this research contributes to the general knowledge pertaining to African lions and their social behaviors.

Carter Potthoff

MN - College of Saint Benedict/ Saint John's University

Discipline: Natural and Physical Sciences

Authors:
#1 Carter Potthoff
Connor Veldman

Abstract Name: Oxpecker (Buphagus spp.) Abundance and Host Species Preference in the Serengeti Ecosystem

We were interested in host species preference among the red-billed oxpecker (Buphagus erythrorynchus) and the yellow-billed oxpecker (Buphagus africanus), as well as their overall prevalence in Ngorongoro Crater and Serengeti National Park, Tanzania. We hypothesized that there would be a difference in the host preference in relation to the presence of a mane in Ngorongoro Crater and Serengeti National Park. We compared our data results to results published by Koenig (1997). We also hypothesized that there would be a difference in the number of oxpeckers between the Ngorongoro Crater and Serengeti National Park. Based on these hypotheses, we predicted that oxpeckers would prefer ungulates with manes as hosts, and that oxpeckers will be more abundant in the Ngorongoro Crater due to drought in the Serengeti that caused a decrease in tick abundance. Data was collected over the course of five days (May 24th to May 29th, 2022) by

driving through the parks and observing oxpecker host species within a 50-meter radius of the jeep. The number of hosts were tallied, as well as the number of oxpeckers present. Data analysis was conducted using a Chi-square Goodness of Fit test. The data suggests that there was a statistically significant difference in oxpecker host preference regarding the presence of manes (x2 = 21.014, p = >0.001, df = 2743). Additionally, there was a statistically significant difference in oxpecker abundance between the Ngorongoro Crater and Serengeti National Park (x2 = 7.05, p = 0.007, df = 46). Overall, this research contributes to the general knowledge regarding the behavior of red-billed and yellow-billed oxpeckers, as well as individual host preferences in Ngorongoro Crater and Serengeti National Park.

Katelynn Potts

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Katelynn Potts

Abstract Name: Herb Lubalin: A Typographer for the Ages

Herb Lubalin was a graphic designer in the 1960s that could be inspirational or controversial because of his work. This paper strives to show the dichotomy with how a designer who shows great work could be considered controversial during his time, but great with a modern view. There is a brief biography of his life talking about how he got to where he was before he became a well renowned designer. Diving into Lubalin's life and overall portfolio is to show how people now speak about his legacy to this day. This paper goes deeper into the context of his work during his golden years of his work, and how the public viewed it during the time, which was not pleasant for the most part. The only reason he wasn't viewed with a nice light was because he considered himself a liberal in a predominately conservative society. He also kept company with a man who was later arrested for his "outrageous" liberal ideas such as posting a mixed-race couple in a magazine in the 1960s. However, with time, society has changed with the years as well as political opinions. While going over obituaries and reflections that today's designers made today can show how much of an influential legacy that he has left behind despite his skewed relationship with society before. With all this information, it's easy to surmise that the difference in generations can change a person's reputation over time. This is supported by the fact that the few designs Lubalin made were considered taboo in the 1960s are now celebrated today and boost the designer into a better light than he had before.

Ainsley Powell

KS - University of Kansas

Discipline: Humanities

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#1 Ainsley Powell

Abstract Name: Mirror, Mirror, on the Big Screen

Film is one of the most common art mediums people observe on a regular basis, and often times, themes in popular films reflect a population's cultural and political developments. This project aims to analyze how films reflect themes of North Americanization in Colombian culture in the last five years. Previous scholars address how films portray cultural changes and, further, how films often imitate contemporary political developments. Additionally, many researchers use film as a medium to study changes in social trends and common behavior patterns to show the influence of the film industry on a population. For this project, content analysis and thematic coding are the primary methods for data analysis, and I will be reviewing the films while paying attention to scenes exemplifying North Americanization in Colombia. The specific terms to define North Americanization come from a collection of articles discussing the North Americanization of Latin America, and the juxtaposition of the terms to the data from content analysis allows for an informed conclusion regarding the reflection of political themes in film in Colombia. The analysis would likely show how North Americanization has affected the culture in Colombia deeply enough for films to reflect the change. The analysis of films also allows for insight into the larger scheme of cultural change, as the arts are often a reflection of life when it comes to the portrayal of political themes and culture.

Takyra Powell

VA - Norfolk State University

Discipline: Interdisciplinary Studies

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#2 Christy Frederick

Abstract Name: Afro-Fashion: The Legacy of Black Culture, Creativity, and Clothing

For centuries, Black culture has influenced the fashion industry. Yet, the individuals and trends set by the culture have been overlooked, downplayed, or even discredited. In this study, we developed a vehicle of research that will explore and discuss black culture and experiences that influence the fashion community. Beyond the apparent intersections of fashion and culture, this research will also examine psychological variables that have shaped the relationship between the Black community and fashion. To begin, we gathered information about the history of mainstream fashion and the tools required to advance the industry. We then explored the relationship between enslaved Africans, indigo, silk, and cotton. From there, we started investigating which creative fashion trends and influences related to Black culture. After collecting that data, we concentrated our research on Black people who had a significant impact, paved the way, or were underappreciated in the fashion industry. Concentrating on those individuals, we examine their lives in fashion and psychological elements that shaped their cognitive processes and behaviors. Lastly, we conducted personal interviews with 10 participants, asking them questions such as: Briefly state what was your inspiration behind your outfit. Do you believe black culture influences fashion..if so, how? Name some of your favorite fashion designers, stylists, or brands (if acceptable). In one word, describe black culture. We asked the interviewees if they were familiar with any of the designers or influencers listed on our

questionnaire. After conducting these interviews, we found that many participants believe Black culture influences the fashion industry and can expand upon their reasoning. Participants can also name their favorite European fashion brands but failed to recognize many of our questionnaire's Black designers or influencers. This study was critical because it shared, enhanced, and acknowledged the impact of Black experiences and culture on the fashion industry.

Isabel Powell

DC - Georgetown University

Discipline: Health and Human Services

Authors:
#1 Isabel Powell

Abstract Name: The Effects of Stigma Against HIV and Tuberculosis on Patient Mental Health and Healthcare-Seeking Behavior in Dharamshala

HIV and tuberculosis are highly impactful diseases in India, causing severe morbidity, mortality, and suffering for millions. The stigmatization of these diseases unnecessarily exacerbates suffering for those afflicted and their families, compounding to the existing physical and emotional burden of diagnosis. Individual interviews with healthcare workers were conducted at Delek Hospital and the Tibetan Children's Village in order to identify the existence and effects of stigma in the Tibetan refugee population in Dharamshala. Respondents reported an extremely high burden of tuberculosis in the community, complicated by the refugee status and unique infrastructural challenges of the population. The burden of HIV in the community is remarkably low, although it may be underreported. All healthcare workers noted the tangible influence of stigma, yet many believed that stigma has decreased as the disease has become normalized. Respondents reported highly detrimental consequences to patient mental health as a result of both disease diagnosis and stigmatization, ranging from elevated anxiety and depression to isolation and suicide. Finally, stigmatization of both tuberculosis and HIV are connected with four major behavioral consequences in patients: delayed healthcare visits, resistance to disclosing their diagnosis, traveling to far-away hospitals, and refusal to follow treatment regimens. Stigmatization, and its consequences to patient mental health and disruption of healthcare-seeking behaviors, serves as a dangerous barrier to effective public health interventions and disease elimination in Dharamshala.

Prerana Prabhushankar

NC - North Carolina State University

Discipline: Health and Human Services

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Abstract Name: Development of Coffee Toothpaste to Inhibit Growth of Cavity-Promoting S. mutans

Dental caries is a major public health issue that affects all humans. A previous study by Antonio et. al reported a 4-log reduction of Streptococcus mutans (S. mutans), one of the primary bacteria involved in dental caries, after treatment with a Coffea canephora (C. canephora) extract (Barma et. al, 2021). This study indicated that the plaque-fighting benefits of C. canephora are only available in black coffee, without the

added cream and sugar that many coffee lovers enjoy. Coffee drinking and the use of toothpaste are morning rituals for many people. To help consumers reap the potential dental benefits of coffee in an alternative manner, would it be possible to include a C. canephora extract in toothpaste? In order to answer this overarching question, we must first ask, does C. canephora have bactericidal effects when interacting with S. mutans biofilm? One concentration of brewed green and three concentrations of light roast, as well as ten concentrations of instant coffee were used to find trends in coffee concentration and S. mutans colony count. As the concentration of light roast coffee increased, the colony-forming units of S. mutans decreased. The Minimal Bactericidal Concentration of instant coffee with S. mutans was 255 g/L. The Minimum Inhibitory Concentration (MIC) of instant coffee was also found in the 55 g/L concentration. Specifically, S. mutans was inhibited when the 55 g/L concentration was diluted to contain 5% instant coffee and 95% saline solution. The next steps include replication in triplicate to create a standard curve of coffee concentration and colony-forming units. After confirmation of these results, experiments will be repeated on model tooth substrates to find the optimal concentration to put into toothpaste.

Shrey Pradeep

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Discipline: Interdisciplinary Studies

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Abstract Name: The Future of Artificial Intelligence in Medicine

Artificial intelligence (AI), the simulation of human intellect and problem-solving by machines, is a rapidly developing field with an ever-increasing number of applications in a large number of domains that affect the human experience. AI's share in the global healthcare market size is expected to grow 37.5% between 2023 and 2030. This increased incorporation of AI into healthcare is expected to cut costs by $150-$200 billion yearly. These reasons have caused AI to come to the forefront of conversation in healthcare. The potential utility of AI has been highly touted but there are also increasing concerns about its limitations, negative side effects, and unethical applications. This panel will confine its focus to the current and potential future use of AI in the medical field. AI has already made significant contributions in the fields of drug design, genomic analysis, big data epidemiological analysis, electronic record keeping, and differential diagnosis using medical images. AI can assist physicians in diagnosing patients as exemplified by the use of "ProFound AI," an FDA-approved software, that analyzes mammography images and gives a second opinion on breast cancer cases. The application of conventional neural networks in developing deep learning algorithms is particularly advanced in the field of radiology and has resulted in highly-accurate detection rates, that have the potential to transform telemedicine. Through focusing specifically on the use of AI in medicine, a topic that has been in discussion by the National Institute of Health since 1975, we hope to address the challenges and limitations of AI in general.

Rujula Pradeep

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Jose Ramirez-Guerrero

Abstract Name: Manipulation of chromatin structure to modulate cardiac pathology

Cardiac pathogenesis comprises complex phenotypic changes underpinned by alteration of gene expression. These transcriptional changes have been extensively studied, but how chromatin structural remodeling facilitates transcriptional responses remains unknown. A versatile player in genomic structural organization is the chromatin protein CTCF. Cardiomyocyte-specific depletion of CTCF promotes significant changes in chromatin topology, resulting in heart failure. To study whether restoring CTCF levels can reverse the KO phenotype through the re-establishment of both the pathological chromatin structure and transcriptional profiles, we designed a viral vector to specifically express CTCF in cardiomyocytes. Western blot from CTCF KO animals showed increased CTCF levels two weeks after viral injection with a sustained peak in expression to five weeks. Echocardiography experiments demonstrate that reintroduction of CTCF into failing CTCF-depleted mouse hearts rescues the pathological phenotype of the animals. This improvement is characterized by sustained progress in ejection fraction and left ventricular chamber size. Heart weight to body weight ratio confirms the reversion of cardiac hypertrophy five weeks after injection. RNA-seq experiments performed at week five after AAV9 injection detected numerous differentially expressed genes with opposite transcriptional behavior depending on CTCF levels. To also test the hypothesis that rescue of CTCF levels ameliorates cardiac disease through genomic reorganization, we examined chromatin architecture by performing Hi-C. Principal component analysis demonstrates that CTCF restoring remodels chromatin architecture to resemble healthy myocyte chromatin. Taken together, our experiments demonstrate that modulation of CTCF levels is a novel and realistic approach to regulate cardiac phenotype and, consequently, ameliorate heart failure.

Avaye Pradhan

CA - Cuesta College

Discipline: Mathematics and Computer Science

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Carson Dorough

Abstract Name: Exploring Pi and Infinite Series: A Journey Through the Mathematical Canon

The number pi has been expressed in different ways. Various publications from 2022 and 2023 have proposed some new expressions that have been echoed in a problem published in the most recent issue of The College Mathematics Journal, by the Mathematical Association of America. The work presented here introduces a novel development of one of these expressions, involving an infinite sum of discrete probabilities curiously resulting in the reciprocal of pi. Our development extends the methodology introduced by the pioneering works of D.H.Lehmer and Narendra Bhandari to bridge the gap between discrete and continuous mathematics. Our proof is anchored in the well known generating function of the central binomial coefficients, which, upon elegant manipulation, is discovered to hide the classic Wallis' integral. Wallis' integral, a seminal result in calculus and series analysis, is used in our proof to cement the relationship between the discrete series and the classical mathematical constant pi. The work presented here also discusses previous literature. In doing so, we converse with Pascal and Wallis. We also discuss the timeless beauty and interconnectedness of mathematical concepts spanning centuries as we comment on concepts that we

encountered in the path to our solution, such as the Wallis product, Euler's infinite product for the sine function, the gamma function and double factorials. These concepts emerged from our work in the proof, although they were eventually found to be not necessary. In our presentation we will ask you to join us in this conversation and learn about our discoveries around the iconic mathematical constant pi.

Megha Pratapwar

MI - Michigan State University

Discipline: Health and Human Services

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Anushree Ravi

Abstract Name: Impacts of Exposure from Per- and Polyfluoroalkyl Substances on the Infant Gut Microbiota

Per- and polyfluoroalkyl substances (PFAS) are a group of chemicals widely used in consumer products which lead to adverse health effects in humans. Exposure occurs through dust, drinking water, and food. PFAS degrade slowly and therefore can cause long-term contamination of both humans and the environment. Health effects of PFAS include developmental delays in children, reduced immunity, and interference with hormones. PFAS levels in human milk have been positively associated with decreased diversity in the gut microbiome of 1 month old infants. To study the impact of PFAS contamination in Michigan, 79 mother-infant dyads provided samples of one to four month old infant stool and answered questionnaires. Questionnaire responses were analyzed to estimate PFAS exposure. DNA was extracted from stool samples, and sequencing of the v4 region of the 16S ribosomal RNA gene was performed to characterize the bacterial alpha and beta diversity. Regression was performed to determine associations between PFAS exposure and infant gut microbiota characteristics. Of 39 infants fed at least some formula mixed with water, 44% drank formula prepared with bottled water and 38% drank formula prepared with city water. Of the 59 infants at least partially breastfed, 52 mothers drank at least some tap water in the 3 months preceding stool collection. 69% of these mothers report public water supply as their primary source of tap water. 29% report a private well. Approximately 39% of participants live in counties with ≥ 9 groundwater/drinking water testing sites that detected PFAS levels greater than the standard. Since gut microbiota membership is established early in life, knowing which exposures alter the composition of this microbiota is crucial to ensure optimal child development. The results of this project will further our understanding of the impact of PFAS on the gut microbiota during this crucial developmental time point.

Jillian Preite

FL - Embry - Riddle Aeronautical University

Discipline: Health and Human Services

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Abstract Name: The Effects of Social Media on the Teenage Demographic

There is no question that social media is on the rise, but it may be too much for young brains to handle. This video was done as a Digital Artifact that demonstrates these possibilities. Teenagers are one of, if not the largest, demographic of users on social media. Up to 95% of youth ages 13-17 report using a social media platform, with more than a third saying they use social media 'almost constantly' (U.S. Department of Health and Human Services, 2023). The brain finishes developing in the mid-to-late 20's, so their overuse and oversaturation of content may be detrimental to their mental well being. Additionally, between the ages of 10 and 19, teenagers undergo a sensitive period of brain development, including the appearance of mental health challenges. So, if a child is exposed to constant social media during this period, it can easily trigger mental health issues. It has been found that children who spend more than 3 hours a day on social media face double the risk of mental health problems (U.S. Department of Health and Human Services, 2023). With mental health issues being on the rise, it is important that teenagers are exposed to the definition of 'mental health'. This has been proven to not be well known in teenagers through a study done by researchers Michelle O'Reilly, Nisha Dorga, and Paul Reilly in 2016. They gathered a number of children and asked them a number of questions, one being their definition of mental health. It was surprisingly found that a majority of the participating children were unable to clearly define 'mental health' correctly. Because social media is one of the main sources of communication for teenagers, it can be argued that it is one of the main reasons for mental health issues within their demographic.

Amil-R Preyer

GA - Kennesaw State University

Discipline: Social Sciences

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#11 Cortney Calligan
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Abstract Name: Assessing the emotionality of Black and Brown Students regarding Intelligence Testing and the effect on perceived Self Efficacy

Students' perceptions of giftedness and intelligence differ immensely across the nation. When assessing intelligence and giftedness, Black and Brown students are most negatively affected by the cultural biases in the testing process. Twenty-four Black and Brown children between the ages of 8 and 18, with an average age of 11, were interviewed at the James T. Anderson Boys and Girls Club. They were asked about their perceptions of what it means to be smart and their cultural definitions of giftedness. Qualitative coding of the interviews was conducted, and frequencies were obtained for the following ideas: perceptions of what makes people smart, cultural definitions of giftedness, and children's perceptions of parental preferences for what they should learn. Children believed that they could become smarter with effort. Themes about the acquisition of intelligence were as follows: learning, paying attention, being smart, using knowledge, life

skills, and racial or ethnic identity and ancestry. Of the children sampled, there was an even representation of those placed in on-level and gifted programs. The majority of students felt neutral about their academic placement; those who did not were more likely to feel positive than negative. The findings indicated that children believe paying attention and being smart was the most important part of intelligence, whereas their parents mostly wished for them to develop academic and life skills. There is a congruency between the children's beliefs and perceptions of their parents' beliefs. Ancestry and ethnic identity may be essential elements in shaping minority children's perception of intelligence.

Charles Price

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

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Abstract Name: Service Utilization among Chronically Unhoused Individuals in Northwestern Wisconsin

Service Utilization among Chronically Unhoused Individuals in Northwestern WisconsinThe purpose of this research project is to examine the type, frequency, and cost of social service utilization among chronically unhoused adults in one semi-rural Wisconsin community. A number of researchers in the United States and Canada have examined this topic, but the majority of research has occurred in urban rather than rural or semi-rural areas.Two modes of data collection will be used in this study: the Timeline Follow-Back Method (TLFB) and a review of service utilization records. The Timeline Follow-Back Method relies on respondents to retrospectively self-report how many nights they have spent in a homeless shelter, inpatient medical or mental health facility, or jail during a 365 day period. In addition, respondents are asked to recall how many times they met with a social service provider, medical provider, or public defender in the past 365 days. Respondents are also asked to sign releases of information for local medical and social service facilities in order to allow the research team to capture any additional information about service utilization that the respondent may not have been able to recall during the TLFB interview.A total of 20 individuals are slated to participate in the study from December 2023 to February 2024. These individuals were referred to the research team by the primary agency serving unhoused individuals in the focal community. The information gathered via the TLFB interviews and review of records will be analyzed to determine the average yearly per respondent cost as well as the aggregate costs for the group.

Connor Prim

TN - Middle Tennessee State University

Discipline: Education

Authors:
#1 Connor Prim

Abstract Name: Integrating Classical Music Into the Elementary Classroom

Elementary music should expose children to a wide range of musical experiences. Some of those, such as pop music, are easy to incorporate into lessons due to their fun nature but many educators struggle when considering how to effectively teach music from the classical canon. Most students think it is "boring," and

the overwhelmed music teacher might just give in to their whims. However, teachers who think this way are robbing their students of the enrichment these masterworks provide. Still, educators must be strategic about how they implement them in the classroom. Sitting still for an hour while listening to a Brahms symphony might just reinforce students' negative perceptions about this music. By utilizing movement, mutual orientation, and musical instruments, teachers can get students to engage and relate to classical music in a whole new way, transforming their future and revitalizing the genre for a new generation of listeners to enjoy.

William Privette

NC - Western Carolina University

Discipline: Natural and Physical Sciences

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Abstract Name: Computational studies of uranium terpyridine derivatives for potential nuclear waste applications

Nuclear power promises the future of energy production in the world. While it is an environmentally friendly replacement for fossil fuels, nuclear energy production presents the problem of creating long-lasting nuclear by-products. These nuclear waste products contain radioactive uranium which can serve as a significant environmental threat. To this end, nuclear waste treatment is an active area of research with many challenges such as the removal of radioactive uranium metal from nuclear waste. Designing selective uranium metal binding agents (chelating agents) can be a potential solution to this problem. Our research is focused on computational studies of uranium chelating agents based on terpyridine ligand derivatives. In this work, we present the molecular structures, electronic and substituent effects, and reaction free energies of uranium terpyridine complexes to aid in designing highly selective nuclear waste treatment agents. Geometry optimization and thermodynamic properties of the uranium compounds in the gas and solvent phase were calculated using Gaussian 16 software at the density functional level (DFT) of theory using the PBE0 method. Average uranium-nitrogen bond distances in terpyridine derivatives increase with increasing the electron-withdrawing nature of the substituent groups (with a maximum bond variation of 0.0162). An opposite trend was observed for the average uranium-oxygen bond distance in water molecules bound to uranium. The free energy variation in the uranium ligand coordination reaction does not follow the variation of electron-withdrawing trend. The free energies varied by roughly 1050 KJ/mol, with the lowest value, 682.63 KJ/mol coming from the nitro substituent group and the largest from the brominated complex at 1732.83 KJ/mol. The solvent phase calculations followed the same trends.

Madison Procyk

GA - Georgia Southern University

Discipline: Engineering and Architecture

Authors:
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#2 Sevki Cesmeci

Abstract Name: A Novel Artificial Pancreas System for People With T1D

Approximately 1.6 million Americans are suffering from type 1 diabetics (T1D), and despite the proven

clinical benefits, many T1D patients hesitate to use artificial pancreas (AP) systems due to the burden of carrying an on-body insulin pump. Addressing this issue there is a pressing need for insulin delivery systems with reduced “form-factors” and other “user-centric” features to increase the greater adoption of such devices in the T1D community. To this end, we propose an innovative concept of a magnetorheological (MR) peristaltic micropump designed to offer a compact, lightweight, portable, wirelessly controllable, durable, and low-power insulin delivery system. This study employs physics-based 3D simulations conducted using COMSOL Multiphysics software, integrating the Magneto-Fluid Solid (FSI) Interaction model to evaluate the performance of the proposed MR-μPump. Our computational findings indicate that the MR-micropump can transfer up to 1.99 μL of fluid in a single pumping cycle, achieving this flow rate within 0.41 seconds with a magnetic field strength of 0.15 T. This system can be integrated into a wearable patch, including the flow chamber, flow sensors, drug reservoir, and electromagnets. Beyond insulin delivery for T1D patients, the versatility of this micropump extends to a wide range of applications, including transporting blood in artificial organs, organ-on-chip applications, and enhancing micro-cooling devices. This research presents a promising approach for addressing the reluctance of T1D patients to adopt AP systems by providing a user-centric, miniature, and highly efficient insulin delivery solution. Moreover, the versatile use of MR-micropump in different areas highlights its importance in improving both medical technology and micro-fluidic systems.Keywords: Type 1 diabetes (T1D), Artificial pancreas (AP) systems, Magnetorheological (MR) peristaltic micropump, Insulin delivery, Wearable patch, Microfluidic systems

Calieb Prunty

MN - University of Minnesota - Twin Cities

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Polymer Flow Atomization with a Counter Flow Nozzle

Polymers’ tendency to stay in their molecular chains makes flow atomization difficult. As there becomes a need for more advanced materials and processes, there will be a greater demand for polymer sprays in the medical, aeronautical, and automotive industries to name a few. A process called effervescent atomization has been shown to be effective in breaking up the flows of fluids by introducing a gas flow through implementation of a counter flow nozzle[1]. The purpose of this experiment is to determine the effectiveness of effervescent atomization in atomizing aqueous polymer solutions by analyzing the size of the atomized droplets. A trial case of pure water has been taken as a baseline.The intention is to collect six water/Polyethylene Oxide (PEO) solutions using molecular weights ranging from 100E3 Kg/Kmol to 4000E3 Kg/Kmol. These six solutions will be mixed at a PEO concentration of 0.15% by weight. The liquid for every solution will have a fixed flow rate of 60 mL/min. Calculations have been made to determine the gas flow rate of five air-liquid ratios by mass (ALR) with a range of 0.2 to 1. Air is the gas that will be used in the nozzle. A camera, along with the image processing software ImageJ, will be used to determine the Sauter mean diameter (SMD) and the SMD values will be plotted against the ALR values. Each PEO’s molecular weight will be a different data series. An analysis will then be made for the plot and values. This analysis will include a comparison to previous studies by Geckler[2], Broniarz-Press[3], and Hermosín-Reyes[4]. Discussion will also include the applicability of the nozzle in real life applications, considering the experimentally determined upper limit of molecular weight which can still be atomized.

Carter Pryor

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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Abstract Name: Kinetics of H2 Reduction of CO/CO2 to Methanol on Commercially Available Cu-ZnO Catalyst

Methanol is a commodity chemical of great industrial significance, with over 100 million metric tons produced per year, primarily by the hydrogenation of CO over Al2O3 supported Cu-ZnO catalysts. Despite its importance and its history of over 50 years of use, the reaction is poorly understood, with the active phase(s)/site(s), mechanism, and relative role of each metal remaining unclear. Further, though hydrogenation of CO2 to methanol is also thermodynamically allowed, it is strongly kinetically limited with current catalysts. As captured CO2 becomes increasingly available as a feedstock for chemical processes, greater understanding of traditional methanol synthesis is vital to development of new catalysts that will permit economically viable conversion with CO2 as the feed, since high operating temperatures reduce the already equilibrium-limited conversion. Using a custom-built reactor system, we have examined the effect of feed and process conditions on methanol formation with a commercial Cu-ZnO/Al2O3 methanol catalyst. The rate orders of CO and H2 have also been computed from reaction data, with implications for the rate-determining step of the reaction. Addition of small amounts of CO2 to the feed significantly reduce conversion, suggesting competitive adsorption between CO and CO2; temperature programmed desorption (TPD) of spent catalysts support this premise. Finally, temperature programmed oxidation (TPO) of spent catalysts have also indicated catalyst fouling has occurred during reaction and that the foulanst are hydrocarbon and elemental carbon. These results lay the groundwork for gaining a deeper understanding of traditional methanol catalysts and pave the way for the development of a new generation of catalysts that will permit selective conversion of CO2.

Audrey Pumphrey

OK - University of Central Oklahoma

Discipline: Humanities

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Abstract Name: Bumper Stickers: America's SoapBox on Wheels

Today bumper stickers are a driver's way of communicating and sharing ideas on the road. However, when these stickers were first used in the 1920s it was for practical uses such as advertising. Surprisingly there is a strong correlation between cultural events and the design of bumper stickers you see throughout the years. Bumper stickers, and other ephemera, became a key part of political campaigns starting around the 60s. While the value and goals of these political stickers have changed over time, the design within them has not changed drastically due to their effectiveness. Bumper stickers have also been seen at the forefront of many protests. Many of these protests surround civil and human rights and were often made by those who were protesting rather than a manufacturer. Like many things in life, these movements had those who opposed them. However, the interesting thing in the case of bumper stickers is that: those who opposed them often made stickers similar to the ones who they opposed. For example, the Black Lives Matter (BLM) and All Lives Matter (ALM) bumper stickers look the same besides the swapping of “black” with “all”. One of the main reasons for doing this is the effectiveness of the design that is being ripped off. Another type of bumper sticker that has become popular in the last 10 years is stickers surrounding irony. Gen-Z has brought irony,

post-irony, and meta-irony into the mainstream, and now the road. Most of these stickers showcase “bad design” and satirical nonsense, which in itself is ironic. Whether they advocate for causes, express political views, or are simply nonsensical, bumper stickers allow our vehicles to be public forums, showcasing our beliefs to all on the road.

Taylor Puno

CA - University of La Verne

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Abstract Name: Urban Heat and Cool Island Effects on Aerosol Microbiome Assemblages

Aeroecology is an emerging field that aims to understand the ecological function of the aerosphere. While the term was coined in 2008, its roots can be traced back to World War II when radar technology was recognized for ecological research. Aeroecology has gained attention due to its potential in studying pollution, disease, crop damage, and pest control. The atmospheric environment consists of biotic and abiotic components that influence aerosol microbiome composition. However, more research is needed to characterize bioaerosols and understand their dynamics in the face of climate change. Our study examines the impact of urbanization, particularly heat and cool island effects, on airborne microorganisms. We hypothesized that aerosol microbial richness, diversity, and evenness would vary with the time and location of heat and cool island effects. In La Verne, we observed changes in microbial richness in relation to the time and location of heat and cool island effects, but microbial diversity and evenness remained unaffected by these independent factors. Notably, the south campus of the University of La Verne exhibited the highest aerosol microbial richness, whereas Las Flores Park displayed significant changes in aerosol microbial richness between the (morning) urban cool island effect and (afternoon) urban heat island effect. Our findings emphasize the need for further research on aerosol microbiome dynamics in urban environments to better understand their impacts on human health and the environment, contributing to sustainable urban planning.

Rishita Puril

PA - Drexel University

Discipline: Natural and Physical Sciences

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Abstract Name: Exploring the Unique Reactivity of Unsaturated Isocyanides

Isocyanoalkenes are functionalized isocyanides that facilitate the efficient synthesis of pyridines, imidazoles, and peptide nucleic acids. They have the potential to act as precursors for numerous bioactive compounds, including the antibiotics Isocyanoindole B371 and Xanthocillin X derived from Penicillium notatum. The purpose of our research is to explore the largely unknown chemistry of a specific isocyanide-based functional group— the bromoisocyanoalkene. Due to its reactivity being relatively underdeveloped, we want to discover how the compound acts in a chemical environment to learn more about its reaction mechanisms and how its unique chemistry and structure can be useful in the pharmaceutical world.To begin, the lab-made vinyl formamide, formed by a cross-coupling reaction between vinyl iodide and formamide, served as a precursor for generating two bromoisocyanoalkenes, each featuring distinct alkyl and aryl substituents. One substrate was cyclic, while the other had an OBOM group at the ortho position of its phenyl ring. Upon treating the bromoisocyanides with NaSH, we found out that the compound was converted to thiazole. The reaction pathway presumably underwent a sequence of elimination, addition, deprotonation, cyclization, and protonation reactions. The OBOM bromoisocyanoalkene produced 5-substituted thiazole, and the cyclic substrate generated cyclic thiazole.Our ongoing efforts are currently directed towards further developing the NaSH addition to bromoisocyanoalkenes into a universal pathway to thiazole synthesis by experimenting with several more substrates that offer diverse electronic and steric properties. We aim to ultimately manufacture a seamless method to produce the highest yield of various thiazole products, the next being the thiazole alkaloid, Peganumal A.

Emily Pursley

IL - Illinois College

Discipline: Humanities

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Abstract Name: Telling a Story of Freedom: The Preservation and Interpretation of New Philadelphia as a Site of Public History

New Philadelphia was founded in 1836 in Pike County, Illinois, by “Free” Frank McWorter. It was the first town in the United States to be platted and legally registered by an African American. Frank McWorter, born enslaved, was in a unique position to be able to buy his own and his family’s freedom through decades of hard work. His legacy lives on at New Philadelphia, and though the town has long since vanished, it is honored today as the newest unit of the National Park Service with the designation of National Historic Site. The townsite is also honored as part of the NPS Underground Railroad Network to Freedom, as a National Historic Landmark, and the townsite and Frank McWorter’s gravesite are on the National Register of Historic Places. This history’s significance has been recognized and remembered, but how it has been remembered, and how it will be remembered in future generations, is a matter of debate. Various interpretations over the years have taken opposing positions on how the site should be cared for and how the story should be told, causing conflict among stakeholders. Common narratives tend to exaggerate certain aspects or events and favor one extreme or the other, fixating either on beauty and harmony or adversity and strife. On both ends of the spectrum, historical evidence is misinterpreted and misused—or ignored entirely. This paper analyzes what secondary source authors, McWorter descendants, and community members have said and uses primary sources, textbooks, and other scholarship to argue that the sensationalized story being told is not the factual and well-rounded history that should be represented at this site in its future as a National Historic Site.

Andrea Putri

NC - North Carolina State University

Discipline: Natural and Physical Sciences

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Abstract Name: Preliminary Comparisons of Water Quality Between Waterways Within the Walnut Creek Watershed

Aging water infrastructures impact urban stream water quality. We currently study two waterways, one in the Centennial campus at NC State University (CC), which has lost much riparian coverage due to stormwater runoff and buildings surrounding it. The second waterway is at the Raleigh Wetland Center (RWW), approximately 5 miles from CC, and has poor water quality due to aging water infrastructure, erosion, and flooding. The differences between the sites were mainly due to the differences in the non-point sources of pollution. Our initial water quality parameter data (pH, conductivity, dissolved oxygen, and nutrients) has shown fluctuations in the parameter values in RWW while more steady changes in the CC creek. The objectives of this study are to develop reference indices for freshwater quality parameters using the measurements mentioned above from CC and use the reference indices to compare data of the same parameters from RWW waterways before and after the replacement of the sewer pipes. We will use existing water quality data from RWW before and after pipe replacement and continue to monitor both waterways. The result of this study will be vital to understanding the effectiveness of replacing aging sewer pipes to enhance the water quality in urban waterways. Furthermore, study findings are expected to highlight the importance of maintaining and repairing the water infrastructures in the watersheds and have important implications for policy and budget allocation of municipalities in the fast-changing world.

Jalaa Qays-Grier

NC - Winston-Salem State University

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Abstract Name: Identification of Phenolic compounds in Bryophyllum Pinnatum leaf using different organic solvents

Bryophyllum Pinnatum (Lam.), is a perennial native plant from Madagascar and belong to the family Crassulaceae. The leaves are widely used in traditional medicine due to their biological activities for the treatment of several diseases, including inflammation, hypertension, kidney stones, gastrointestinal disorder, and other oxidative processes. The medicinal and pharmacological properties of Bryophyllum Pinnatum are attributed to the presence of secondary phenolic compounds. This study aimed to elucidate the phenolic composition of Bryophyllum pinnatum leaf extract using different organic solvent. Preparation of the leaf extracts involved methanol and ethanol as solvents. The methanol and ethanol leaf extracts were analyzed for total phenolic content using the Folin method and total protein concentration using the BCA method. Additionally, the antioxidant capacity of the extracts was quantitatively assessed using the Oxiselect antioxidant assay. Subsequently, high performance liquid chromatography (HPLC) analysis was done to

identify major phenolic constituents within the extracts. The study results showed higher total phenolic content, and total antioxidant capacity in the ethanol-based BP extract compared to methanol-based extract. Ethanol-based BP extract had elevated total protein concentration (2610.14±5.68 μg/mL) than methanol BP extract (2464.16 ±2.94 μg/mL). These results indicate that the choice of extraction solvents affects the extraction efficiency of phenolic compounds in BP leaf. HPLC analysis identified three flavonoid compounds- kaempferol, quercetin, myricetin in both methanol and ethanol extracts. The study findings demonstrated the importance of solvent selection in optimizing the phenolic profile in BP leaf for potential therapeutic application. In addition, the identification of these flavonoids compounds contributes to understanding the phenolic composition of BP and potentially correlating with its medicinal properties.

Hieu Quach

IL - Knox College

Discipline: Business and Entrepreneurship

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Abstract Name: Gender Earnings Inequality: Technology vs. Total Workforce

Big and famous topics, although old, need to receive attention to be re-researched carefully because under the impact of the COVID-19 pandemic, everything has become unprecedented and unpredictable. One of the topics is the gender wage gap, with a particular focus on technology and science workers because of the importance in the field's development. Using data from Basic Monthly CPS and utilizing the Blinder-Oaxaca Model, the aim is to connect relevant components (education, gender, industry, and incomes) to provide up-to-date knowledge of the research problem.

Hillary Quach

FL - University of Central Florida

Discipline: Natural and Physical Sciences

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Abstract Name: A Tail of Two Fishes: Exploring Population Structure in Two Fish Species Across the Galápagos Islands

The Galápagos Islands, a UNESCO World Heritage Site and a biodiversity hotspot with high levels of endemism, is home to over 440 species of fishes. Marine conditions across the Archipelago are greatly influenced by ocean currents in the region. The Pacific Equatorial Undercurrent, South Equatorial Current, and the Humboldt Current deliver waters rich in nutrients across the three major regions within the Galápagos (northern, western, and central). These conditions create a dynamic environment close to the equator, enabling diverse species to thrive in distinct parts of the Galápagos. Despite the rich biodiversity in the region and diverse oceanographic conditions, there has been limited research examining the genetic connectivity of marine populations across the Galápagos Islands. The objective of this study is to examine population

structure in two fish species located across the three regions of the Galápagos: the southern white tail major (Stegastes beebei) and the blacktip cardinalfish (Apogon atradorsatus). These species differ in reproductive strategies and the length of their dispersive larval stage, offering a unique opportunity to study the interplay between ecological conditions, reproductive strategies, and population dynamics. Here we use restriction-site Associated DNA sequencing on 55 individuals from each species across the three major regions. We analyzed both neutral and potentially selective loci to provide valuable insight into how species adapt to their environment, which have important implications for conservation and fisheries management in the Galápagos.

Sarah Quach

CA - Chapman University

Discipline: Natural and Physical Sciences

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Abstract Name: Triangulating Neural Correlates of Consciousness

For decades, neuroscientists have been trying to find a plausible explanation for how our subjective experience could emerge from processes in the brain. Early work by Christof Koch and Francis Crick on the neural basis of consciousness argued that consciousness can be approached empirically by identifying the neural correlates of consciousness (NCCs). Past experiments attempted to identify the NCCs using common manipulations like backward masking to interfere with conscious perception. Although the use of this method suggests many different candidate NCCs, in theory using any one manipulation alone to identify the neural processes that define consciousness is limited. It becomes difficult to determine which candidate NCCs are specific to the manipulation, and which are general properties of consciousness. The primary aim of this project is to identify more generalizable NCCs, by using a different and more innovative approach: the "triangulation" method. Using electro-encephalography (EEG) to record brain data, this approach compares the results of three different manipulations of visual perception: backward masking, dichoptic color fusion, and inattentional blindness. By triangulating across the three manipulations, we assess the overlap in putative correlates in response to the very same visual stimuli and in the same human subjects. In particular, this specific project will focus on the representational stability of neural responses to sensory stimuli as a candidate correlate to classify data from individual trials as "seen" or "unseen." The data will provide us with a unique assessment of the overlap among NCCs and allow us to identify NCCs that triangulate across all manipulations of visual perception. Using data-driven machine-learning analyses, the triangulation approach may lead us one step closer to identifying the genuine neural correlates of conscious visual experience.

Maxwell Quaye

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Discipline: Natural and Physical Sciences

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Abstract Name: Comparative Analysis of Lipid Nanoparticle and Liposomal Formulations of Light-Activated Drugs for Photodynamic Therapy Applications

Photodynamic therapy (PDT) is an advancing clinical treatment for cancer therapy that employs the use of light and photosensitive molecules called photosensitizers. PDT operates by illuminating these photosensitizers with specific wavelengths of light which leads to the production of toxic reactive molecular species in target cancerous cells to eliminate them. Visudyne, the only clinically approved nanomedicine for PDT, consists of a liposomal nanocarrier loaded with the photosensitizer BPD. Since its approval, the use of Visudyne and its subsequent liposomal BPD formulations have been extensively explored for PDT applications such as macular degeneration, pancreatic cancer therapy, and imaging, and its creation has solidified it as a prominent PDT modality. Solid lipid nanoparticles (LNPs) are novel lipid based nanocarriers with prominence in nucleic acid delivery systems, such as the mRNA based COVID-19 vaccine. The LNP nanocarrier is a novel platform that has not been deeply explored for PDT. In this study, we compare this novel LNP nanocarrier with the well-established liposome, both loaded with a lipid conjugate of BPD (BPD-PC), to investigate its optical, photochemical, and phototherapeutic properties for PDT. We conducted experiments using in vitro and in vivo models of pancreatic cancer. From our results, we revealed that the LNP formulation displayed greater hydroxyl radical generation when activated with 690 nm light and higher stability observed when carrying BPD-PC, resulting in less leakage compared to the liposome. We also revealed no significant differences in phototoxicity, tumor selectivity, or tumor penetration. Most importantly, we found that LNPs were significantly more efficient at inducing immunogenic cell death when activated with 690 nm light than liposomes. These results highlight LNPs as a promising alternative platform for PDT. LNPs hold considerably more potential than liposomes for immunotherapy applications, especially in diseases like pancreatic cancer where innovative approaches are needed to sensitize the tumors to immunotherapy.

Ivan Quezada

TN - Trevecca Nazarene University

Discipline: Engineering and Architecture

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Abstract Name: Atmospheric Balloon Measurement Control Module

Weather balloons are a key part of atmospheric research and have a rich history in collecting crucial data. In the past, obtaining such data was limited and expensive due to technological limitations. However, the arrival of modern electronics optimized this field, enabling more sophisticated controllers, sensors, and increased memory on compact boards at a lower cost. These technological changes led the way for a groundbreaking project. The design of a board that can obtain atmospheric data at a reduced cost. This project focuses on the planning, redesign, and construction of an atmospheric balloon module built with modern-day equipment like updated pressure and temperature sensors, a stepper driver, and a new automotive networking development board (PIC). The main objective is to collect important data such as pressure, temperature, humidity, and residues, from the Earth's atmosphere. The balloon will ascend to altitude, providing an overview and collecting valuable data that is not easily accessible. The balloon will be monitored through the GPS unit so that it may be retrieved easily once the flight is over. To transfer and read the data, an SD card system will be incorporated into the main board. This data collection system is low-cost and will allow easy access to the information obtained while also making it user-friendly. With the construction of these new and updated

modules, we hope to pick up imperative information that will help us learn more about climatic conditions, climate change, greenhouse effect, and atmospheric composition.

Karen Quick

MT - Montana State University - Bozeman

Discipline: Humanities

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#1 Karen Quick

Abstract Name: Communal Canons: The Importance of Digital Fanfiction

The shift from printed fanfiction to digital fanfiction in the last two decades has resulted in an “explosion” of access, the use of which is “largely removed” from the study of researchers (Hill and Pecoskie). Unlike the widespread acknowledgment and engagement of popular media such as novels and movies, the act of reading and writing fanfiction remains relatively under the radar. Infrequently discussed yet widely accessible, the databases and engagement on fanfiction sites continue to grow. Archive of Our Own (AO3) boasts a community of over 5 million users and 10 million works. Another larger platform, Wattpad, claims to have over 90 million users globally. But what is it that makes the act of fanfiction reading and writing so popular? At the very essence of the genre, is there a dominant craving that pushes people towards these communities, or is current research incapable of offering potential reasonings?Currently, a plethora of research stands to suggest and introduce various potential explorations for the appeal of fanfiction writing. Each is widely varied, though one predominant suggestion is that fanfiction stands to be a reclamation of identity, especially for marginalized groups. These works allow marginalized persons to “push back against and offer alternatives to stereotypical and normative discourses” (Black et al). Sapuridis and Alberto, on the other hand, propose that fanfiction–more specifically, self-insert fanfictions–function as a means through which “any reader who encounters it” may superimpose themselves on the narrative and live vicariously through it. However, these studies lack consideration of the thoughts of the readers and writers of the fanfictions. My presentation seeks to fill this gap. It relies and reflects on a set of anonymous, voluntary survey responses offered up by fanfiction readers and writers to shed light on the largely unheard voices of fanfiction readers and writers.

Taitasi Quinata

CA - California State University - Channel Islands

Discipline: Social Sciences

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Abstract Name: Articulatory and Acoustic Effects in Verbal Responses to an Online Quizzing Task

Speech is thought to be a pre-planned action that can be held in a buffer during a conversation. Emerging work suggests the contents of this buffer can affect lip and tongue positioning, long before speech sounds are audibly produced. The objective of this study is to expand on how speech planning is influenced by conversational cues using a verbal quizzing paradigm. Our approach involved a replication and adaptation of the approach used by Bogles et al (2015), who asked quiz questions in Dutch, in an in-person laboratory experiment. This study uses a similar design in English, using American pop culture. We formulated a set of 50 questions. Each question had both an early and late version; where early cues were in the middle of the question and late cues were at the very end. This study was designed to be fully online, utilizing novel

webcam lip-tracking software. This enables the data collected to be immediately uploaded and allows participation from anywhere. The software measures the lip-movements to determine when speech planning begins in reference to when vocal responses occur. In concurrence with prior work, we expect there to be shorter verbal reaction times with the early cued questions. This expectation is supported by the acoustic data, which suggests that participant's audible responses began sooner when questions used the early cues. The analysis of articulatory data is ongoing.

Tate Quintero

OK - University of Central Oklahoma

Discipline: Education

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Abstract Name: The Chaotic Mind of David Carson: One of the Worlds most successful yet controversial designers

Graphic designers tend to struggle with the aspect of stepping too far outside of the box. With a field that is so diverse and endless, infinitely growing and expanding; How could this ever be an issue? Because of the creative freedom that graphic design may encompass, rules have been constructed in order to limit designers to create and put forward work that clearly tells a story in an admirable way. These rules were seemingly created in hopes of avoiding designs that may confuse the public or send them the wrong message that they may not be able to correctly comprehend. Although unaware of his claimed rule-breaking, David Carson took an approach to graphic design that required no rules. He dove into open minded exploring and forever changed the world of creating. He painstakingly expanded the minds of critics, viewers, and readers of his artistic productions, permanently opening the doors of possibility to future designers. While Carson faced many difficulties throughout his career, he continued to bring expression and meaning back into type design and format, whether it be in advertisements or his own publications. David Carson was misunderstood by most and appreciated by many. He has not only proven to be a monster of an influence in the design community, but has also forever pasted his name into the history of graphic design.

McKenna Quirk

MT - Montana State University

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Abstract Name: The Effects of Treatment with Baytril® (Enrofloxacin) on qPCR Detectable Levels of Mesomycoplasma ovipneumoniae

Mesomycoplasma ovipneumoniae (previously Mycoplasma ovipneumoniae) is a respiratory pathogen that infects domestic sheep (Ovis aries), domestic goats (Capra hircus) and Bighorn Sheep (Ovis canadensis). This bacterium can cause acute to chronic pneumonia in domestic sheep, while Bighorn sheep often develop fatal pneumonia when exposed to this pathogen. To study M. ovipneumoniae infection in a sheep model, a specific-pathogen-free (SPF) herd of domestic sheep was established in 2020 and has been routinely screened to confirm SPF status. To test the efficacy of the antibiotic Baytril® (enrofloxacin) in treating M. ovipnuemoniae infection, ten SPF sheep were randomly selected and separated equally into a treatment group and a control group that did not receive treatment. All ten sheep were infected with M. ovipneumoniae via inoculation of the nasal and oral cavities and the conjunctival sacs and were observed for four weeks. The treatment group then received Baytril® for five days subcutaneously and via nasal wash while the control group remained untreated. All sheep were observed for four weeks after treatment and then euthanized. Weekly nasal swabs were obtained from all sheep and post mortem swabs of the paranasal sinuses, trachea and bronchi were collected immediately after euthanasia. An Eppendorf epMotion 5075 robot was utilized to perform DNA extractions on the weekly nasal swabs. Subsequent qPCR of the nasal swabs showed that M. ovipneumoniae was below a detectable level one week after Baytril® administration in all treated lambs. However, 1/5 and 3/5 lambs in the Baytril® group tested positive for M. ovipneumoniae at 2 and 3 weeks post treatment. The untreated control lambs consistently exhibited detectable levels of M. ovipneumoniae. Reemergence of infection after antibiotic treatment could be attributed to presence of M. ovipneumoniae in other respiratory tract areas. Future steps include performing qPCR on the various post mortem swabs.

Neely Quirk

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

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Abstract Name: Synthesis & Characterization of Biofriendly Pressure Sensitive Adhesives

Pressure-sensitive adhesives (PSAs) are prevalent in daily life, ranging from everyday items like sticky notes to more critical applications in the medical field, such as bandages. However, the use of nonrenewable petroleum in adhesives contributes to environmental sustainability challenges. To address this issue and promote a more sustainable future, we investigate the potential of bio-friendly, bioderived materials such as polyethylene glycol (PEG), cyclodextrin (CD) which is a sugar derivative, and lipoic acid (LA) derived from garlic, for use in PSAs. Our research focuses on creating adhesive materials with properties comparable to petroleum-based counterparts by leveraging these bio-friendly materials to form slide-ring structures known as polyrotaxanes (PR). Polyrotaxanes, featuring rings along the main polymer strand, exhibit remarkable stress dissipation and fracture resistance due to the pulley effect. The utilization of polyrotaxanes as adhesives is not a novel concept, particularly within the realm of epoxy glues. However, using biofriendly materials to synthesize polyrotaxanes for adhesives marks a noteworthy innovation within this field. We take a 3-step approach – lipoated CD synthesis, sample fabrication, and calculation of work of debonding. In the sample fabrication step, systematic variation of adhesive formulations lets us optimize the crosslinker (LCD) percentage for adhesion in ambient air and underwater. Our ongoing testing methodologies are probe-tack testing, T-peel test, response to seawater and & biomes, and underwater load-bearing assessments over varying ratios of LA:LAPR, ranging from 1:1 to 199:1. These tests mimic the parameters the adhesive encounters during its life cycle and its projected biocompatible degradation. In conclusion, our developed adhesive composition, particularly the LA:LCD formulation, holds promise as a bio-friendly and biodegradable alternative to conventional petroleum-based adhesives and will contribute to the advancement of sustainable adhesive technologies.

Megan Raab

PA - Messiah University

Discipline: Business and Entrepreneurship

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Abstract Name: Viability and Efficacy of Savings Groups in Shantytowns

Savings groups are used globally in both rural and urban areas in order to promote community-based savings and lending to those who lack access to formal financial institutions. Shantytowns are a unique urban area due to their peripheral urban locations and specific socioeconomic characteristics. It is known that savings groups are used in shantytowns but there is little discussion of the viability and efficacy of savings groups in shantytowns. This paper used a synthesis of literature on savings groups and studies on shantytowns to analyze key drivers of savings group formation that relate to shantytowns. Antecedents of savings group formation and success include physical proximity, social capital, and a desire for social security. These align with shantytown socioeconomic characteristics such as physical crowding, longevity of stay, and poor living conditions. This study suggests that savings groups are likely to flourish in shantytowns due to the pattern of drivers. Effective savings groups in shantytowns can lead to numerous benefits that not only include improved social bonding and economic growth from their functioning as a savings and lending mechanism but also greater political influence that can drive greater social change.

Anatalia Radoc

WI - University of Wisconsin-La Crosse

Discipline: Humanities

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#1 Anatalia Radoc

Abstract Name: Gone Phishing: A Comprehensive Study of Phishing Prevention Tactics at the University of Wisconsin-La Crosse

Higher education institutions (HEI) have become the latest target for phishing scams due to their decentralized nature, complacent attitude toward data security, and possession of hundreds, if not thousands, of individuals' personal information. One of the most widely accepted methods of protecting valuable personal data is creating a culture of cyber security throughout the institution via information security awareness education and reporting system. This project seeks to identify the extent of the University of Wisconsin's data security policies to promote digital safety and identify ways the university can improve this policy to better protect student information. I argue that UWL is not taking appropriate measures to create a culture of cybersecurity by implementing an ineffective security awareness policy that wholly leaves out one of the university's largest stakeholders: students. I will conduct a textual analysis of UWL information security policy, UW System network security policy, and messages from the school regarding phishing scams to understand how policy language and rhetoric shapes information security awareness practices at the university. I will also conduct interviews with IT faculty leaders at UWL and UW Madison to understand how current security awareness policies for the entire UW system are successful at protecting students and creating a culture of cyber security. Finally, I will consult research in the field to recommend specific changes UWL could make to their security awareness policies to ensure students are receiving the necessary tools to protect themselves. The most important weapon HEIs have against potential data breaches that would cost the

university hundreds of thousands of dollars is a confident, properly educated school population aware of the importance of online safety.

Madeline Radosevic

VA - Virginia Tech

Discipline: Natural and Physical Sciences

Authors:
#1 Madeline Radosevic
#2 Rebecca Thompson
#3 Erica Feuerbacher

Abstract Name: The Evaluation of Equine Diets for Determination of Nutrient Deficiencies and Surpluses

Having a balanced diet is an important part of equine welfare. Unbalanced diets have been attributed to cause poor performance, behavioral issues, poor hoof and coat quality as well as failure to maintain condition. More serious issues such as colic, ulcers or laminitis can also be attributed to an incorrectly balanced diet. The aim of this study was to evaluate the diets of 32 horses using the 2007 NRC guidelines including ratios for the micronutrients. The study horses included ? geldings and ? mares with ages from 6 to 29 years. All horses were fed ad libitum first cutting grass hay. All horses received at least one supplemental source of calories, with most receiving 2 sources of supplemental calories. The amount of energy (megacalories) and nutrients each horse required per day was calculated using their current bodyweight in kilograms regardless of their Body Condition Score (BCS). We determined that 32 horses (100%) had an unbalanced diet with the most common deficiencies being in Copper (90.6%) and Zinc (96.9%). Thirty-two horses (100%) had a surplus of iron which we established as the primary cause of Copper and Zinc deficiency. Sodium deficiency was found in 15 horses (46.9%) while Chloride deficiency was found in 5 horses (15.6%). Sodium and Chloride deficiencies could be correlated with the amount of required daily megacalories a horse received from their hay, with Chloride deficiency linked with hay intake under 30% and Sodium deficiency being linked with hay intake over 50%. These trends show that the average horse likely has an unbalanced diet which could be negatively affecting performance, behavior and overall health. Additionally, hay cutting and variety can play a large role in the nutritional value of hay, which could impact horse health as hay or pasture is the majority of most horses' diets.

Kristina Radovic

GA - Brenau University

Discipline:

Authors:
#1 Kristina Radovic

Abstract Name: Estimating the Price and Income Elasticities of Domestic Passenger Travel Demand for Atlanta Airport

As we all know, understanding consumers' responsiveness to price and income changes are very important concept in microeconomics. Practitioners such as operating managers of airports also need to have information on price and income elasticity estimates to perform effective revenue management. This study examined the domestic air travel market demand for Atlanta Hartsfield–Jackson Airport (AHJA) and estimated own price and income elasticities using data from the Bureau of Transportation Statistics and

Atlanta Fed. We used the Stock-Watson dynamic ordinary least square (DOLS) procedure (Stock and Watson, 1993) which improves on OLS by coping with small samples and dynamic sources of bias. As we expected, the airfare has a negative and significant impact on revenue passenger miles. Since the absolute value of the coefficient is less than 1, it indicates that own price elasticity of demand for air travel is inelastic. In other words, air travelers are less responsive to a price change. For instance, a 10% increase inairfare, reduces the revenue passenger mile by only 4.2%. Moreover, there is a significant and positive relationship between income and revenue passenger miles. The income coefficient is greater than one and hence indicates an elastic income elasticity of demand. A 10% increase in real income brings about a 22.8 % increase in revenue passenger miles.

Percy Raggi

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Percy Raggi
#2 D'Juan Farmer
#3 Kathryn Wilhem

Abstract Name: Investigating the Zebrafish-Specific Gene wu:fj16a03 as a Tool to Visualize and Manipulate Meningeal Development

The meninges are a multi-layered membranous tissue between the skull and brain, and have been implicated as a regulator of bone and brain development. However, the specific mechanisms controlling interactions between these tissues remain unclear. The zebrafish model proves useful as a unique model for this, developing outside of the mother and allowing for in depth live imaging throughout the developmental processes, but little is known currently about meningeal development in this species. Therefore, we sought to identify meninges-specific genes that could be used to aid the visualization of zebrafish meningeal development. By performing single cell RNA-sequencing of the zebrafish skull and its associated tissues, the Farmer lab identified high expression of a previously uncharacterized zebrafish specific gene known as wu:fj16a03 in meninges. In order to test whether wu:fj16a03 labels meninges in vivo, we successfully created a knock-in line using CRISPR/Cas9 to insert a nlsEOS fluorescent protein downstream of the endogenous wu:fj16a03 promoter. Preliminary imaging suggests that wu:fj16a03 expression in the meninges emerges between early larval development and adulthood. To enable manipulation of wu:fj16a03 expressing cells, we are now generating a wu:fj16a03:Gal4 zebrafish line to enable use of the extensively utilized Gal4:UAS system for future functional tests. Additionally, we are currently focusing on understanding the precise temporal and spatial expression of wu:fj16a03 during development. These experiments lay an important foundation for the Farmer lab to use zebrafish as a model to understand intra-tissue signaling critical for proper skull development.

Harishankar Raghunath

CA - University of California - Berkeley

Discipline: Business and Entrepreneurship

Authors:
#1 Harishankar Raghunath

Abstract Name: Breaking or Bluffing: Artificial Intelligence Impact on Bay Area Businesses

Artificial intelligence (AI), a rapidly developing field, has been a topic of discourse and debate in the past decades. Throughout its development, businesses find opportunity to use AI and its generated content, in numerous areas such as marketing, product development, management, and overall strategy. The paper will review AI development within the United States, and policies introduced by the US, California State, and local governments. Additionally, the paper will discuss particularly about AI usage within the healthcare industry in the Bay Area. Subsequently, there will be three types of statistical examinations on the data: hypothesis testing, analyzing the associations to understand AI impact, and data visualizations of revenue, number of employees, and stock market valuation upon significant usage of AI. The study also reviews the current literature and perspectives on AI development, and analyzes the business policies and strategies of healthcare companies using interviews. The study concludes with some implications and recommendations for policy makers, business practitioners, and academic researchers.

Roshna Ragunathan

NC - University of North Carolina at Charlotte

Discipline: Natural and Physical Sciences

Authors:
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#2 Md. Raihan Uddin
#3 Marilyn Gunner

Abstract Name: Conservation of Key Residues Involved in Proton Pumping Pathways in Respiratory Complex I

Respiratory Complex I is the first enzyme in the aerobic electron transport chain. It actively pumps 4 H+ across the membrane by coupling their transfer to thermodynamically energy-releasing redox reactions. In Thermus thermophilus, the membrane domain that transports protons across the membrane consists of three homologous antiporter channels and the E-channel. Each channel transports one proton across the membrane. Previous studies have revealed that there are several key residues involved in proton pumping via the Grotthus mechanism in the antiporter and E-channels of Complex I . Many of these residues are highly conserved across species. However, the conservation of nearby residues within a 6 to 8-angstrom radius is not known, so it was investigated using Basic Local Alignment Search Tool (BLAST), multiple sequence alignment (MSA), and WebLogos. Individual key residues are often highly conserved, but the surrounding residues range from moderately conserved to having low conservation. Oftentimes, there is no uniform residue characteristic, with nearby residues being hydrophobic and nonpolar, reflecting the characteristic of the interior of membrane proteins. Additionally, sequence comparison of the antiporter channels showed a similarity of less than 30% with each other. However, key residues occur in the same generalized location of the channel, indicating structure is more conserved than sequence. Using the program CoeViz, covariance studies of the key residues were conducted and revealed that residues significantly covary with hydrophobic residues. However, there is no clear pattern to the covarying residues. As a future direction, the covariance matrix will be utilized for further analysis to uncover any underlying patterns. This work is supported by NSF-REU MCB 1852496.

Nafina Raha

CA - California State University - Northridge

Discipline: Humanities

Authors:

#1 Nafina Raha

Abstract Name: A Comparative Intertextual Analysis of Generational Haunting in Diasporic Korean and Armenian Communities

Despite the prominence of analysis on markers of generational trauma within studies of the “comfort women” and the Armenian Genocide, these markers have yet to be studied in comparison. Generational haunting in Korean and Armenian communities are marked by historic instances of state-sanctioned mass sexual violence, which was weaponized by both the Japanese Imperial Army and the Ottoman Empire. The aim of this study is to conduct an intertextual analysis of generational trauma, haunting, and the figure of the ghost in two diasporic narratives, Comfort Women by Nora Okja Keller and Orhan’s Inheritance by Aline Ohanesian, and to place these narratives within the greater historical context of the gendered violence against the “comfort women” and Armenian women during the Genocide. Los Angeles will be my site of research due to the large Korean and Armenian American diasporic communities, which together have a history of coalition work towards memorialization and commemoration. This study addresses three things: 1) the role of diaspora in addressing gendered violence and trauma within literature; 2) the significance of different markers of generational trauma and haunting; and 3) my commitment to taking a victim-centered approach and centering survivors’ agency in my study of these texts. The ghost and generational haunting reflect how silencing, denial, and erasure–which has impacted communities targeted by Japanese military sexual slavery as well as the Armenian community in relation to the genocide–have led to subsequent generations being haunted by the ghosts of those who never got to tell their stories or whose stories were denied/suppressed by denialists and revisionists. Central to this study of generational trauma and haunting is the importance of survivors’ agency; the ghost manifests in the lives of diasporic agents due to the silencing of victims’ stories and voices.

Sara Rahimnejad

CA - Mt. San Antonio College

Discipline:

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Abstract Name: Bridging Horizons: Mentor-Student Collaboration Igniting Photocatalytic Innovations for Real-World Challenges

In the field of renewable energy, semiconductor-driven photocatalysis emerges as a pioneering force, offering extensive applications in both energy and environmental domains.Understanding the effects of different crystalline structures on photocatalytic efficiency becomes imperative as it not only influences the overall performance but also provides crucial insights for tailoring and optimizing these materials for enhanced real-world applications. This research, conducted by an instructor alongside community college students, Investigating the distinctive impacts of crystalline structures is essential for unlocking the full potential of photocatalysts and advancing the development of efficient and sustainable solutions.Tungsten trioxide (WO3), an n-type semiconductor, emerges as a promising candidate due to its stability, environmental friendliness, biocompatibility, and tunable bandgap. This study delves into the synthesis of monoclinic WO3 nano cubes and rods showcasing enhanced photocatalytic activity following calcination.Expanding the horizons of this exploration, the study investigates efficient photocatalysts for environmental remediation under LED visible light. Employing a hydrothermal method, two distinct structures of WO3 photocatalysts – Rod and Cubic – undergo thorough characterization using SEM, Powder XRD, and EPR techniques. The photocatalytic efficiency of these structures, particularly the WO3-500 cubic calcined temperature, emerges as a standout performer, achieving approximately 90% degradation of rhodamine B in just 50 minutes.Noteworthy is the consistent high-performance exhibited by both WO3 Rod and WO3 Cubic

structures across varying LED intensities. EPR measurements shed the influence of calcination temperature on oxygen vacancy concentrations, while powder XRD analysis confirms the high purity and crystallinity of the WO3 samples. The study's findings underscore the pivotal role of mentor-student partnerships in transcending academic boundaries, facilitating the development of cutting-edge solutions for real-world challenges in renewable energy and environmental remediation.

Sanjana Rahman

KY - University of Kentucky

Discipline: Education

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Abstract Name: More than a Monolith: How the Model Minority Myth Impacts Asian/Asian-American Students' Experiences

By understanding students' social context, we can better understand and support their mathematics learning. For example, Black and Latine students' sense of belonging is related to STEM persistence (Barbieri & Miller-Cotto, 2021). However, little research has addressed math experiences of Asian/Asian-American (A/AA) students. Anecdotal accounts indicate that Asian students experience the "model minority" myth when their mathematics competence is evaluated against the stereotype of a perfect student or the "model minority" than actual performance (Blackburn, 2019). To our knowledge, there is little to no empirical research on how the "model minority" myth (MMM) impacts students' perception of mathematical experiences. In this study, we explore Asian/Asian-Americans' prior experiences with the "model minority" myth in mathematics, including understanding whether A/AAs endorse the ideas of the myth. Also, we examine how priming the "model minority" stereotype affects A/AAs math performance. Undergraduate A/AA students (N = 50) will be randomly assigned to read about the MMM or read a control paragraph before a series of simple algebra problems. Then, they will answer questions about their experiences with math, thoughts about and experiences with the MMM, and social dominance orientation. Data collection will begin in Dec 2023. We hypothesize that priming the "model minority" stereotype will cause heightened pressure among A/AA students leading to decreased performance. We will explore patterns among different ethnic and cultural subgroups. Additionally, we will qualitatively examine themes in A/AA students' written responses about their experiences with the MMM. This research will make a novel contribution to the literature on student experiences in math by increasing the understanding of diverse perspectives in undergraduate education. In addition, it will further elucidate both the role of social identity in learning and also how shifts and emerges in identity might affect development.

Hari Rajah

CA - Cuesta College

Discipline: Engineering and Architecture

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Abstract Name: 3D Printed Aircraft for Extended Flight Duration: An Undergraduate Research Project

This undergraduate research outlines the project design undertaken by a team of three undergraduate engineering students from Community Cuesta College, San Luis Obispo, participating in the 2024 3D Printed Aircraft Competition at California State University, Los Angeles. The primary objective of this project is to design, construct, and test a 3D-printable aircraft with the ultimate goal of achieving the longest possible flight duration. The document provides insights into the background research, highlighting the existing knowledge base in the field. It further outlines the specific objectives of the project, including the design, construction, and testing phases. Additionally, the document addresses the project's management approach, detailing how the team plans to coordinate efforts to meet the competition's requirements. This research aims to contribute to the field of aerospace engineering by pushing the boundaries of 3D-printed aircraft capabilities. The outcomes of this project will be essential not only for the competition but also for advancing the understanding and application of 3D printing in aircraft design.

Melissa Rajalingam

GBR - Brighton and Sussex Medical School

Discipline: Health and Human Services

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#3 Ben Hicks

Abstract Name: Motivations for being informal carers of people living with dementia: An updated systematic review

Informal caregivers offer vital continuous, unpaid care to improve the quality of life of people with dementia and ease the demand for care services. The dyadic process of caregiving has multifaceted impacts warranting efforts to reduce caregiver burden and improve well-being, understanding motivations for adopting a caregiving role can predict experiences, perceptions, and impacts on caregivers. A systematic review conducted by Greenwood and Smith found motivators for informal caregivers. Substantial evidence documents variations in cultural perception and social values influencing caregiver experiences and motivations. The purpose of this systematic review was to update the searches by Greenwood and Smith to describe and compare the motivations of caregiving between demographics, ethnicities, and cultures. Six electronic databases were searched from August 2018 to August 2023. Titles and abstracts screened using Machine Learning approaches (ASReview). A subset of full texts was screened in duplicate. Included studies were appraised using the Mixed Methods Appraisal Tool (MMAT). Extracted data were grouped into themes. Initial database searches identified 1,530 articles and the following deduplication and screening 12 shortlisted studies were included. These were added to the existing 26 studies from Greenwood and Smith. Cultural explanations for motivations for caregiving include familism, ethnic identity, cultural values and beliefs, obligation, and sense of fulfilment. Cultural perception and social values influence caregivers' experiences and perceptions thus affecting the family's engagement/acceptance of formal care/support. Further research is warranted to inform advances in psychosocial support interventions for ethnically diverse caregivers to achieve personalised care and reduce the burden on family caregivers.

Snekha Rajasekaran

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:

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Abstract Name: The Role of SCN5A in Sick Sinus Syndrome and other Cardiovascular Diseases: A Bioinformatic Study

Background: Sick sinus syndrome (SSS), also referred to as sinus node dysfunction, is a heart disorder that occurs when the natural pacemaker in the heart fails. The condition is found in approximately 1 in every 600 individuals, often affecting both male and female populations. SSS primarily manifests in older adults but can occur at any age, stemming from a combination of genetic and environmental factors. In many cases, the cause of the condition remains unknown, but genetic changes may play a role, leading to abnormal heartbeats and other symptoms associated with SSS. Identifying these genetic factors could enhance monitoring, diagnosis, and treatment strategies for individuals at risk for this condition, particularly neonates and young infants.Objective: To explore the genetic basis of SSS, we conducted a literature-based review of epidemiological studies to identify potential genes and genetic variants associated with this condition and their occurrence in the population. This survey revealed multiple genes associated with SSS including SCN5A, HCN4, and GNB2.Methods: Bioinformatic resources, such as ClinVar and Human Gene Mutation Database (HGMD), provided information on reported mutations in these genes and their clinical significance.Results: Particularly, several mutations were reported in the SCN5A gene, such as residue changes F1250L, associated with drug-induced long QT syndrome (LQTS); P1298L, associated with SSS; and R1629Q, associated with changes in voltage-gated sodium channel activity, thereby prolonging inactivation recovery and resulting in Brugada syndrome (BrS). These bioinformatic studies identified multiple mutations in the SCN5A gene that contribute to various cardiomyopathies, with particular significance in infants.Conclusion: Building upon these findings, a comprehensive variant analysis has been conducted to understand the impact of these variants and their contribution to the pathophysiology of SSS. Future studies will explore the functional impact through modeling specific mutations in SCN5A using in vitro cardiomyocyte cultures.

Soundharya Ramanathan

AL - University of Alabama at Birmingham

Discipline: Humanities

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#2 Alison Chapman

Abstract Name: Judging a Book by its Cover: A Case Study Analysis on the Rich Publishing History of Daisy Jones & the Six

While the text within a book may remain the same over the course of several years, decades, or centuries, the material contents of the book — i.e., the bibliographic code — is very likely to undergo several changes. These changes are featured primarily on the different covers of a book, whether it's the cover art, title font, or awards received, alongside other attributes.My research chronicles five different editions of Daisy Jones & the Six, a book written by Taylor Jenkins Reid and first published in March of 2019. As I dissect the bibliographic changes this book has undergone through these past five years, I emphasize the importance of each change within the overall world of book publishing and readership. I also analyze the impact of the book's 2023 television adaptation, and how it has contributed to an increase in the circulation of the book. The past year has been monumental in the book's readership, and this has been further reinforced by the bibliographic contents of the novel. While the well-known adage goes, "Don't judge a book by its cover" — it

is in fact these features that are accentuated within the publishing world to better increase a book's visibility and credibility.

Akul Ramayani

NY - Brooklyn College

Discipline: Health and Human Services

Authors:
#1 Akul Ramayani

Abstract Name: Social Healthcare in a Nursing Home Setting

Nursing homes can be defined as end of life healthcare facilities generally for the elderly in which care is provided to those that are usually sick, have some health disorder or are incapable of taking care of themselves. These facilities are primarily occupied by medical professionals such as doctors and nurses that make sure that residents are able to carry out the rest of their life in a reasonable manner. A central component of these facilities and sometimes not present enough are leisure activities. Leisure activities may be delineated as any sort of activity that an individual takes part in voluntarily such as playing games, meeting family or even something as simple as engaging in social interaction with others around you. It has been observed that increased participation in these activities have led to an overall positive impact on the health of these individuals. Variables such as mortality rate, duration of time post-admission, self-report measures and even brain scans corroborate the positive impact of such activities on the individual. A statistical analysis with correlation coefficient values at the forefront will be conducted in order to demonstrate the type of relationship and strength of relationship between the leisure activities and the health variables (variables that describe the overall well-being of an individual). An increased attention to this area of health may lead to a better end of life experience for nursing home residents in the future.

Rakshith Ramdas

AL - University of Alabama at Birmingham

Discipline: Education

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Abstract Name: Educational Reform to Correct Racial Disparities

One key asset individuals in our ever-changing society should have is a strong educational background. However, access to high-quality education is inequitable across persons and places. Educational disparities are prevalent in the state of Alabama, which ranked 39th in reading and 40th in math among fourth-grade students (according to the 2022 National Assessment of Education Programs). Among eighth graders, educational achievement is even worse: Alabama eighth graders ranked 52nd in math and 49th in reading. Unfortunately, the majority of students affected by such disparities are Black and Latino students, who are more likely to attend resource-poor schools and be subject to increased surveillance and disciplinary practices. Disrupting this apparent school-to-prison pipeline means focusing on the qualitative improvement of education for these students, changing their destination from impoverished communities to flourishing careers. The project will present preliminary data from a collaboration between UAB’s JEDI (Justice, Equity, Diversity, & Inclusion) Legal Lab and Growing Kings, a local non-profit organization providing school-based mentoring to struggling students from grades 4th - 12th. Growing Kings supports student success by

providing developmentally-specific instruction and peer mentorship within elementary, middle, and high schools. Using a tight budget for nearly 10 years, Growing Kings has a wealth of hard copy student assessment tracking program participants. The Legal Lab provides data entry support needed for Growing Kings to document program outcomes. The findings of this project have led to the demand for constitutional reform and governmental action. Section 256 of the Alabama State Constitution permits the application of the morally wrong doctrine “separate but equal.” Therefore, it is the best interest of minority students that an amendment to the constitution is approved by the state legislature and is ratified, so that this abominable provision is corrected. With this, public education can institutionalize the fundamental right to quality education for all.

rachel Ramirez

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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#1 Rachel Ramirez

Abstract Name: Casa Amanecer: Inclusive Universal Residential Design for the Visually Impaired, merging traditional methods and advancing technology.

This project presents an approach to residential design tailored for an individual living with his family with severe visual impairments with very little to no vision. The research findings indicate that wayfinding, color placement, and innovative voice-activated technological strategies can enhance quality of life of people with visual impairment.Speaking with a specialist who has worked in a vision service organization shared several best practices and methods of wayfinding, and color placement. Several conversations with the client help relate desired use and implementation of technological advances. Several Case Studies assisted reinforced the choice and hue of warm color tones.For safe and effective wayfinding, wood casing is considered along walls in hallways, and various floor materials of different colors and textures are applied to help users distinguish different space. Color theory is implemented by choice of paint color using warm yellow tones to help maximize ease in visual potential. Contrasting colors like kitchen countertops and cabinets are strategically applied to denote changes. Various floor materials of different colors and textures help distinguish different space uses.Integrating technology, including smart applications and appliances, is a crucial component of the design strategy. Universal design principles ensure these technologies are accessible and user-friendly for individuals with varying degrees of visual impairment, making these spaces all-ability friendly. Smart home systems, equipped with voice-activated controls and sensory feedback, empower residents to manage their living spaces independently.This residential design approach solves various concerns visually impaired individuals face using traditional wayfinding principles, color theory, and universal design technologies to create a subtle, seamless blending of physical and digital elements all family members can enjoy.

Jeanette Ramirez

TX - The University of Texas at El Paso

Discipline: Health and Human Services

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Alejandra Mirazo
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Abstract Name: Improving Social and Behavioral Skills in Children with Autism Through Arts and Crafts

Autism spectrum disorder (ASD) is a disorder that affects some structures of the brain and its functions. ASD is a broad disorder that varies from child to child and impacts every child differently. Children with autism are often characterized by having difficulties in communication, social skills, and behavior that can affect their home and school life.This service-learning project aims to help children with Autism improve their behavior and social skills through arts and crafts. The participants were children who were on divergent spectrum levels and had behavioral issues from Autism Hope of El Paso organization (ages ranging from 3-13). The program consists of arts and crafts sessions every week for one month to help improve the behavior of children on the spectrum through the implementation of collaborative projects. Materials used were paint, paintbrushes, clay, markers, colored pencils, wooden crafts, and printouts for the children to use during the arts and crafts sessions. Data was collected through a modified version of the validated Child-Behavior Questionnaire which was provided to the parents at the beginning of our sessions and at the end. A dependent t-test was used to evaluate changes from pre- to post-sessions. The T-test revealed that there was a statistical improvement in the children's social and behavioral skills between the pre-and post-program [t (7) = 5000, p = 0.020]. As a reflection, our service-learning project has given us the opportunity to understand children with Autism and to help them improve their social and behavioral skills through arts and crafts.

Karla Ramirez

CA - University of California - Merced

Discipline: Mathematics and Computer Science

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#1 Karla Ramirez
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Abstract Name: Analyzing the Interplay of COVID-19, Employment Rates, and Politics: A County-Level Study in California

This research delves into the relationship between the COVID-19 pandemic and employment rates by county in California, with a focus on testing rate, positivity rate, unemployment rate, claim rate, and death rate. The rapid spread of COVID-19 led to widespread business closures, resulting in a rapid escalation of unemployment rates. As COVID-19 positivity rates escalated, different counties responded differently, in closure policies and enforcement of local and state mandates. Consequently, this study examines the relationship between COVID-19 positivity rates, the deaths that came from the disease, and their influence on employment and unemployment rates. Further, I investigate the ramifications of political affiliation by leadership and voters on employment and COVID-19 positivity rates and mortality rates. This study hopes to shed light on several factors in each county that led to differences in the effects of the COVID-19 pandemic. This study combines data from local, state, and federal sources to best identify causal effects. Using quantitative research, this research intends to understand more thoroughly what worked well, and what did not with hopes to make future policy decisions more effective in helping residents in California and elsewhere.

Jayden Ramirez de Arellano

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
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#3 Conrad Liszka
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#5 Dominique Davis

Abstract Name: Loneliness Predicting Artificial Intelligence Attitude and Job Satisfaction

Tang et al. (2023) suggest that feelings of loneliness have a positive correlation with the use of artificial intelligence (AI) in a workplace setting. If AI continues to be used in workplaces, it will continue causing negative effects in those working with it. There is a lack of literature on how AI use and perception may relate to loneliness in individuals who do not work directly with AI in their day-to-day lives, a gap that the current study aims to fill. However, the loneliness paired with disclosure of the participants were in most cases tested in correlation to the Minnesota Multiphasic Personality Inventory (Archer,1979) (Franzoi & Davis, 1985). Many studies only discuss theories and background literature, but do not perform actual statistical investigations. For that reason, I will be performing a multiple regression where loneliness will be the predictor of job satisfaction and AI attitude. The data will be collected from participants across the United States using a panel service. The current study uses the Loneliness-Deprivation Scale (de Jong-Gierveld, 1987), the Basic Psychological Need Satisfaction at Work Scale (Eriksson & Boman, 2018) and the

General Attitudes Towards Robots Scale adapted for AI (Koverola, M. et al., 2022). The first hypothesis is that loneliness will have a moderate negative correlation with a job satisfaction subscale, explaining relations they have with coworkers. The second hypothesis is loneliness and AI attitude will have a high positive correlation. The third hypothesis is job satisfaction is positively correlated with AI attitude. The findings of this study can be useful to those trying to reduce feelings of loneliness. The results can also be useful to employers worried about their employee's well-being as AI becomes more integrated in our society. The findings will be incredibly useful for research involving AI moving forward in terms of workplace implementation.

Isabella Ramos

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

Authors:
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Sara Taghizadegan

Abstract Name: Constructing Supramolecular Chelate for Sequestration of Heavy Metal Toxins

Heavy metals, such as mercury, cadmium, and lead, are consider potent toxin, because they can crosslink cysteines in proteins hindering protein activity, ultimately leading to apoptosis. Due to the lipophilicity of heavy metal toxin, they tend to accumulate in lipid-rich organs, such as brain and liver, which are hard to reach by hydrophilic antidotes. In this project, we are developing molecular cages decorated with heavy metal binding groups, with the aims to 1. capture heavy metals toxins and 2. isolate them from physiological proteins by trapping them in the hydrophobic cavity of the cage. Current achievement includes synthesis and optimization of a molecular cage formed by mine condensation. Future effort will be to reduce the imine to amine groups, which allows for subsequent installation of metal-binding groups, such as dithiocarbamate (DTC).

Rayleen Ramos

NJ - Kean University

Discipline: Mathematics and Computer Science

Authors:
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Abstract Name: Comprehensive Phishing Detection: A Machine Learning Approach

Phishing attacks pose a growing cybersecurity threat, demanding effective detection mechanisms. This study explores the utilization of machine learning and natural language processing techniques to enhance the detection of phishing emails. The research objectives include analyzing linguistic patterns, evaluating model performance, and exploring the applicability of AI models. The investigation drew upon a comprehensive literature review. It utilized a labeled dataset to develop and evaluate an algorithm capable of classifying unseen data as spam or non-spam. Pre-processing techniques included tokenization, stopword removal, logistic regression, and other classification algorithms. Evaluation metrics such as accuracy, precision, and confusion matrices were used to assess model performance. The research demonstrates the effectiveness of

machine learning models in accurately identifying and classifying phishing emails. The logistic regression model achieved a high accuracy score of 98.3% and 98% precision, supported by the logistic regression classification report. The analysis highlights the significance of linguistic patterns in distinguishing phishing emails from legitimate ones. Furthermore, an AI model, ChatGPT, is incorporated to generate and identify phishing emails, using prompt engineering to improve questions for the best results. Those results were tested on the created model to see how well it could categorize them as spam, and the results confirmed the model's competence in distinguishing between genuine and simulated phishing efforts. This investigation showcases the crucial role of machine learning and natural language processing in enhancing phishing detection and emphasizes their potential to strengthen cybersecurity defenses. In the future, the scope of the research will broaden by testing and training the model on a more diverse dataset to improve its adaptability in detecting phishing attempts. In addition, ChatGPT's ability to generate more personalized and targeted phishing emails will be tested. Assessing risks tailored to individual users for a more comprehensive assessment of cybersecurity solutions.

Joshua Ramos

CA - California Polytechnic State University - San Luis Obispo

Discipline: Engineering and Architecture

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Jake Hacker

Abstract Name: Modulus-Weighted Failure Analysis of an Auxetic Hip Implant Under Eccentric Loading

This paper presents a numerical investigation of an auxetic hip implant under eccentric loading. The long-term stability of hip implants is influenced by various factors, and the loads acting across the hip joint are crucial. Hip implants are designed to replace the natural hip joint and restore functionality and mobility. The loads on the hip joint can be affected by factors such as body weight, activity level, and the biomechanics of an individual. Surgeons and orthopedic professionals consider these factors when selecting and implanting hip prostheses to optimize long-term outcomes and minimize the risk of failure. Additionally, ongoing research and advancements in materials and design continue to improve hip implant longevity and overall patient satisfaction. In this study, the femoral implant with circular cross sections subjected to an axial load and uniaxial bending moment is modeled using an iterative modulus-weighted scheme in MATLAB to examine the mechanical behaviors at the bone-implant interface. The auxetic materials with a negative Poisson’s Ratio on the retracting side of the femoral implant are utilized herein to help address the problems associated with the resultant bending effect and prevent aseptic loosening. The maximum loads (axial load and bending moment) acting on the implant are of great interest, and they can cause implant stability problems, which can lead to implant failure. Results reveal that the member carrying capacity of the auxetic hip implant is approximately 32% higher than that of the conventional hip implant. Thus, it can be concluded that auxetic implants greatly increase the strength of the bone-implant interface and decrease the risk of failure.

Angelica Ramos

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:

#1 Angelica Ramos
#2 Brandon Garcia-Castaneda
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#4 Idaira Oliva
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Abstract Name: Chemogenetic activation of midbrain astrocytes during cocaine condition placed preference

Substance use disorders (SUDs), which affects approximately 15% of the US population, are often characterized by a strong urge to consume drugs. One of the challenges with treating SUDs is the high incidence of relapse, which can be precipitated by exposure to drug-paired cues. As such, there is a critical need to identify the neural systems involved with establishing the association between drugs and drug-paired cues. Preclinical studies commonly use the condition place preference (CPP) assay, which is a rodent task that assesses the strength of the association between drugs and contextual cues. Previous work has demonstrated that ventral tegmental area (VTA) dopamine neurons are critically involved in mediating cocaine CPP. Increasing evidence highlights that drugs of abuse can alter astrocytes and how they interact with neurons. However, it is unclear though if astrocytes in the VTA are regulating the development of cocaine CPP. To address this, we will use chemogenetics to selectively activate Gq signaling in VTA astrocytes in animals trained to undergo cocaine CPP. This research will pave the way to understanding if astrocytes in the VTA can be targeted to break the association between drugs and drug-paired cues.

Fatima Ramos-Rangel

OK - University of Central Oklahoma

Discipline: Social Sciences

Authors:
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#2 Travis Roach

Abstract Name: The Effects of Patriarchy on Crime

Patriarchal ideologies exude outside the hands of a male body, and into the coffins of female victims. In the United States, men commit acts of crime that disproportionately affect women. A patriarchal society when involved with crime, provides women the counteractive benefit of comfort and pronoia. In this research, I expand on the established definition of femicide with specific acknowledgement of the fourth wave of feminism using data from the department of justice. These data are specific to both the gender and the relationship between the victim and the perpetrator(s). I study domestic violence incident report convictions, femicides, and rape with reference to laws that are meant to maximize the bodily autonomy of women. This project sheds light on the patriarchal ways of thinking, and shows that these ideologies pose a significant threat to women in modern day American society.

Elise Ramsay

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
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#2 Alyssa BonoAnno

Alyssa BonoAnno

Abstract Name: The Impact of Exposure to Equity, Diversity, and Inclusion Education

This review examines the impact of implementation of Equity, Diversity, and Inclusion (EDI) content within higher education to recognize the structural inequities that exist in the larger society. EDI is a powerful strategy to acknowledge self-awareness and identify strong biases that are currently present in our culture, specifically within education and employment. This research focuses on the effect of Equity, Diversity, and Inclusion on students both in and beyond the classroom. Previous research has shown that EDI has been ineffective due to the adoption of information deficit model approaches which work to solely educate the audience through a yearly training course. In contrast, utilizing alternative methods such as those that employ interactive discussions, mandated programs, and projects allow students to acquire a new perspective. To measure whether EDI is truly effective, the use of pre- and post-surveys would provide researchers with evidence of how successful current programs are. Social work departments in higher education often set the tone for EDI courses, and at the University of Wisconsin-Eau Claire, EDI is prominent on campus, more specifically within the social work major. To improve this, we can use these methods which will give us a better understanding of why EDI is not more known campus wide. With an in-depth understanding of its positive impact on students, we can also expect that there will be an association between EDI and future places of employment. Using these expected findings, we can ensure that incorporating EDI curriculum goes beyond the social work department and into other majors. The future of this study creates potential for a positive change on educational environments such as the University of Wisconsin-Eau Claire.

Diana Rand

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Diana Rand

Abstract Name: Measurement of Behavioral Characteristics in Free-Moving Ants

Personality is a major area of research in psychological science because it allows us to understand behavioral diversity among people as well as the consistency of those differences across situations. To claim that non-human animals possess personality requires that behavioral characteristics are consistent over time, similar to what is observed in humans. The purpose of this study was to examine behavioral characteristics in an invertebrate animal model, harvester ants, to see if their behaviors meet the criteria to be characterized as personality. We conducted two 5-minute tests separate by approximately 45 minutes in which ants were placed in containers and their behavior was recorded. We measured the expression of several different behaviors in each test: locomotor activity, open field behavior, and self-grooming in both tests. We assessed the distribution of these behaviors across our sample and found that only locomotor activity was distributed in a way that approximated a bell curve, which is characteristic of personality traits in humans; self-grooming behavior showed a left-skewed distribution and open-field behavior showed a right-skewed distribution. We also examined the consistency of behaviors by correlating individual ants' measurements in test 1 vs. test 2. We found that none of the correlations were significant (p's > 0.13), suggesting that there was little consistency observed in the expression of individuals' behaviors. These findings fail to support the theory that these behaviors can be used to describe personality characteristics in ants. Future research can examine other behaviors, such as necrophoresis and aggression, to see if they provide support for the expression of personality within individual ants.

Brittany Rangel

CA - Reedley College

Discipline: Visual and Performing Arts

Authors:
#1 Brittay Rangel

Abstract Name: Rosa Bonheur Symbolism of Equine Portraiture

This research project delves into 19th-century French artist Rosa Bonheur’s profound fascination with horses and seeks to uncover the symbolic messages embedded in her equine masterpieces. The driving question revolves around understanding how Bonheur's portrayal of horses reflected her personal identity and the message of the value of these animals. The significance of this research lies in unveiling the nuances of Bonheur's unconventional career, challenged gender norms, and contributing to the broader discourse on the intersection of art, identity, and societal values in the 19th century. As an influential female artist, Bonheur's unique perspective on horses provides valuable insights into gender dynamics, artistic expression, and societal shifts during the 19th century. This paper will explore just some of her many equine related artworks and attempt to understand the symbolism Rosa Bonheur depicts and the impact horses on both art and society during the 19th century.

Tenley Ransom

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
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#3 Erin Johnson
#4 Nathaniel Weston

Abstract Name: Heavy Metals in Honeybees Along an Urban to Rural Gradient in the Philadelphia Region

Honeybees provide critical ecosystem services, such as pollination to a variety of economically important crops. There has been increasing concern about honeybee health due to incidences of ‘colony collapse disorder’ and declining honeybee populations. Since honeybees pollinate a variety of flowering plants near their hive, honeybee health may also be indicative of the health of the plants they pollinate and the soil those plants grow in. The goal of my research was to evaluate heavy metal content in honeybees along an urban to rural gradient in the Philadelphia region. Honeybees were collected at nine sites along this gradient, from Center City, Philadelphia to Chester Springs, PA. Three samples (consisting of 10 bees each) from each site were microwave digested and analyzed for heavy metals and several other elements (Mg, Cr, Mn, Fe, Cu, Zn, As, Cd, and Pb) by inductively coupled plasma mass spectrometry (ICP-MS). The land use for each site was analyzed with a 1.5km radius, which is the honeybee foraging radius. The foraging habitat from bees collected along the urban to rural gradient ranged from 1.68 to 84.50% impervious surface. I found that Pb, As, and Fe content in the honeybees increased with increasing impervious surface (p < 0.05), while Mn content decreased (p < 0.05). My results indicate that honeybees living in urban environments have higher Pb, As, and Fe content, indicating higher exposure to those heavy metals in urban environments. There were statistically significant differences between sites for Cu and for Mg (ANOVA p < 0.05), but I did not find a relationship between land use or impervious surface and Cu or Mg, suggesting other factors not investigated in this study may influence honeybee heavy metal content.

Deepa Rao

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Deepa Rao

Abstract Name: Wages, Work, and Worry: Effects and Circumstances of College Students' Part Time Jobs

As college tuition increases and minimum wage makes little effort to catch up, the relationship between students and employment shifts as well. In order to evaluate the current state of student employment, a variety of sources were reviewed in order to establish the effect employment has on both academic achievement and student health, the societal and workplace-related circumstances around employment and its effects, and the steps that can be taken to mitigate negative effects. This paper argues that employment in certain fields, such as food service and retail, has negative effects– first, on student wellbeing, and second, on academic performance– due to the intensity of the job and the conditions of the workplace. Additionally, this paper advocates for a three-pronged approach to solving this problem: firstly, with financial changes that reduce the monetary burden on the student; secondly, with institutional changes that reduce the stress and pressure on the student; thirdly, with personal changes that the student must encourage in themselves in order to better balance the remaining challenges they may face.

Leah Rapp

NY - SUNY Geneseo

Discipline: Humanities

Authors:
#1 Leah Knapton Rapp

Abstract Name: Her Constant Beauty Doth Inform: Translating the Medieval into Modern, Edward Burne-Jones and The Legend of Briar Rose

In 1859, Sir Edward Burne-Jones, an Exeter College dropout and amateur illustrator, traveled to Italy for the first time. A seminal moment at the beginning of his career, Burne-Jones experienced a cultural center of the Middle Ages with the fresh eyes of a talented and curious young man. In this paper, I plan to show how Edward Burne-Jones' 1859 tour of Italy's medieval creative centers was instrumental in his neo-traditional and multi-disciplined career as a leader in the early English decorative arts movement by examining the conceptualization, design, and installation of his 1890 Legend of Briar Rose paintings.Based on the Grimms Brothers 1812 version of The Little Brier-Rose, the paintings also take some inspiration from Alfred Lord Tennyson's contemporary narrative poem "The Day Dream," from which the title of this paper comes. Painted on large horizontal canvases, hedges of rosebushes visually connect the paintings, one of many symbols the painter used to communicate the fairy tale to viewers in the know. The composition of the paintings was my first clue to Burne-Jones' Italian influence. To create works that complemented a relatively small home saloon, the painter abandoned the techniques that allowed works to stand out in a cavernous academic salon gallery. By combining the perspectival tools of the 15th-century Siena School with contemporary literary and decorative themes, Burne-Jones was not necessarily discovering a dead visual language but translating it for a modern audience. Burne-Jones explored The Briar Rose through several mediums, linking his understanding of medieval craftsmanship with the contemporary tendency to superimpose material and message. By examining the pieces and the interior spaces that Burne-Jones viewed in Italy with a critical eye toward materiality, symbolism, and compositional tools, I intend to work backward through Burne-Jones' career to correlate The Briar Rose series with the foundations of medieval art.

Amber Rappl

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

Authors:
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#4 Julie Johnson

Abstract Name: Data Analysis and Monitoring Crew: A UWRF-Led, Public-Private Student Training Program Putting Freshwater Collaborative Support Into Action

The Data Analysis and Monitoring Crew (DAM Crew) is a student training program that implements a 10-year monitoring plan developed for the Kinnickinnic River (the Kinni) in and around River Falls, Wisconsin. The monitoring plan is a response to the expected removal of 2 small dams in River Falls in the coming 3-5 years. The city of River Falls is working with the environmental consulting firm Interfluve and the non-profit Kinni Corridor Collaborative to raise funds for dam removal and subsequent river corridor restoration. The monitoring plan provides a pre-removal baseline of the river's ecological health while allowing river stakeholders and managers to understand changes in the river over time. With support from the Freshwater Collaborative of Wisconsin (FCW), UWRF developed a professional training program for students to use this unique community setting as a living laboratory.The Kinnickinnic River is designated an Outstanding Resource Water and a Class 1 Trout stream by the Wisconsin DNR, with trout densities in certain stream reaches greater than 5000 trout per mile. Dams threaten the self-sustaining trout fisheries below the City of River Falls by changing temperature, flow regimes, and altering habitats. The DAM Crew collects water quality, stream morphology, and habitat data. They receive training from river restoration professionals in industry. They also collect the formal data for the Kinni Monitoring Plan and provide a valuable service to their community as it implements river management.

Mohammad Rashad

PA - Children's Hospital of Philadelphia

Discipline: Natural and Physical Sciences

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#3 Stewart Anderson

Abstract Name: Improving the Efficacy of Glioblastoma Multiforme Detection and Treatment Using Migratory Interneurons

Glioblastoma Multiforme (GBM) accounts for nearly half of all known malignant brain tumors and is prone to impacting and invading surrounding brain tissue. By concentrating on the role of neocortical interneurons in GBM development, enhanced detection and treatment of the tumor could be attained. Using mice cell lines and brains, a form of human Glioblastoma was introduced to observe the efficacy of injected migratory interneurons in targeting and locating the tumor location. Glioblastoma cells are known to express the protein stromal cell derived-factor-1 (SDF-1), the main target point for the interneurons. Migratory interneurons were

then injected, with these interneurons expressing cytokine receptor-4 (CXCR4), a cytokine with the ability to target the Glioblastoma SDF-1 proteins. To conduct this project, cell culture techniques were performed to derive the growth of neural stem cells. Subsequently, histological techniques were used to accurately localize and detect the interneurons and the tumor. Mice brains were sectioned into slices that allowed for the injected tumors to be located within the margins of each section. Immunostaining allowed for the visualization of the interneurons and the tumor using a primary antibody to bind to the CXCR4 cytokine and the SDF-1 protein, with a complementary secondary antibody as a visual marker (primarily RFP, GFP, and DAPI). The use of immunofluorescence microscopy allowed for the identification of the interneurons and the tumor in each section. The results of these experiments display the promising ability of interneurons to accurately locate and track down the GBM tumor at various injection sites. These results are potentially groundbreaking, as accurately detecting the GBM tumor in the early stages of embryonic development could limit its extraneural metastatic potency. Significant therapeutic implications are also associated with these results, but further experimentation on developing a novel GBM cell-based therapy with the use of migratory interneurons must be conducted.

Mirza Rashid

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

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Abstract Name: Beyond Clicks: The Art of Continuous Authentication via Mouse Dynamics

In the ever-evolving landscape of cybersecurity, the quest for robust and unobtrusive user authentication methods has become paramount to maintain system security. Traditional static or one-time authentication techniques possess an inherent vulnerability as they only guarantee that the user is genuine at the time of their initial login. In light of this, continuous authentication aims to overcome this vulnerability by continually authenticating a user throughout their entire session. In this approach, once a user gains access to a system, they are validated using behavior-based metrics to ensure the system is being accessed by a genuine user throught their entire session. This is achieved through the use of machine learning which constructs a model of the user's behavior that is then continually evaluated throughout their use of the system. Out of several approaches of continuous authentication, this study focuses on mouse dynamics as it is thought to be the most unintrusive and accessible approach as it uses how a user interacts with a mouse to validate their identity. The central research question that this study will tackle is whether UI context will impact how a user would use a mouse and if a machine learning model can identify those differences or the underlying pattern of behavior that the user exhibits. To this end, this study will collect mouse data from users interacting with two different UI contexts. This data collected will be used to develop and evaluate several machine learning models. Based on the results of model testing, the efficacy and viability of continuous authentication using mouse dynamics in both similar and differing UI contexts will be determined.

Janice Rateshwar

NY - City University of New York - City College of New York

Discipline: Interdisciplinary Studies

Authors:
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Abstract Name: Free Docking of Cross-Reactive Lupus Antibody to Epstein–Barr Virus Nuclear Antigen 1 (EBNA-1) and Double Stranded DNA

Systemic Lupus Erythematosus (SLE) is an autoimmune disease characterized by anti-double stranded DNA (anti-dsDNA) antibodies. While the origin of anti-dsDNA antibodies is unknown, it may be due to molecular mimicry of dsDNA by Epstein–Barr virus nuclear antigen 1 (EBNA-1), the major nuclear protein in Epstein-Barr Virus. A monoclonal antibody to EBNA-1 (designated 3D4), generated in our laboratory, cross-reacts with dsDNA. Epitope mapping revealed that 3D4 recognizes a 160 amino acid fragment, LS9459-619, in the carboxyl region of EBNA-1. Understanding similarities between interaction sites of 3D4 with LS9459-619 and dsDNA may indicate origins of anti-dsDNA antibodies. Recent x-ray crystallography of the 3D4-LS9459-619 complex revealed contact residues, which were confirmed by mutational analysis of Complementarity-Determining Regions (CDRs) of the heavy and light chains of 3D4. However, further modeling via docking, can test reproducibility of the 3D4-LS9459-619 crystallized structure (3D4-LS9459-619-cs) and assess the power of computational modeling for predicting 3D4-dsDNA interactions. HDOCK, a Fast-Fourier-Transform docking web-server, was used for free docking of 3D4-LS9459-619 and 3D4-dsDNA. 3D4-LS9459-619 docked models (3D4-LS9459-619-dms) and 3D4-dsDNA docked models (3D4-dsDNA-dms) were ranked by lowest energy and analyzed for orientation and intermolecular interactions via PyMol and LigPlot+. 3D4-LS9459-619-dm rank 4 has significant overlap with the 3D4-LS9459-619-cs, supporting validity of docking for binding site prediction. Comparison of the top ten 3D4-dsDNA-dms with mutational analysis reveals 3D4-dsDNA-dm rank 6 most likely represents putative interactions of 3D4 CDRs with dsDNA. Future studies using HDOCK will test if other dsDNA sequences demonstrate similar putative interactions with 3D4. Furthermore, x-ray crystallography of 3D4 and dsDNA will validate the putative interactions observed in HDOCK 3D4-dsDNA-dms.

Ananya Ravikumar

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

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Abstract Name: Exploring the Activity of MECP2, Its Interactors, and DNA Damage Proteins In Rett Syndrome Models

Rett syndrome is a rare intellectual and developmental disorder that causes severe physical and cognitive impairment due to mutations in the X-linked DNA-binding protein methyl-CpG-binding protein 2 (MECP2). Though the specific pathogenic mechanism of MECP2 activity is unclear, its loss impacts neuronal development – our lab observed that mutant neurons with loss of MECP2 function have less branching and increased p53, senescence, and DNA damage. The OpenCell database lists an MECP2 interactome connecting it to proteins like PARP1, NUCKS1, CHRAC1, SNX1, etc., many of which are involved in chromatin modification and DNA damage responses. This sparked the question of whether these proteins closely localize to MECP2 in neurons and if loss of MECP2 function impacts their activity. Indeed, confocal microscopy showed significant PARP1-MECP2 and NUCKS1-MECP2 colocalization. An in vivo enzyme-linked immunosorbent assay detected lower PARP1 activity in mutant than control neurons. We hypothesize that manipulating PARP1 activity will affect DNA repair in neurons and produce a Rett-like phenotype. This will be investigated by adding PARP1 inhibitors to control neurons and noting the effect on dendritic branching and senescence, along with observing if NAD+ supplementation, which boosts the DNA repair function of PARP1, reverses this effect. Overall, assessing protein interactions of MECP2 and its role in

PARP1-mediated DNA repair will help characterize what proteins may be involved in contributing to the Rett phenotype.

Jordan Rawda

CA - California State University - Long Beach

Discipline: Business and Entrepreneurship

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Abstract Name: Analyzing the Validity and Content of Damodaran's Modified Discounted Cash Flows Model

Aswath Damodaran is a professor at NYU Stern School of Business who created a custom discounted-cash-flows valuation model using Microsoft Excel. This valuation model allows for customization through the inputting of an individual investor's custom estimates and additional growth levers, such as research and development. This analysis of the validity of the model will assess the model's ability to produce reasonable and useful estimates of the value of a firm's equity. In doing so, we hope to show that this model can be used by individual investors as an aide to make better-informed investment decisions. Firstly, we obtained the model through Damodaran's blog. We then obtained financial data from the Bloomberg Terminal to input into the spreadsheet. Finally, we analyzed how the spreadsheet calculated the value of equity by exploring and explaining the inputs and calculations. Furthermore, we showed how an investor could find the data required for inputs and how those inputs were used to find the value of equity. Overall, the spreadsheet allowed for greater accuracy over standard models due to the addition of growth levers not found in standard models. However, due to the model requiring estimates that may vary from investor to investor, the model's accuracy is reliant on variable investor estimates.

Monica Rayburn

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Bartonella Prevalence within People Experiencing Homelessness

Bartonella is a genus of vector-transmitted, fastidious bacteria, responsible for various diseases, including trench fever, Oroya fever, Carrion's disease, endocarditis, peliosis hepatis and cat-scratch disease. Despite a noticeable increase in Bartonella cases worldwide, there is limited research on its prevalence, including among persons experiencing homelessness (PEH). Due to environmental/housing conditions and other risk factors, a substantial number of Bartonella infections may be observed among PEHs in urban areas. Our objective was to review the prevalence of Bartonella in PEH and evaluate the importance of Bartonellosis in

this population. A scoping review of PubMed, CINAHL, Scopus, and Embase databases was conducted using the following search terms, ("Homeless Population" OR "Homeless Persons" OR "Homeless*") AND ("Bartonella" OR "Bartonella quintana"). The search returned 382 articles for title/abstract review and 177 articles for full-text review. Article exclusion criteria was: a. published in a language other than Portuguese, Spanish, or English, b. tests Bartonella prevalence in samples other than human blood, c. articles were case studies/reports, review articles, animal studies, or conference abstracts. Data was extracted from 16 studies included in the review. In each step of the process, articles were screened/abstracted by two researchers independently, and a third researcher resolved any conflicts. Covidence software was used to manage this review. Bartonella prevalence differed depending on the geographical region, population characteristics, and test/test cut-off used. Prevalence ranges were: B. henselae IgG 0.2%-54%, B. quintana IgG 0%-57%, B. quintana IgM 2.3%-7.1%, B. elizabethae 12.5%-52.1%, B. grahamii IgG 2.1%, and B. spp 29.2%-62.5%. Through this novel scoping review, we can conclude that Bartonella is a disease of concern for the increasing population of PEH.

Alexa Rayon

FL - University of West Florida

Discipline: Business and Entrepreneurship

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Abstract Name: Is Cosplay a Labor of Love or Dollars? Part 1: Love is Winning

This research is about cosplay, a process of bringing a fictional character to life via costuming and acting. More specifically, cosplay has been described as an act of transformation and self-expression in the production of a chosen identity through performances within a certain time and space. In cosplay, a chosen identity may fluctuate as the participant moves from one temporary identity to another based on their changing interests and passions.Prior research has found that cosplay participants often form groups with others from the same fandom. As individual cosplayers move fluidly between characters, they also move between groups in a more ephemeral form of communal organization recognized as “neo-tribalism.” Neo-tribes are based on shared experiences and shifting cultural patterns rather than traditional demographics.Because much cosplay is enacted during pop-culture fan conventions (e.g., San Diego Comic-Con), it has personal, communal, and commercial relevance. Thus, we are interested in exploring the meaning of cosplay from the perspectives of various stakeholders. The study presented here is the first part of a planned three-part research project to examine the meanings of cosplay from the perspectives of participants, fan convention organizers, and convention venue management.During our interviews with avid cosplayers, key questions included, “What is your motivation for cosplay?” and “What makes cosplay authentic for you?” Early findings reveal the importance of personal values, “resonating with the character you portray,” and the joy of tribal communion for both motivation and authenticity. A related theme that emerged was freedom of expression, i.e., “exercising choice in what is revealed versus what is reserved.” Finally, as one participant succinctly stated, “Cosplay is the highest form of fandom.”This research will continue with quantitative surveys of participants and interviews with fan convention organizers.

Elizabeth Ashley Rea

AZ - Embry-Riddle Aeronautical University

Discipline:

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Abstract Name: Participatory Design, Educational Equity, & Undergraduate Research Mentoring

Within technical communication, researchers have often used participatory design methods attentive to issues of equity (Shalamova, 2020; Watkins & Lindsley, 2020; Sonka, McArdle, Potts, 2021). As the field of technical and professional communication grapples with ongoing conversations around social justice (Walton, Moore, & Jones, 2019; Constaza-Chock, 2020), there is a need to further develop mentoring practices and pedagogies that work towards greater educational equity in our classrooms, labs, and academic support services. To this end, this presentation asks: how can we use participatory design methods to mentor undergraduate researchers on equity-focused educational research projects?This presentation reflects on two participatory design studies with undergraduate research partners and offers strategies for inclusive and empowering mentoring. The first study used participatory design to imagine, design, and implement a new writing and design lab attentive to the localized needs of diverse community stakeholders. This multi-year study provided experiential learning opportunities for students in technical writing, business communication, human factors psychology, and user experience writing. The second study focused on cultivating a greater sense of belonging for women and underrepresented students in introductory engineering courses. In this two-year study, student research collaborators used participatory design methods to investigate and analyze women engineering students' experiences in the classroom and pilot a small-scale educational intervention. Ultimately, this presentation offers insights for students working on educational equity research projects and mentors seeking to further their inclusive mentoring practices.

Juniper Reagan

NY - Long Island University

Discipline: Natural and Physical Sciences

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Abstract Name: Understanding Local Efforts to Change Attitudes and Behaviors Regarding Plastic Pollution and Waste Management in West Bali, Indonesia: A Case Study on Plastic Free Bali

Plastic pollution is a pressing global issue that affects every corner of the world. While the existence of plastic in Earth’s environments alone is dangerous, its tendency to degrade into microplastics causes even further damage to human, plant, and animal life. When it comes to changing the way we consume and dispose of single-use plastic materials, action oriented community-based organizations are often the leaders of anti-plastic movements. This transdisciplinary qualitative case study explores how one such community-led initiative, Plastic Free Bali, an organization under Yayasan Biosfir Indonesia, is working to combat plastic pollution in West Bali, Indonesia. Dedicated to changing local attitudes and behaviors regarding single-use plastic consumption and waste disposal, the organization’s approach involves a combination of education, vocational training, and the government-funded building of waste management infrastructure on the village level. Data collection took place over the course of a three-month internship at the organization from September to November 2023 and consisted of structured and semi-structured interviews, door-to-door surveys in local neighborhoods, archival research, and participant observation. Three major themes emerged from the research, including that empowering women through educating them to be community leaders lies at the heart of Plastic Free Bali’s approach. Secondly, the research found that there is a need for combining local infrastructure development and education at the household level. Finally, the findings highlighted that tourism can be a major factor in driving community action against plastic pollution.

Kylie Reardon

MN - St. Olaf College

Discipline: Health and Human Services

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Abstract Name: Feasibility and Effects of a New Treadmill Perturbation Protocol in Younger and Older Adults

Slips and trips are the leading cause of anxiety and injury in older adults. Research indicates a relationship between neuromuscular adaptations to mitigate fall risk through reactive balance training. Comparative analysis outcomes between younger and older populations completing perturbation balance training need further research. This information is vital for comprehending degenerative brain mechanisms and biomechanical adjustments, contributing to our knowledge of strategies to address fall risks in older adults. PURPOSE: To examine the feasibility of a new treadmill perturbation protocol in younger and older adults as well as neuromuscular adaptation differences in younger and older adults associated with trip-specific training. METHODS: St. Olaf College students (N=20; aged 20 ± 2) and community-dwelling older adults (N=20; aged 64.9 ± 6.8) were recruited to participate in eight perturbation treadmill sessions, each incorporating various stability challenges (trunk stability, step stability, and continuous simulations) while being distracted with conversation adding the element of dual tasking. Additionally, pre and post-testing including functional assessments. RESULTS: The perturbation intervention was feasible in these populations as both showed adaptability to repeated perturbations. While both improved, older populations show a significant improvement in functional assessments sit to stand and timed up and go. Overall, there was a decrease in reaction time to slips and trips in both populations. DISCUSSION: This treadmill perturbation intervention protocol was feasible in both populations. Older adults did not show deficits in stability after perturbations but showed prolonged and long-term adaptability. Perturbation intervention protocol should be considered for decreased fall risk.

Annabelle Recinos

CA - California State University - Fullerton

Discipline: Engineering and Architecture

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Alexis Gopaul

Abstract Name: Reinforced Concrete Corrosion Probabilistic Service Life Model Utilizing Zeolite

In 2021, the American Society of Civil Engineers (ASCE) reported that 7.5% of all bridges in the U.S. were structurally deficient, and the cost of retrofitting and rehabilitation of these bridges was around $125 billion. The primary reason for the structural deficiencies in these bridges is chloride-induced corrosion. This project aims to develop a robust service life model for reinforced concrete structures which includes the corrosion initiation and propagation times.This research is particularly urgent as new reinforced concrete bridges utilize emerging and durable materials that current corrosion service life models do not adequately account for. To bridge this gap, various binary- and ternary-based high-performance concrete (HPC) mixtures using zeolite as the primary SCM were investigated. Additionally, other parameters such as cover depth, rebar size, and rebar type were explored to observe their influence on the service life. Nondestructive electrical resistivity testing was performed on each concrete mixture and the data was then utilized in the numerical models to compute the service life.Baseline service life was determined using deterministic models, Fick's second law of diffusion for computation of the initiation time, and the existing Vidal model for the propagation time. The same data was then compared to probabilistic model results from two service life modeling software, Life365 and Korozeeneck. Life365 allows for more geographical variability in results. However, it is mostly limited to corrosion initiation times. Korozeeneck, on the other hand, demonstrated more comprehensive results by computing reliable corrosion propagation times. In general, binary and ternary-based concrete mixtures blended with zeolite showed significant improvement in service life over the ordinary Portland cement concrete mixture. In summary, this study is a step towards enhancing probabilistic service life models by including sustainable and durable materials.

Snigdha Reddy

WI - University of Wisconsin-Parkside

Discipline: Natural and Physical Sciences

Authors:
#1 Snigdha Reddy
#2 Boluwatife Hamzat
#3 Stefinie Washington
#4 Brittany Dobrowksi
#5 Lauren Prochniak

Abstract Name: Enzymology of Intestinal Short Chain Fatty Acid Metabolism

Integral roles for colonic microbiota in human physiology, metabolism, and health are well established. Colonic microbiomes in Western populations are generally dominated by species belonging to two bacterial phyla, Firmicutes and Bacteroidetes. Bacteroidetes includes well-recognized commensal and mutualistic species that serve to break down complex polysaccharides in the gut and generate products such as carbohydrates, propionate, and acetate that can serve as nutrients for the host and other microbial community members. In turn, Firmicutes utilize available resources (carbohydrates, acetate, etc.) to produce metabolites including an array of short chain fatty acids (SCFA), primarily acetate, propionate and butyrate, through fermentation. Numerous studies have revealed how these SCFA mediate important community level metabolic interactions within the gut, as well as provide critical signaling and metabolic outcomes for the host. One enzymatic pathway for SCFA production involves two distinct enzymes: 1) an SCFA kinase and 2) an acyltransferase. Together, these enzymes reversibly interconvert fatty acids with their acyl-CoA derivatives. The genome sequences of various gut microflora species, including Bacteroides thetaiotaomicron (BT), Phocaeicola vulgatus (PV), and Roseburia intestinalis (RI) encode enzymes exhibiting amino acid substitutions predicted to generate novel substrate preferences compared to previously characterized SCFA kinases. Heterologous expression of histidine-tagged variants of the BT, PV, and RI enzymes in E. coli has allowed characterization of biochemical properties regarding these variants. Results from these experiments provide insights regarding potential physiological roles for these enzymes in branched-chain fatty acid and medium chain fatty acid metabolism, as well as SCFA metabolism, that may influence community dynamics within the gut.

Brancen Redman

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Brancen Redman
#2 Tingying Xu
#3 Wei Ren

Abstract Name: Bioremediation of Crude Oil using Native Fungi

Oil spills have devastating consequences for the environment, impacting both the affected areas and the methods employed to rectify them. With our heavy reliance on oil for various purposes globally, activities like oil extraction, drilling, and refining are widespread, inadvertently leading to environmental contamination. This issue is particularly pronounced in states heavily reliant on oil, such as Oklahoma. To address this pressing concern, numerous techniques—ranging from chemical, physical, to thermal processes—are employed to remediate oil spills. However, these methods often come with high costs and environmental risks. Consequently, there's a growing emphasis on identifying more eco-friendly and cost-effective approaches for cleaning oil-contaminated regions.Bioremediation stands out as a natural means of breaking down environmental pollutants by harnessing the capabilities of living organisms. We have set out to discover an indigenous fungus from Oklahoma that thrives in its natural habitat and climate, capitalizing on its enzymatic prowess to degrade hydrocarbons and remediate oil-contaminated areas.Our recent findings involve the isolation of several novel fungi types (phylogenetic analysis is ongoing) from an Oklahoma drill site. These fungi, when introduced to a medium containing 1% crude oil as the sole carbon source, demonstrated the capacity to degrade the oil. Our ongoing research involves subjecting these candidate fungi to an aqueous medium with 1% crude oil for varying durations—1, 7, 14, and 21 days—to assess the extent and pace of oil degradation. This evaluation utilizes flame ionization detector-gas chromatography (FID-GC) to identify the oil components degraded by our fungi. Additionally, an Ultraviolet-visible (UV-Vis) spectrophotometer will measure the total concentration of dissolved hydrocarbons. These analytical tools will aid in identifying an indigenous Oklahoma fungus capable of efficiently degrading oil. The envisioned outcome is to utilize this fungus as an affordable, efficient, and natural solution to combat oil spills across Oklahoma.

Meghan Reed

MD - Salisbury University

Discipline: Natural and Physical Sciences

Authors:
#1 Meghan Reed
#2 Angela Freeman

Abstract Name: UV reflectance and fluorescence in flying squirrels for mate choice

Ultraviolet reflectance and fluorescence (UV R&F) are newly discovered phenomena in mammals and highly novel for flying squirrels. No current explanation is known for the adaptive purpose of UV R&F other than speculations for their use in several areas: predator evasion or mimicry tactics, interspecific or intraspecific communication, adapting to the surrounding terrain or nighttime environment, and mating

purposes. Previous studies have suggested that flying squirrels can perceive UV light so they may use it for mate choice as other species like Melopsittacus undulatus (budgerigar parrot) and jumping spiders do. No known studies have previously been performed on mate choice in flying squirrels specifically, and the reasons behind flying squirrel UV R&F could be applied to other UV R&F species as well. To evaluate, two experiments will focus on mate choice and will work to answer whether UV R&F is important in flying squirrels, if these features are used in mate choice, and which feature is more useful in mate choice: UV reflectance or UV fluorescence. During the first experiment, flying squirrels will be exposed to same-sex or opposite-sex animals under different control lighting conditions. Experimental UV and neutral density filters light conditions will be used in the second experiment to alter the R&F perceived by subject squirrels. Over a duration of about an hour, the amount of time the subject spends in front of a box will be recorded for all lighting conditions and compared between lighting conditions to determine if flying squirrels respond differently when UV R&F information is available for decision making. Data collection will be completed and analyzed by February 2024.

Daniel Reeve

VT - Norwich University

Discipline: Engineering and Architecture

Authors:
#1 Daniel Reeve

Abstract Name: Integrating VDC with Drones, AI, and Automation to Operate and Maintain Structures: Martian Colony Application

AbstractThe global construction engineering industry is rapidly developing technology to construct more sustainable, analytical, and serviceable human habitats. This includes but is not limited to the use of drone hardware, integrated sensors, artificial intelligence for big data management, and virtual design and construction software. These provide a significantly enhanced ability to collect, analyze, and convey information about structures. Simultaneously, capabilities for construction in interplanetary space are recieving increasing attention from both governmental and private enterprise organizations. This report examines the potential utilization of modern construction technology to optimize the operation and maintenance of remotely constructed human habitats on Mars. Relevant details on the Martian environment, descriptions of active missions, a background of operation and maintenance practices in space, and a review of literature regarding the most recent construction industry technology is included. Case studies are presented where key proof-of-concept is established for the future remote monitoring of structures. Finally, a system schematic is provided to display how existing technology could be most effectively integrated to remotely maintain extraterrestrial structures. Index TermsMars, Martian Construction, Martian Structures, Martian Colonization, VDC, BIM, IoT, Drones, Operation and Maintenance, Remote Construction, Construction Technology

Keanu Regenhardt

MT - Montana State University

Discipline: Engineering and Architecture

Authors:
#1 Keanu Regenhardt
#2 Yaofa Li
#3 Sarah Morris

#4 Erik Johnson
#5 Keenan Vincent

Abstract Name: An Experimental Study of Flow Dynamics in a Model CDC Biofilm Reactor Using Particle Image Velocimetry

When bacteria group together on a sub aquatic surface, they create what is known as biofilms. Biofilms are commonly used in the world today and are responsible for treating our water, improving plant growth, and much more. Biofilms are grown using biofilm reactors, which consist of a beaker with multiple coupons and a baffle to stir and create flow within the reactor. Controlling the environment within the reactor is crucial to ensure that biofilms grow properly. There are many laboratory reactors that can be used to grow biofilms under different conditions. Some of these conditions include the temperature, the composition of the microbes, and the carbon source, for example. Another way to control the environment is to manage the fluid flow with the biofilm reactor. Although it is known that flow inside of a biofilm reactor affects the growth of biofilms, it is not yet fully understood. To that end, this study aims to characterize the flow dynamics within a model biofilm reactor by quantifying the velocity fields and shear stress employing particle image velocimetry. To facilitate PIV measurements, a specially machined CDC biofilm reactor was created that will allow light to pass through the reactor without distortions so that the particles can be properly illuminated and traced. These PIV results will provide valuable insight into the physics and effects of flow dynamics in biofilm reactors, providing guidelines for new engineering designs.

Aaron Reid

TN - Trevecca Nazarene University

Discipline: Humanities

Authors:
#1 Aaron Reid

Abstract Name: Holy Roman Progressivism, the Legacy of Maria Theresa

The Habsburgs of the 17th and 18th century recognized a need to evolve in order to survive as a ruling family, and adapted their methods to avoid destruction and to stabilize power. Enlightened Absolutism was the use of progressive, publicly beneficial ideals and social understandings for the purpose of enhancing the position of the absolutist monarch. While the scope of this project covers four generations of Habsburg monarchs, it shows how this practice of enlightened absolutism was mastered by Maria Theresa, who used her careful understanding to grow imperial power, and ultimately culminated into a truly progressive emperor in Joseph II. My research involved an assortment of well-preserved documents that needed to be translated into English, such as The Family Pact of 1703 and Pragmatic Sanction of 1713. Many private writings, particularly Maria Theresa and Joseph II, were used to gain a better understanding of their minds, along with imperial law and declarations at the time of their reign. Particular secondary sources I would like to credit are The War of Spanish Succession by James Falkner, Joseph II: Volume 1, In the Shadow of Maria Theresa, 1741-1780 by Derek Beales, and Maria Theresa by Edward Crankshaw. The sources prove that Joseph II was a more radically neoteric ruler than his Maria Theresa, but also that she was more effective than he managed to be due to her patient use of the tools at her disposal. This project concludes on the relevance of these tactics on the modern world and the influence they had during the Enlightenment era.

Jessica Reider

MD - Salisbury University

Discipline: Natural and Physical Sciences

Authors:
#1 Jessica Reider

Abstract Name: Water Quality: The Basis for Marine Health

Estuaries are the first line of defense for water flowing into the ocean, catching inputs from upstream. The system allows for natural filtration but is only able to handle a certain amount of materials. Like any system, there is an equilibrium that can be irreversible if tipped too far in any one direction. Nutrient loads are just one example of equilibrium within marine ecosystems and when tipped too far can lead to eutrophication and hypoxic conditions which are unsuitable for life. Humans are the main source of increased nutrients and other chemicals through increased urbanization along coastal areas. Changes in the barrier along the estuary waterways, or changes in land use, can impact the level of nutrients entering the water. A way to monitor nutrient loadings and evaluate the health of the aquatic ecosystem is through tracking water quality. Water quality refers to the physical, chemical, and biological characteristics of water, and together can communicate the health of the water depending on known parameters for a particular ecosystem. Evaluated nutrients include nitrogen and phosphorus which are present in elevated levels notably from fertilizer runoff from agricultural operations. Chlorophyll A is representative of plant growth and can be useful in tracking levels of algal growth which at high levels can be detrimental to the ecosystem. Environmental factors such as pH and salinity are monitored as fluctuations can exceed the ranges suitable for organisms to survive. Dissolved oxygen monitoring is key in tracking hypoxic zones often as a result of eutrophication and leaves the area uninhabitable. Together, these parameters serve to communicate the health of aquatic ecosystems and track the impacts humans have on the estuaries.

Aidan Reiss

CT - Eastern Connecticut State University

Discipline: Humanities

Authors:
#1 Aidan Reiss

Abstract Name: Cross-cultural Synthesis: Soviet Romanticism and Azeri Tradition in the Music of Fikret Amirov

“I adore the West. But I am a proud son of the East.” These were the words of the twenty-six-year-old composer Fikret Amirov when defending his contribution to the Easternization of music in Soviet-occupied Azerbaijan. In the wake of increased political pressures, unstable global landscapes, and reemerging national identities, the young Amirov endeavored in 1948 to stimulate the then nascent East-West synthesis movement, balancing stringent Soviet pedagogy with colloquial Azeri tradition. As a promising and eager ethnomusicologist, Amirov conducted several ethnographic campaigns in the distant corners of both Azerbaijan and the Middle East, employing his discoveries to bring Western attention to Eastern ideas. As a result, he created a series of enduring national masterpieces, including the famous Piano Concerto on Arabian Themes (1957) (in collaboration with Elmira Nazirova). This paper focuses in on three factors that allowed Amirov the opportunity to redefine the compositional traditions of Azerbaijan: Soviet political pressure, Western indoctrination, and the birth of new composed genres. By examining the writings of Aida Huseynova, John Morgan O’Connell, and Boris Schwarz on the cultural, political, and academic traditions of Azerbaijan and the ethnomusicological efforts of Amirov himself, I will concentrate on the afore-mentioned concerto, identifying how it simultaneously reaffirms and redefines traditional Western classical aesthetics. Through analysis of the concerto form, the socio-political implications of folk culture in high art, and the reception of symphonic mugham among soviet historians and musicologists, I will demonstrate the

significance of Amirov's musical ethnography in the construction and legacy of the postmodern Azerbaijani national identity.

Adrian Remigio

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Adrian Remigio
#2 Ginny Isava

Abstract Name: What Makes or Breaks Fieldwork?: Exploring Factors Which Affect Student Experience and Pedagogical Effectiveness

Fieldwork activities within natural sciences offer numerous student benefits, including solidifying higher-order thinking, transferable skills, and analytical reasoning. Despite the evident benefits of fieldwork which supplement classroom learning, many students have reservations or choose not to participate. An interview and questionnaire were administered to undergraduate students taking the Spring 2023 geological field techniques class at California State University Fullerton. Questions analyzed how perceptions of self-efficacy, identity as a geologist, and sense of belonging changed throughout the class, as well as how comfort and preparedness affected the students' experience. Over 50% of post-course participants mentioned class topics as problematic, stating they would like more guidance on the subjects and assignments. Survey data showed improvement in all geological field techniques and methods, yet some factors related to sense of belonging declined from 94% in pre-course to 75% in post-course. Students expressed concern about knowledge on assignments, what to bring, and the conditions of working outside. Notably, lacking outdoor experience had no adverse effect on students' fieldwork experience; the majority had confidence in instructor preparedness. Students' self-efficacy and identity as a geologist generally positively changed by the end of the course. While students felt confident in the instructors and improved geological techniques, the lack of preparation for working outdoors and feeling lost on assignments negatively impacted their experience. Future renditions of this course and other classes across multiple disciplines can benefit from focusing pre-field class time on preparing for field assignments, situations one may encounter, and how to prepare for them.

Emma Rendall

NC - University of North Carolina at Wilmington

Discipline: Health and Human Services

Authors:
#1 Emma Rendall
#2 John Lothes
#3 Nicholas Castro
#4 Lisa Sprod

Abstract Name: Prevalence and Indicators of Gym Intimidation in Female College Students

The purpose of this study was to determine indicators of and measure gym intimidation in female college students. A survey was emailed to female college students at a large, public university in the southeastern US (n=357). Class standing, academic college, major, gym frequency, gym equipment used, and sports

participation were assessed. Gym intimidation was measured using the Social Exercise and Anxiety Measure (SEAM) subscales: social exercise self-efficacy (SES: 5-items, 0-100 scale, assesses confidence in the ability to exercise in various environments), gym avoidance (GA: 4 items, 0-7 scale, assesses gym avoidant behavior), and exercise importance (EI: 3 items, 0-7 scale, assesses priority of exercise). Respondents were 50% confident in exercising at a crowded gym compared to 95% confident at a private gym. The GA item with the strongest score was “I think people are judging me”. Pearson’s correlations, t-tests, and ANOVAs were used to identify significant relationships. Pearson’s correlations revealed a relationship (p<0.01) between frequency of gym attendance and all SEAM questions. Self-predicted success is correlated with exercise importance and ability to use a gym. Significant differences (p<0.01) were found for all SEAM scores between exercise science majors and non-exercise science majors; between those who use strength equipment and those who do not. SES and GA scores were lower in freshmen than other class standings. Gym intimidation is prevalent in the female college students and is a barrier to participation in exercise. Most concerns focused on perceived judgment as opposed to exercise itself. Combating intimidation from perceived judgment is critical.

Abigail Renner

SD - Black Hills State University

Discipline: Natural and Physical Sciences

Authors:
#1 Abigail Renner
#2 Ellie Moore
#3 Devin Messer
#4 Grace Mawawa
#5 Taylor Dowden
#6 Matthew Pawlus
Grace Mawawa
Devin Messer

Abstract Name: The Effects of -Methylamino-L-Alanine in Mesenchymal Stem Cell Differentiation and Neurogenesis

-methylamino-L-alanine (BMAA) is a biotoxin produced by cyanobacteria species found in algae blooms that bioaccumulate in food webs. Human exposure to BMAA over an extended period is thought to lead to bioaccumulation in the brain resulting in neurodegeneration and the development of amyotrophic lateral sclerosis/ parkinsonism-dementia complex (ALS/PDC); however, the specific action of BMAA in neurons is a complex mechanism that is incompletely understood. Further, no therapeutics or treatments exist to counteract toxin exposure and neurodegeneration. We have previously found that BMAA causes cell dysfunction in IMR32 human neuroblastoma cells via a mechanism at least partially dependent upon the upregulation of canonical WNT signaling. Further, we have found that BMAA is capable of modulating neuronal differentiation in this cell line, presumably through WNT-mediated mechanisms. WNT is a critical signaling pathway involved in a diverse array of physiological processes including neuronal polarization, differentiation, proliferation, and mesenchymal transition. This study investigates the potential role of BMAA in altering cell differentiation and neurodevelopmental processes in human cells. The data presented here support the hypothesis that human exposure to BMAA during development may impact neurogenesis to predispose individuals to neurodegenerative disease. Human mesenchymal stem cells or iPSC-derived neural progenitor cells were treated with sub-excitotoxic concentrations of BMAA throughout critical stages of in vitro differentiation from stem cell to neural progenitor to dopaminergic neurons and glia. Expression of differentiation markers, proliferation, cell lineage distribution, and morphological changes induced by BMAA were analyzed. Our findings characterize developmental defects driven by exposure to BMAA and indicate the possibility of developmental origins of sporadic neurodegenerative diseases.

Allen Resendiz

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Amanda Horton

Abstract Name: The Life of Richard Hollis Career

I'll discuss about Richard Hollis and the topics he taught students in this paper. I'll turn to Richard Hollis's "Writings About Graphic Design" to understand his perspective on graphic design. He enjoys making observations about how visuals are used, for example. I'll go into greater detail regarding his artistic influences and where he got his work's style. I'll discuss his work as a printer, magazine editor, art school professor, and multi-published author. He has lectured at numerous art schools, published books, and worked as a printer as a magazine editor. He also co-founded the West of England College of Art's School of Design. In 2019, Hollis was named an Honorary Fellow of the Royal Society of Literature.

Valeria Restrepo

TX - The University of Texas at San Antonio

Discipline: Natural and Physical Sciences

Authors:
#1 Valeria Restrepo
#2 Santiago Martin Albo
#3 Fernando Hernandez
#4 Sandra Sanchez-Reilly

Abstract Name: Effect of frailty on mortality of patients requiring mechanical ventilation

Background: One out of six older adults in the U.S are frail. Critically ill patients that require mechanical ventilation have a high morbidity and mortality. Limited information is available regarding how frailty impacts outcomes in mechanical ventilated patients. Our aim was to determine whether frailty affected mortality in mechanical ventilated patients. Methods: We performed an observational cohort study of critically ill patients admitted to the ICU at the University Hospital and the South Texas Veterans Health Care System in San Antonio, TX over a two-month period (November-December) in 2022. We included patients that required invasive mechanical ventilation and excluded all patients that only received high flow nasal cannula (HFNC) or non-invasive mechanical ventilation (NIV). Our variable of interest was frailty measured by the Clinical Frailty Scale (CFS) with a score of ≥ 5 compared to non-frailty patients (CFS < 5). The primary outcomes were all-cause ICU- and hospital mortality. Results: We included 74 patients that required invasive mechanical ventilation. The patients were stratified as frail (CFS ≥ 5; n=46, 62.2%) and non-frail (n=28, 37.8%). Patients tend to be male for both frail and non-frail groups. However, frail patients tend to be older (mean age 66.7 +SD 10.1) compared to non-frail patients (mean age 50.9 +SD 13.7). Among all the patients that required invasive mechanical ventilation, the ICU mortality was 35.1% and the hospital mortality was 40.5%. The ICU mortality was numerically higher among frail patients (n=20, 43.5%) vs. (n=6, 21.4%) non-frail patients (OR 2.82, 95% CI 0.96-8.26, p=0.06). Additionally, frail patients had higher hospital mortality (n=24, 52.2%) vs. (n=6, 21.4%) non frail patients (OR 4.00, 05% CI 1.37-11.69, p=0.01). Conclusion: Our results suggest frailty is associated with higher hospital mortality, but not ICU mortality. Further studies should assess whether frailty hospital survivors may have higher long-term mortality.

George Retana

CA - University of the Pacific

Discipline: Social Sciences

Authors:
#1 George Retana

Abstract Name: Enhancing Veteran Transition: Assessing Community Support Impact

This study acknowledges the pivotal role of community support for veterans transitioning from active-duty service to civilian life, recognizing the potential life-altering challenges in the absence of such support. Amidst the complexity of veterans' reintegration, the research aims to comprehensively assess the scope and effectiveness of community support mechanisms. The investigation centers on understanding the crucial role of community engagement, spanning various services and initiatives. Posed by my research question, "To what extent do the scope and efficacy of community support systems contribute to facilitating a successful transition for military veterans from active-duty service to civilian life?"—the study designates community support systems as the independent variable and the successful transition of veterans as the dependent variable.Employing a survey with 86 veteran participants responding to 40 questions, the research establishes a strong correlation between veterans' transitioning experiences and their expressed need for community. The findings not only underscore the significance of community support in successful reintegration but also contribute valuable insights to inform targeted initiatives and policies enhancing the transition experience for military veterans.

Dexten Retchloff

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Dexten Retchloff
#2 Wenxia Ma
#3 Anna Thalacker-Mercer
#4 Susan Ruby

Abstract Name: Proteomic Dynamics of Succinylation During Myogenic Differentiation

Myogenesis, the formation and development of muscle tissue, is the process by which myogenic precursor cells transition into multinucleated myotubes. The determinants of this process are essential in the understanding of skeletal muscle regeneration and atrophy. This study focuses on the role of succinylation, a posttranslational modification in which a succinyl group is added to an exposed lysine residue, thereby altering protein structure and function. We investigated the impact of SIRT5, a sirtuin that reduces the level of protein succinylation as a metabolic regulatory system. Primary muscle progenitor cells (MPCs) and C2C12 myoblasts were systematically cultured through proliferation and differentiation phases, and subsequent lysates were analyzed by western blotting using Anti-SIRT5 and Anti-Total-K-Succinylation antibodies. This analysis revealed a temporal upregulation of SIRT5 and an advancing decrease of succinylated proteins, corresponding with the progression of cellular differentiation. Induced hyper-succinylation via Dimethyl Succinate was observed to perturb protein function at molecular weights ~55 kDa and ~200 kDa, leading to impaired myogenic differentiation. This was evidenced through immunocytochemistry by reduced expression of the differentiation marker pan-Myosin Heavy Chain. Pathway enrichment analysis of succinylated proteins implicated vacuolar fusion, cytoskeletal integrity, cellular signaling, and ATP metabolism, among other integral processes. These results demonstrate that succinylation and SIRT5 play critical roles in myogenic

differentiation by modulating critical cellular pathways. Identifying the molecular mechanisms of succinylation enhances our understanding of myogenesis and reveals potential targets for therapeutic intervention in muscle wasting associated with age, malnutrition, disuse, injury, and disease.

Heidi Reust

OK - University of Central Oklahoma

Discipline: Social Sciences

Authors:
#1 Heidi Reust

Abstract Name: Subhuman: Incel Fantasies That Create Victimhood

Incels, short form for “involuntary celibates,” are men who are angry with their lack of romantic and sexual relationships and are infamous for turning their resentment towards women. Research on incels has increased due to the rise in social media platforms that allow them to connect (O’Malley, Holt, & Holt, 2020) and the increase in high-profile, violent incidents involving incels (Baele, Brace, & Coan, 2019), and due to the overall potential threat posed by them (Cottee, 2020). However, there is a lack of research on understanding why incels see themselves as outsiders beyond their lack of confidence or self-esteem. Using fantasy theme analysis, this study centers on the fantasies incels invest in that contribute to their self-proclaimed status as “Othered.” Results from the study found the following fantasies: subhuman, or stories of low self-worth, roping, the idolization of suicide, and foids, stories of women who act against incels. Within this study, it was also revealed that there exist subgroups within the incel community that maintain beliefs that contradict previous research, such as subverting the idea that all incels are celibate. These new revelations highlight the need for shifting lenses of analysis to reach a fuller comprehension of incels. Understanding the incel community and its complexities is imperative to creating preventative measures to dismantle their beliefs. Future research will focus on a fixed analysis of a single subgroup in the incel community, allowing a broader perspective of knowledge that would help inform efforts to reform current incels by deconstructing their misogynistic views as well as adding to current preventative measures.

Mayra Reyes

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

Authors:
#1 Kang Du

Abstract Name: Synthesizing a thiophenol precursor for thiol-bridging mix-valent metal complexes.

Mix-valent dinucluear complexes are unique models used for the exploration of intriguing magnetic properties and used to comprehend active sites in numerous biological enzymes. Among these complexes, those bridges to sulfur are especially interesting due to the enhanced orbital overlap between sulfur and transition metals. For this research project, the goal is to synthesize an important thiophenol precursor that will be used to help prepare a diverse range of dinuclear complexes conveniently. So far, a dialdehyde phenol has been successfully synthesized through a two-step synthesis. The continuation of this project will allow for the conversion of the phenol into a thiophenol group.

Andrea Reyes

TX - Southern Methodist University

Discipline: Natural and Physical Sciences

Authors:
#1 Andrea Reyes
#2 Krista Lynne Smith

Abstract Name: A Multiwavelength View of Star Formation and Feedback in Active Galaxies

Active Galactic Nuclei (AGN) are supermassive black holes at the centers of galaxies that are actively accreting matter. This process can drive powerful outflows of matter and radiation into the host galaxy, which can enhance and/or shut off star formation, in a process known as AGN feedback. I present images of these outflows in multiple electromagnetic wavebands: 22 GHz radio images taken by the Very Large Array, X-ray images from the Chandra space telescope, and visible light images from the Hubble Space Telescope. This multiwavelength view gives us a better understanding of the AGN-galaxy interaction: the radio images map the outflows themselves, visible light shows us how large the jet is relative to the galaxy and the locations of star formation, and X-ray emission maps the sites of interaction of the outflow and host galaxy gas. The radio and X-ray images were used to determine which galaxies to further analyze using spectroscopic images from the MUSE IFU instrument on the VLT, which provides spectral information for every spatial pixel in a galaxy image. I analyze a sample of both archival and newly-obtained MUSE data, resulting in maps of ionized oxygen and hydrogen gas. These images also provide velocity information, revealing distinct regions of red-shifted and blue-shifted gas emission that can indicate rotation, outflow-driven gas velocities, or turbulent motion due to shocks at interaction sites. Future work will use the MUSE data to determine the strength of the outflow, and it will also verify that it is caused by an AGN and not other radiative sources such as supernovae.

Ana Reyes

CA - California State University - Fullerton

Discipline:

Authors:
#1 Ana Reyes
Lucía Acalá

Abstract Name: Cosechando Poder Through Transformative Research Practices

This presentation aims to highlight two transformative research approaches that center on historically marginalized students as we acknowledge the cultural values, wisdom, and practices they bring to the lab and collaboratively build on those. Our research practices extend beyond traditional research bounds to honor the conocimiento (knowledge systems), value, and wisdom of students and their communities. Our research practices seek to dismantle the hidden curriculum by fostering mutual partnerships between students and faculty mentors from marginalized communities. Through this presentation, we will share the critical components of our approach, including the development of culturally and linguistically responsive research frameworks, liberatory research labs, and capacity-building initiatives. Some of the methodologies we use are participatory action research, indigenous methodologies, and community-based research. We will provide examples of how these methodologies can be implemented and share three fundamental approaches that attendees can adopt to their research groups such as active role modeling, power-sharing, and intentional de-centering of the traditional role of “researchers” in academia.

claudia reyes

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Claudia Reyes

Abstract Name: The Relationships of Social Media Use, Self-Esteem and Loneliness

Humans have an inherent need for social connections, where the quality of relationships holds greater significance than quantity, as the absence of such connections can lead to loneliness and diminished self-esteem (SE). Baumeister and Leary describe this as an innate drive for meaningful social interactions. Social media (SM) plays a pivotal role in fostering and sustaining these connections, reducing the reliance on in-person interactions. Single individuals with a large social circle may find that SM has a limited impact on their sense of companionship but can contribute to more substantial relationships.In committed relationships, the use of SM can serve various purposes, potentially indicating unmet companionship needs within the relationship. The quality of connections with a partner can significantly influence SE and feelings of loneliness.It is hypothesized that: H1) Among single people with few friends, SM users will have higher SE and experience less loneliness than non-users; H2) Among single people with lots of friends, SM users will have no difference in levels of SE or loneliness than non-users; and H3) Among people who are married or in a long-term relationship, SM users will have lower SE and experience greater levels of loneliness than non-users.Data will be obtained anonymously at an online survey site from 100 people over the age of 18 years. They will complete questionnaires including basic demographics, the amount of SM usage, the UCLA 3-item Loneliness Scale (LS), and the Rosenberg Self-Esteem Scale (SE).H1 will be supported if SM users have lower LS scores and higher SE scores than non-users. H2 will be supported if users and non-users have similar LS and SE scores. H3 will be supported if SM users have higher LS scores and lower SE scores than non-users.

Kassandra Reyes

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Kassandra Reyes

Abstract Name: DOOR 46

Although the United States is known for attracting the most immigrants around the world it continues to lack a system designed to aid common barriers that new residents face. Therefore, DOOR 46, a temporary housing facility for immigrants will provide a community that emphasizes gathering individuals with similar struggles while exposing them to different cultural experiences that improve their adaptation to the new country. The design focuses on traditional aspects of the most common immigrant cultures for each State while enhancing the curiosity of other cultures. This community can provide the residents with a sense of cultural familiarity by designing a space with their cultural aspects and still being surrounded by other cultures. The middle ground of balancing the familiar spaces with other cultures will allow the immigrants to ease into their new lifestyles in the States. After conducting various forms of research such as surveys and articles, it is evident that this specific project required deeper one-on-one conversations to conduct the most authentic research.

Within the research, it became evident that new residents encounter lots of barriers, such as being homesick, culture shock, and lack of knowledge. Therefore, DOOR 46, will have a small community of culturally inspired homes with a public building in the center, filled with spaces designed to improve their adaptation in the United States. The homes will consist of common elements prevalent in each group of the specific culture, such as materials, shapes, colors, textiles, and much more. Meanwhile, the main public building will have spaces that will enhance the development of the new residents, like classrooms for English and citizenship classes and a minimarket with authentic food. Altogether, DOOR 46 will provide a comfortable and inviting space for all the new immigrants to have access to all their physical and mental needs.

Jocel Angelo Reyes

TX - Lone Star College

Discipline: Humanities

Authors:
#1 Jocel Angelo Reyes

Abstract Name: Traditionalism in Assimilation: A Case Study of Filipino Literature

This research examines the impact of cultural traditionalism on the Filipino diaspora when assimilating into other cultures through an examination of Filipino literature, including Regie Cabico's depiction of his family's immigration to the US in "Mango Poem," and Mia Alvar's short story exploring the lives of Filipino families settled in Bahrain in "Shadow Families." With a population of approximately twelve million people spanning over two hundred countries, the Filipino diaspora is one of the largest dispersed communities in the world. While many studies have assessed how Filipino culture impacts the diaspora's assimilation into foreign cultures, what is less explored is how the stories produced from this process present assimilation. First, this paper investigates the normalcy of Filipino immigration through the research of Filipino cultural analyst Maharaj Desai and migration policy expert Kevin O'Neil, locating key aspects of Filipino culture to better understand the origins of the Filipino diaspora. Then, W.E.B. Du Bois' theory of the Double Consciousness is analyzed for its usefulness as a culturally focused framework for investigating the Filipino immigration experience. Finally, a comparative analysis of the cultural symbols, including those representing Filipino Catholicism, seen in the "Mango Poem" and "Shadow Families" is conducted through the lens of the Double Consciousness. Ultimately, this analysis suggests that Filipino adherence to traditionalism plays an important role as a coping mechanism for migrants; however, it can also place Filipinos in a position to be alienated within the culture they are immigrating into. These two examples of Filipino fiction provide representations of immigrants who hold onto certain cultural identity markers during assimilation, which continually connects them to the greater Filipino immigrant community and argue that the Filipino immigration experience is similar for most Filipino migrants.

Amanda Reyes

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Amanda Reyes
#2 Stevan Pecic

Abstract Name: In Vitro Selection of DNA Aptamers for Kavain

Kava, Piper methysticum, is a plant characteristic for Pacific islands. Currently Kava is gaining attention in its ability to dissuade anxiety as an alternative to conventional prescription drugs. The primary active principle in Kava is kavain. Despite the observed benefits surrounding kavain, there have been recent studies linking the molecule to several adverse effects and even liver failure. Traditional methods for detecting kavain require expensive equipment and highly trained staff. Due to the possible link between kavain and liver toxicity, the development of the sensitive, but still rapid and robust analytical method for detection of kavain is needed. The objective of this project is to develop a biosensor made of single stranded DNA-aptamer that will bind to kavain with high affinity and high specificity. In our lab we are isolating DNA-aptamers through the process of an in vitro selection and amplification- SELEX (Systematic Evolution of Ligands by Exponential Enrichment). We use a commercially available ssDNA library of 36 random nucleotides flanked by two primers. A nucleic acid library that has 36 randomized positions potentially contains 436 different oligonucleotide sequences, each one with a unique associated structure. Through multiple rounds of SELEX, all members of the library which interact with a target kavain will be favored for PCR amplification and would be more likely identified as binders. Currently we have completed 10 rounds of SELEX, and the target kavain has maintained at a concentration of 100 mM. In our next steps we plan to start decreasing the concentration of kavain, and to start introducing a counter-target, Pipermethystine at 1mM. This will be followed by cloning and sequencing in order to isolate a DNA-aptamer for kavain in low nanomolar range. We expect that our study will enable development of the more advanced biosensors for detection of challenging small molecules of interest.

Amy Reyes

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Amy Reyes
#2 Vipin Paliwal

Abstract Name: Synthesis and Testing of a Nanobead Sunscreen from Kaempferia galanga Rhizomes, a Green Chemistry Approach

Kaempferia galanga is a member of Zingiberaceae. It has medicinal properties such as anti-inflammatory, anti-fungal, and pain-relieving effects. K. galanga rhizomes are rich in cinnamate derivatives; these are common sunscreen agents due to their ultraviolet (UV) radiation absorbing properties. This study aimed to extract ethyl-p-methoxycinnamate (EPMC), an abundant cinnamate derivative in K. galanga rhizomes, and encapsulate it within Pluronic nanobeads to form a nanobead sunscreen effective against UV radiation, specifically ultraviolet-B (UVB). Overexposure to UV radiation without protection increases the risk for skin damage and cancer. The method consists of three phases. EPMC was extracted from dehydrated K. galanga rhizomes through maceration with 70% ethanol, fractionation with n-hexane and ethyl acetate, followed by drying via a rotary evaporator. The nanobeads were synthesized with extracted EPMC using a custom Flash NanoPrecipitation (FNP) apparatus. Thin Layer Chromatography (TLC) verified the presence of EPMC in the nanobeads, and UV/Visible Spectroscopy (UV/Vis) confirmed the ability of the EPMC nanobeads to absorb UVB radiation. The effectiveness of the EPMC nanobeads was investigated using a UVB chamber and radiometer. 2x diluted unseparated EPMC nanobeads showed a 48.23% UVB absorbance rate. 2x diluted unseparated and 2x diluted aggregated EPMC nanobead samples were assessed for effectiveness in UVB absorbance throughout extended UVB exposure. After five hours, 54% and 41% efficiency respectively were reported. Ongoing is an efficacy assessment of the EMPC nanobeads on calf thymus DNA exposed to UVB. 6-4 photoproducts (6-4 PP) will be measured using Enzyme Linked Immunosorbent Assay (ELISA). The results are expected to show a significant reduction of 6-4 PP on the DNA with the protection of EPMC nanobeads compared to the control - DNA without the protection of the EPMC nanobeads. The results of this EPMC nanobead sunscreen demonstrate a potential to offer human skin cells protection against UV-induced damage.

Valeria Reyes Bastidas

CA - California State University - Fullerton

Discipline: Health and Human Services

Authors:
#1 Valeria Reyes Bastidas
#2 Andrea Caliz
#3 Melanie Trujillo
#4 Alicia Springfield
#5 Do Kyeong Lee Lee
Andrea Caliz
Melanie Trujillo

Abstract Name: Investigation of Infant Postural Duration, Frequency, and Milestones During The First Year of Life

During the early stages of motor development, infants engage in a variety of postures, which support their ability to acquire motor skills in the future, such as walking (CDC, 2023). In this investigation, we assessed the patterns of infant postures, as well as, the average onset of milestones (e.g., sitting, crawling, cruising). Longitudinal observations (1-12 months) followed the motor behaviors of eight infants (5F, 3M). Naturalistic observations occurred via monthly home visits; in which a researcher recorded wakeful infant playtime for 20-30 minutes. Data analysis consisted of continuous coding to determine the frequency and duration of infant posture. As anticipated, results reflected an emergence of sitting skills around 4 months, with a slow increase in average, past the functional onset (FO), (M = 6.37 months). This pattern is followed by a notable decrease around 8 months, creating an inverted U-shaped curve of sitting skill expression across the first year of life. Prone postures indicated a similar expression range, reflecting an inverted U-shaped curve. The data shows that infants engage in low percentages of prone postures at 2 months, which increase around 6 months, and decline in the final 6 months. Pronation skills resulted in a later average FO (M = 9.09) due to the inclusion of crawling skills. Our analyses also revealed an increase in upright posture percentages with age, emerging around 9 months. The range of upright postures resulted in an increasing pattern until the FO (M = 12.8 months). Identifying posture frequency, duration and milestone ranges can impact the field of motor behavior by providing a deeper understanding of developmental influences within the first year of life.

Molly Reynolds

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Molly Reynolds
#2 HaoSheng Sun

Abstract Name: Understanding the Role of Gap Junction Molecule innexin-19 in Neuronal Maturation and Aging

Many molecular and functional changes occur in post-mitotic neurons throughout post-embryonic nervous system development/maturation and aging. One emerging hypothesis is that defects in neuronal maturation early in development can predispose individuals to impaired neuronal aging and neurodegeneration later in life. One of the most prominent changes, crucial for proper neuronal maturation, is the downregulation of electrical synapses/gap junctions, one of two major modes of neuron-neuron communication. Our goal for this project is to understand if and how the downregulation of electrical synapses contributes to neuronal maturation and aging, using Caenorhabditis elegans (C. elegans) as our experimental model due to their stereotyped and fast developmental cycle, invariant cell lineage, and the ability to identify the expression pattern of any molecule in the entire nervous system to single neuron resolution. We first focused on innexin-19 (inx-19), a gap junction channel that has been previously suggested to play important roles in neuronal maturation, and characterized its downregulated expression pattern across post-embryonic development in single neuron resolution. Next, we characterized the locomotor behavior across each stage of post-embryonic development in wild type vs. inx-19 null mutant animals using the WormTracker. Despite high inx-19 expression in early development, we found that inx-19 mutant animals only exhibited defects in locomotion in old adults. To investigate this further, we used the Auxin Inducible Degron tool to control inx-19 function with spatiotemporal precision. We found that specifically inhibiting inx-19 function in early larval stages but returning to normal function in adulthood still impaired locomotion specifically in old adults. Currently, we are investigating the mechanisms by which dysregulation of electrical synapses early in development contributes to defects in neuronal function in aged adults, which will help us to better understand underlying mechanisms of neuronal aging and to identify potential novel therapeutics for neurodegenerative disorders.

Samantha Reynolds

PA - Millersville University

Discipline: Natural and Physical Sciences

Authors:
#1 Samantha Reynolds
#2 Isaac Ligocki
#3 Ajoy Kumar

Abstract Name: Physiological and Behavioral Effects of Salinity on Two Species of Intertidal Snails

Calcifying organisms such as marine snails need calcium and carbonate to build and maintain their shells. The total alkalinity (TA) is highly dependent on carbonate species like carbonate and bicarbonate. The TA and salinity of the ocean vary together because the same processes that increase one also increase the other, and vice versa. TA will have a smaller carbonate concentration as it decreases with salinity, so there will be less available for the snails to use. Thus, shifts in salinity may impact shell-dwelling organisms' ability to maintain and build new shell, or make behavioral shifts to reduce the impact of the salinity. I will investigate

the proposed effects of salinity on two marine snails: Littorina littorea and Ilyanassa obsoleta collected from Chincoteague Bay, Virginia. These snail species play an important role in the bay ecosystem. L. littorea is an herbivore whereas I. obsoleta is a predator; both are prey for many bay organisms. They are both estuarine snails that live in a habitat with high salinity fluctuations throughout the day and year. However, both species may utilize behavioral strategies to avoid suboptimal conditions. To determine the physiological and behavioral effects of salinity on these two species, live snails and empty shells will be exposed to four different salinities. Resulting differences in weight, size, morphology, shell composition, and shell strength will be recorded for approximately four months. We predict that each species will display reduced shell growth at lower salinities unless behavioral shifts allow them to mitigate these effects.

Kera Reynolds

TN - Middle Tennessee State University

Discipline: Education

Authors:
#1 Kera Reynolds

Abstract Name: A Look at University Student Engagement and Connection in and its Impact on At-Risk First-Year Students Residing in Housing and Residential Life at Middle Tennessee State University

This study investigates how at-risk freshmen that are residing in Housing and Residential Life connect with MTSU's campus and feel a sense of belonging versus those that do not reside in Housing and Residential Life. Housing and Residential Life is the center of student engagement and students are expected to feel a sense of connection more than those that do not live in university housing. This study will look at what other university Housing programs are doing for student support and connection, what MTSU does for student support and connection, and the leadership in university Housing. College students, especially at-risk college students, are at risk of dropping out of school and not being connected academically or emotionally. Middle Tennessee State University (MTSU) Housing and Residential Life (HRL) also currently has a little under 3,000 students residing in university housing. One of the ways that students feel connected to campus is by student engagement in the residential halls. Housing staff put together programs for residents to attend, residents live so close to one another, MTSU Housing puts together Living-Learning communities for residents based on interest and major, and other areas of student affairs connect with Housing and Residential Life. Because Housing has many ways for students to be connected to campus well, students that are residing in Housing and Residential Life may feel more connected than students that commute to school. Connection to campus is one of the most important things a student can do during their time on campus. Not every student is going to feel connected to campus. However, if residential life students feel more connected than commuters, it could not only impact students' connections but also lead to helping more “at-risk” students feel connected and attempt to help them be successful academically, socially, and emotionally.

Madison Reynolds

KY - University of Kentucky

Discipline: Humanities

Authors:
#1 Madison Reynolds

Abstract Name: Toward an LGBTQ-Inclusive Russian Language Classroom: Contexts, Models, and Materials

This presentation will share insights derived from ongoing research that considers avenues toward developing more LGBTQ+-inclusive pedagogies within the context of Russian language teaching and learning in the United States. Despite notable strides in recent years to support teaching and learning about more diverse identities in the Slavic field, it is evident that contemporary textbooks for Russian language pedagogy fall short in fully representing LGBTQ+ lives. There remains a lack of readily accessible pedagogical materials designed to assist both learners and instructors in seamlessly integrating these diverse identities into the Russian language classroom. This presentation will introduce several LGBTQ+ inclusive teaching strategies that have proven effective in second language classrooms, providing practical suggestions for how Russian language courses could adopt or adapt these practices for our own cultural contexts. Drawing upon successful practices from other language disciplines, there will be an analysis of the most frequently used methods for inclusive language practices in gendered language and how these practices can be presented to students in the classroom. Furthermore, the presentation will delve into the intricacies of Russian grammatical gender, shedding light on how the queer Russian-speaking community has customized the language to embrace a broader spectrum of identities. This presentation will conclude by sharing with participants a set of resources to use in the classroom setting to include LGBTQ+ identities in novice, intermediate, and advanced level conversations about biographies, relationships, marriage, and families.

Luis Reynoso

FL - Miami Dade College

Discipline: Natural and Physical Sciences

Authors:
#1 Hines Robert E

Abstract Name: Florida Government and data Scientists on rising sea levels

Rising sea levels are a growing problem in coastal regions in Florida, and there are many climate change challenges that scientists and local governments have to face today to maintain a clean and safe environment for the people who live within the tropical regions of Florida. Climate change threatens to enhance coastal flooding and saltwater intrusion into water supplies along regions around the southern United States. The rise in water on sea levels around the coast is expected to be one of the most socially and economically disruptive challenges as the temperatures in Florida keep rising. The water disruptions risk the people around Florida as floods occur during late springs and hot summers, ranging from day-to-day challenges of delivering essential services to planning for large-scale population shifts inevitable with the loss of habitable land. Infrastructure providing necessary water services to treat water waste, control stormwater runoff, and transport are considerably vulnerable to rising sea levels and intensifying existing flooding hazards. Without adaptive measurements in place, rising sea levels could lead to population shifts similar to the great migration, as residents move from inundated areas that are not exposed to water. Although federal and state governments can play key roles in shaping primary climate policy, sea level rise(SLR) has created localized risks that can only be addressed in profoundly local political environments. As a result, coastal cities and counties in Florida face increasing pressure from the general public, media, and credit markets to develop strategic plans addressing rising sea-level risks. To plan risks effectively, local governments developed procedures to break their complex problems down into politically tractable solutions.; yet despite the significant dangers that the coastal governments had to face from rising seas, there had been relatively little research conducted on how they strategically could plan to prepare for risks...

Maria Reza

CA - University of California - Merced

Discipline: Health and Human Services

Authors:
#1 Maria Reza
#2 Lindsay Crawford

Abstract Name: Empowering non-native English speaking students: Nurturing self-efficacy for writing

Research on self-efficacy for writing at the college level is a relatively limited area of study. The current study explores the effects of an upper-level undergraduate writing-intensive Health Communication course on students' self-efficacy for writing. The purpose of this study was to identify strategies for improving self-efficacy for writing, particularly among underrepresented groups, as the study population was majority female, Hispanic, non-native English speakers, and first-generation college students. Student's self-efficacy for writing was measured using the Self-Efficacy for Writing Scale (SEWS) which was administered twice; once at the beginning of the semester and once at the end. Results showed statistically significant differences in students' pre- and post-self-regulation and writing convention scores (15% and 10% increase, respectively). These scores suggest major improvement in students' self-reported abilities for writing mechanics and the regulation of their writing process. Subsequently, two focus groups were conducted to gain insight into how students' self-efficacy for writing was affected by the class content, assignments, instructor feedback, and classroom environment. Implications of low self-efficacy on writing performance and strategies for enhancing self-efficacy for writing are discussed and should be considered for implementation by educators.

Elliot Rezek

NC - Elon University

Discipline: Social Sciences

Authors:
#1 Elliot Rezek

Abstract Name: Viewer Affinity for Live Sports Broadcast Innovations

The NFL is one of the most popular sports leagues in America. In the first two weeks of the season, NFL games are averaging 17.5 million viewers per game. The way NFL games are consumed is changing with the advent of new broadcast techniques that may cater to audiences with different levels of football experience. My research aims to evaluate the response of viewers from various football knowledge bases to new camera angles being used in NFL broadcasting. The traditional broadcast angle shows the two teams on the line of scrimmage and depicts the players' movement up the field as horizontal movement across a viewer's screen. The new camera angle dubbed "All 22", shows the field from behind the view of the offense, making the downfield movement of players appear as vertical movement on the viewer's screen. The reviews of the "All 22" camera angle have been mixed. Some viewers enjoy the new camera angle, as it allows them to see plays unfolding from the offense's perspective and the defense's response to specific movements. Other viewers say that the new angle is disorienting, especially to viewers who are not as familiar with the intricacies of football. This study will gauge the viewers' affinity for the new camera angle using data from individual interviews complemented with data from eye-tracking software used while watching plays from both camera angles. The use of eye-tracking can indicate feelings of stress, interest, or confusion upon viewing certain material. Conducting interviews and tracking the eye movements of participants who are avid and casual football viewers provides insight into how and when to use this camera angle during broadcasts. Furthermore, this study will indicate if the new camera angle is inviting or isolating to viewers new to the sport, which could have implications for viewership trends.

Lauren Casey Ribancos

CA - California State University - Long Beach

Discipline: Humanities

Authors:
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#2 Guotong Li
#3 Kate Flach

Abstract Name: In-Between an Ocean and a Hard Place: Exploring Sojourning Southern Chinese Diaspora in the Pacific and West Indies (1830-1910)

Current scholarship has described Chinese immigration through their search for gold in California or barred entry into the US by the Exclusion Act of 1882, briefly mentioning the extent of their assimilation or assuming permanent settlement in their respective areas. However, it fails to examine the Caribbean and US as a sojourning society like their Southeast Asian counterparts. With anti-government suspicions and rejections of overseas Chinese back into their homeland coupled with exclusionary policies in the US, sojourning Chinese found themselves in a state of estrangement - no citizenship, no rights, nowhere else to go. This group exhibits a particularly interesting perspective of immigration as a temporary state who longs to return to their homeland or at least support their families abroad. This "in-betweeness" of overseas Chinese sprouts various complications regarding their national identity as well; an experience altered and affected by immigration of any means, which too is largely overlooked by scholarship, hiding between paragraphs or through brief mentions in sentences.Thus, this research examines the ideas of a sojourn society's willingness to return home. Southern Chinese migration to the United States, Hawaii, and the Caribbean are going to be chronologically explored in the Modern Period to help contextualize their migration outward, starting from the period of the gold rush in California towards the height of Chinese exclusion in the US using colonial letters from respective plantations and personal narratives. This research will also explore the complicated nature of overseas Chinese's national identity - how exclusionary policies, treatment of Chinese immigrants, and China's rejection/acceptance of their "citizens" directly impacted immigrating Chinese from 1882 to the early 1900s. This research offers various ways to reframe the discourse of immigration and migrant experiences and helps contextualize the presence of large Chinese enclaves throughout North and South America.

Ellie Rice

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Ellie Rice
#2 Anna Mills
#3 Lauren Baur
#4 William Fenske
#5 Xiu Xu
#6 Meifan Chen, PhD

Abstract Name: Astrocytic Contribution to Motor Recovery After Spinal Cord Injury

Spinal cord injury results in loss of motor, sensory, and autonomic functions. Astrocytes, a cell type in the central nervous system, react to injury in a process called astrogliosis that impacts repair. At the site of injury, reactive astrocytes form an astrocytic scar that yields neuroprotective effects. Impaired formation of this scar

causes increased tissue damage along with worsened motor recovery. Our lab identified leucine zipper-bearing kinase (LZK) as a key activator of astrogliosis that promotes wound healing after spinal cord injury in mice. This project examines the effect of astrocyte-specific LZK gene manipulation on hind-limb motor recovery following spinal cord injury. To determine the role of LZK on functional recovery post-injury, a complete crush was performed at thoracic level T8. Hindlimb function was measured using i) Basso Mouse Scale, an open field test that assesses gross motor function; and ii) regular horizontal ladder test that measures skilled stepping over 2 months after injury. Analysis demonstrated decreased function following LZK gene deletion. Decreased gross and fine motor function improvement was seen for the LZK-knock out when compared to the control genotype, suggesting that LZK is necessary for functional recovery. This is further suggested through increased gross motor function observed for the LZK-over expression when compared to the control genotype. Further research must be done to determine the role of LZK-over expression in fine motor recovery.

Elizabeth Rice

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Rice
#2 Luke Bradley

Abstract Name: Determining Specificity in a High-Quality Library of Pervasive Binding Proteins

Antibodies, renowned for their precision in antigen (i.e. binding target) recognition and specificity, exhibit limitations as specific-binding therapeutics due to their large size and complex structures. To overcome these drawbacks, alternative protein scaffolds with stringent binding specificities and smaller sizes are explored through protein library design. This study focuses on the mammalian central calcium-regulating protein calmodulin (CaM) as an alternative scaffold. In the cell, CaM recognizes and binds to hundreds of cellular targets to transmit calcium signaling. Previous work from our group has shown that introducing diversity into this highly-conserved sequence is tolerated to generate a large, high-quality protein library of synthetic CaM. Characterization of over 77 randomly selected sequences confirmed that individual sequences can be overexpressed in bacteria and purified. Additional structural characterization showed conformation differences amongst individual members upon the binding of calcium, and different protein folding stabilities in the unbound (apo) form. Our hypothesis posits an inverse correlation between stability in the unbound form and increased binding specificity with novel targets. To test this hypothesis, we selected three CaM variants (P7, B7, and B9) with reduced apoprotein stability compared to wild-type (WT) CaM, and three variants (K4, P5, and B6) with enhanced apoprotein stability and measured changes in binding specificity through rodent brain pull-down assays. In addition, we provide binding data comparing selected variants to a single target peptide from KCNQ1. Our data show that members with decreased apoprotein stability lead to increased binding specificity and affinity, thereby supporting our overall hypothesis. The outcomes of this investigation with this model protein, yield new insights into protein library design of alternative scaffolds with increased binding recognition and specificity, to help accelerate discovery and development of protein-based tools for research and the treatment of diseases.

Rachael Rice

OH - Capital University

Discipline: Natural and Physical Sciences

Authors:

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#2 Nathan Gibbs
#3 Christine Anderson
Nathan Gibbs

Abstract Name: Identification and Prevalence of Batrachochytrium dendrobatidis on Amphibians in Ohio

Amphibians are in a severe decline worldwide making them the most threatened group of vertebrates. Batrachochytrium dendrobatidis (Bd), a fungal epidermal pathogen, is a major cause but little is known about the occurrence of chytrid in the Midwestern United States. The goal of this research is to assess the prevalence and strains of Bd at the Primmer Outdoor Learning Center (Logan, OH) and the Stratford Ecological Center (Delaware, OH). Amphibians were live-trapped and hand caught during ten sessions at the swamp wetland and streams at Primmer, and a pond and two vernal pools at Stratford, during Spring and Summer 2023. Ninety-six total swab samples were collected at Primmer and Stratford from amphibian species including spotted (Ambystoma maculatum), small-mouthed (A. texanum), southern two-lined (Eurycea cirrigera), northern dusky (Desmognathus fuscus), and eastern red-backed (Plethodon cinereus) salamanders, and American toads (Anaxyrus americanus), spring peepers (Pseudacris crucifer), western chorus frogs (P. triseriata), American bullfrogs (Lithobates catesbeianus), and northern green frogs (L. clamitans melanota). To date, DNA has been extracted and real-time qPCR testing has been performed for 94 swab samples. TaqMan assays consisted of TaqPath BactoPure master mix, primers ITS1-3 Chytr and 5.8S Chytr and probe Chytr MGB2, and Taqman Exogenous Internal Positive Control reagents. Preliminary results show that 4.9% (3/61) of samples from Stratford and 15.2% (5/33) from Primmer were positive for Bd from a western chorus frog, northern green frog, and a spotted salamander from Stratford, and two southern two-lined salamanders and three northern dusky salamanders from Primmer. Additional extractions, qPCR, and digital PCR analyses are ongoing, and samples that test positive will be DNA sequenced to determine the strain of Bd. This research contributes to our understanding of amphibian biodiversity and disease surveillance in Ohio, and can help inform management and conservation efforts in the Midwestern USA.

Janis Richards

TX - San Jacinto College

Discipline: Social Sciences

Authors:
#1 Janis Richards

Abstract Name: Creation of U.S. Money by the Private Sector

According to the U.S. Constitution, can U.S. money be issued by any entities solely in the private sector? The answer is no. Article 1, Section 8, Paragraph 5 of the U.S. Constitution states, “The Congress shall have Power … To coin Money, regulate the Value thereof, and of foreign Coin, and fix the Standard of Weights and Measures.” Paragraph 18 further states, “To make all laws which shall be necessary and proper for carrying into execution the foregoing powers.”Since U.S. money is currently being created and circulated by the private sector, under the auspices of the Federal Reserve, this process is in violation of the Constitution. The Federal Reserve is not a government organization. It is a private cartel of 10 powerful private banks, each of which has the sole responsibility of earning a profit for its investors. The function of earning a profit interferes with the function of working on behalf of the public. Consequently, the U.S. is currently experiencing a pricing structure that harkens runaway inflation. There are no elected officials in the Federal Reserve who are responsible to the American public. The methodology of the Federal Reserve is opaque. It was originally created under fraudulent circumstances in 1913.Historical precedent described from scholarly research verifies the unconstitutionality of private creation of U.S. money. Research methodology will consist of proof from numerous case studies which confirms the thesis. The conclusions will show that U.S. money can only be created and circulated by the Congressional branch of the U.S. Government. These conclusions

will be discussed in the context of historical experience with current evidence of the danger of this private system of money creation to the American public and the world, as was evidenced in 2008.

Cari Richards

UT - Utah Tech University

Discipline: Education

Authors:
#1 Cari Richards

Abstract Name: Struggling Readers: Action to Improve Comprehension

In the intermediate grades, reading comprehension greatly impacts student's ability to understand what they are reading. When evaluating a student's reading performance, 90% accuracy is an indicator that the text is an appropriate level for a student. Accuracy is determined by how many words are read incorrectly while the student is reading orally. The methodology of action research will be used to explore the validity of the following hypothesis, "Will the application of reading strategies improve reading comprehension?"A sixth-grade multilingual learner (ML) who attends an intermediate school will be the focus of this study. This student's reading level is currently evaluated at the third-grade level. Although the student can read simple chapter books, they need continual practice reading with more complex text. To support the student to meet 90% accuracy for reading comprehension, five specific reading strategies will be implemented. After the student has been assessed to determine appropriate reading level text, 1) The student and the teacher will meet four times a week for 15 to 20 minutes for a total of six weeks, 2) teacher will preview words in the text with student, 3) student will read aloud to the teacher, 4) student will orally summarize what is being read. Lastly, to measure if the student's reading comprehension has improved, they will write a summary of the content in 2-3 sentences. With continual support using these strategies, the student will be able to transition to a more complex text.

Emme Richards

DC - American University

Discipline: Social Sciences

Authors:
#1 Emme Richards

Abstract Name: Accusations and AMLO: Legitimizing Femicide Responses Through Political Discourse

How might a presidential administration respond to severe public criticism concerning its reaction to the brutal slaughter of women across the country? This research analyzes how the language patterns of the Mexican presidential administration attempt to justify the political action taken to address femicide, the intentional killing of women based on their gender. In other words, how does the political discourse produced by the Mexican president and his administration from November 2018 to December 2020 in commenting on cases of femicide in Mexico endeavor to legitimize accused policy inaction? Utilizing a critical discourse analysis framework, the term 'femicide' is searched within Mexican presidential administration press conference transcripts from November 2018 to December 2020, providing 57 that discuss this specific form of violence. The femicide-related sections of each of the 57 transcripts are analyzed for recurring discursive patterns in responses to media questions on the administrative response. This study finds that the administration attempts to establish policy legitimacy and minimize culpability by conflating femicide with

other crimes, signaling federal virtue and progress, deflecting attention away from bureaucratic responsibility and toward other involved parties, and generalizing descriptions of response strategies. A quantitative assessment involving the numerical tallying of the four strategies across the 57 transcripts exposes the extensive use of these discursive moves during the time period studied. These findings supplement the understanding of the relationship between discourse and policy as well as political responses to public dissent and violence as initially outlined in previous scholars' studies of normative discourse and the positioning of discourse as both a theory and a method. Further, these findings provide vocabulary to better identify and interrogate rhetorical legitimization and intimate how to navigate the complicated dynamic between the bureaucracy and the people.

Philip Richardsen

NE - Creighton University

Discipline: Natural and Physical Sciences

Authors:
#1 Christine Rapp
#2 Jeffrey Travers

Abstract Name: Air Force Relevant Cold Injury Induces Release of Microvesicle Particles Which is Downregulated by Treatment with Tricyclic Antidepressant Imipramine

The Department of the Air Force has the greatest United States Military presence in the Arctic region with assets in Alaska, Greenland, and around the world, and the Air Force continues expansion and development of operational capabilities in the Arctic region in pursuit of vigilance, deterrence, and defense from foreign threats. Warfighters in the Arctic region and other subarctic regions are at high risk for cold injury including frostbite and hypothermia. One of the most significant pathologies associated with frostbite is inflammation and its consequences including ischemia, necrosis, and self-amputation. Previously, the Travers group has shown that the lipid mediator Platelet-activating factor (PAF) was biosynthesized and released by cells undergoing cold injury. Moreover, many environmental stressors (heat, UVB radiation) which also produce PAF also generate subcellular microvesicle particles (MVP). The goal for these studies was to define if cold injury results in MVP generation and release and whether cold injury effects on MVP release were PAF-Receptor (PAFR)-dependent or -independent. Using the human keratinocyte-derived cell lines HaCaT, KBM (PAFR-), and KBP (PAFR+)we find that cells undergoing Air Force relevant cold injury released MVPs consistent with the release of PAF and that MVP release appears to be PAFR-independent (though more studies need to be carried out to confirm this). We also tested if experimental cold injury to porcine skin explants resulted in MVP release, and if tricyclic antidepressant imipramine which blocks MVP releasing enzyme acid sphingomyelinase is a down-regulator of MVP release. Ultimately, these studies provide the first evidence that cold injury results in MVP release. Future studies will define roles of PAFR and acid sphingomyelinase in MVP release as well as the pathologic consequences of MVP release in the setting of cold injuries.

Grace Richardson

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Grace Richardson
#2 Madelyn Terry
#3 Rachel Wight

#4 Matthew Nicholaou
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Abstract Name: Assessment of a Polyethylene Glycol Based Bivalent Bacteriophage Treatment for Pseudomonas aeruginosa and Staphylococcus aureus in an In Vitro Tissue Model

Bacterial infections caused by Staphylococcus aureus and Pseudomonas aeruginosa are becoming harder to treat due to the rise of deadly antibiotic-resistant strains of these microbes. These bacteria are often responsible for common skin infections including surgical wounds, burns, and diabetic foot ulcers. Bacteriophages, naturally occurring viruses that kill bacteria, present a promising alternative to traditional antimicrobials. This study will evaluate duration of treatment, time of application, and dosage for a polyethylene-glycol (PEG) bacteriophage cream containing two specific bacteriophages: S. aureus bacteriophage 75 and P. aeruginosa bacteriophage PP7 (bivalent). This will be achieved by applying the bivalent ointment to an in vitro porcine skin model that simulates a skin infection. Bacterial presence will be quantified through colony counts at the conclusion of each trial. Results will reveal that varying dosage, treatment duration, and application time will influence this therapy's efficacy. It is expected that high-dose treatments delivered shortly after inoculation will show the largest reduction in bacterial growth. Optimizing dosage and timing of this bacteriophage therapy is important for future clinical application on real patients and could present a valuable alternative to traditional antimicrobials.

Jillian Richarz

FL - The University of Tampa

Discipline: Humanities

Authors:
#1 Jillian Richarz

Abstract Name: Portraits of Prostitution: An examination of sex work and working-class women's experiences in Progressive Era New York City (1890-1920)

Despite its dangers and degradations, prostitution paid more than the so-called “clean” labor that kept working-class women living below the poverty line. This poster reconstructs the social geography of prostitution to reveal another disturbing inequity in the wage-labor market during the industrial economy’s maturation. Black women, who already experienced the least opportunity in the urban workforce, were similarly disadvantaged as sex workers. Unlike most fair-skinned women who benefited from the safeguards and, sometimes, even modern business practices, that defined brothels and dance halls, most women with dark complexions were forced to initiate sexual encounters on the streets or from the windows of their own lodgings. These findings are visualized through charts demonstrating the recorded complexions of sex workers in addition to recorded situations and locations of solicitation according to investigative and arrest affidavits from the Committee of Fourteen and Committee of Fifteen. Finally, there is a graph comparing weekly earnings from sex work and those from “clean” labor from the findings of a 1913 study conducted by the Bedford Hills Reformatory and establishes that sex work was a common occurrence for working-class women of this time. This research builds on the findings of Kathy Peiss, George Chauncey, and Elizabeth Alice Clement by presenting a more racially and ethnically diverse portrait of prostitution in turn-of-the-century New York.

Kamayani Richhariya

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:
#1 Kamayani Richhariya
#2 Gang Kai Poh

Abstract Name: Investigating Solar Wind Conditions of Mars through MAVEN Observations and Validation of the AWSoM Model for Solar Wind Magnetic Fields

The Mars Atmosphere and Volatile Evolution (MAVEN) mission has been pivotal in advancing our understanding of the Martian upper atmosphere and its interactions with the solar wind. Previous MAVEN findings underscore the substantial impact of solar wind conditions on plasma dynamics within Mars' magnetosphere. However, a persistent challenge lies in the absence of a consistent solar wind monitor in the upstream region of Mars' magnetosphere, hindering real-time information acquisition within the planet's plasma environment. This project addresses this critical gap by focusing on the validation and assessment of the Alfvén Wave Solar Atmosphere Model (AWSoM), a solar wind model developed at the University of Michigan. The primary objective is to evaluate the model's effectiveness in predicting solar wind Interplanetary Magnetic Field (IMF) conditions, including both polarity and magnitude. The validation process involves a meticulous comparison of AWSoM's simulated outputs with solar wind data obtained directly from the MAVEN mission. Employing rigorous evaluation metrics such as mean squared error and dynamic time warping, the study aims to quantify the agreement between AWSoM's simulations and MAVEN's observational data. Building on previous comparative studies conducted with solar wind data from MESSENGER, this project extends the scope of inquiry, contributing valuable insights to the broader field of solar activity and solar wind IMF. Furthermore, the methodologies and results presented in this study are anticipated to play a pivotal role in informing future research endeavors and spacecraft missions, particularly those directed towards Mercury, such as the Bepi-Colombo mission.

Alice Rickards

NC - Elon University

Discipline: Education

Authors:
#1 Scott Morrison

Abstract Name: Perspectives on Walking Curriculum from Educators, Caregivers, and First Graders: A Two-Part Qualitative Study

Walking curriculum is a pedagogical practice in P - 12 education wherein educators take students out of the classroom on a walk with a curricular focus. As such, walking curriculum is considered a form of environmental education that connects students to the natural world and to their local community and encourages ecological imagination (Anderson, 2017; Fettes & Judson, 2011; Judson, 2020). In the first part of this study, we interviewed 19 educators (P-12) from the United States, Canada, Chile, Australia, and Singapore about their perceptions of walking curriculum. In our analysis of the data (Braun & Clark, 2021), we found five themes. First, all participants noted multidimensional benefits to being outside, particularly increased focus and attention. Second, most of the participants articulated that going on walks was good for them as teachers. Third, the participants use walking curriculum for multiple purposes. Fourth, all the participants felt that walking curriculum is an inclusive practice, even one that promotes equity. Finally, the participants shared how going on walks connected students to each other and to the land. In the second part of this study, we focused on a first-grade teacher and her students (N = 10) who go on walks every morning. During the 2022-2023 school year, we completed 40 hours of observations with the teacher

and students, and we conducted interviews with nine students and five caregivers. We developed five themes based on interviews and observations with the students and four themes based on interviews with caregivers. Given the many longstanding and common barriers to environmental education (e.g., Ham & Sewing, 1988; Kim & Fortner, 2006), walking curriculum is a means to get students outside the classroom, increasing the likelihood that they connect with nature, place, and peers while also covering typical curricular content and practicing various academic, social, and emotional skills.

Jonah Ridgley

CA - Dominican University of California

Discipline: Humanities

Authors:
#1 Jonah Ridgley

Abstract Name: Contextualizing George Orwell: How Orwell's Life Experiences Influenced his Most Famous Novels

George Orwell is one of the most celebrated authors of the 20th century. His most famous novels, Animal Farm and 1984, serve as insightful commentaries on the horrors of totalitarianism. These two books have been studied extensively and incorporated into public and political discourse since his death in 1950. Contemporary Right-wing and Left-wing leaders and pundits both continue to reference the concepts and language in Orwell’s books to support their respective stances on various issues. Additionally, they have been presented to high schoolers and college students as simplified anti-Communist novels or pro-capitalist propaganda during the Cold War. However, Orwell’s work outside of these iconic novels has been given far less attention. This research project contextualizes Orwell’s work with his life and examines the way his political ideologies changed as a result of his experiences. Special focus is given to Orwell’s stint as an imperial policeman in India, his time spent as a vagabond in working-class England, and his experience in the Spanish Civil War. I argue that Orwell’s participation in the Spanish Civil War was a turning point in his life, exposing him to the authoritarian nature of Stalinism and solidifying his identity as a democratic socialist. This research illustrates that the common oversimplification of Animal Farm and 1984 is problematic as it fails to acknowledge Orwell’s commitment to socialism and his criticism of Western imperial powers. I contend that Animal Farm was intended to be a warning about the corruption of revolution rather than revolution itself and 1984 was written with the intention of warning Westerners about the potential for totalitarianism in their own countries, while also addressing totalitarian regimes of his day.

Emma Rieper

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
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#2 Anna Wilcox
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#4 Rachel Cohen

Abstract Name: Identifying ZYG11A, HS6ST1, and DIO2 gene expression in green anole lizards (Anolis carolinensis)

Green anole lizards (Anolis carolinensis) exemplify certain behavioral changes depending on whether they are in their breeding or non-breeding season. During the breeding season, these lizards display sexual behaviors such as head bobbing and flashing their dewlap and these behaviors do not occur during the non-breeding season. Our question is to determine at the gene level what might contribute to these behaviors being apparent in the breeding season and not the nonbreeding season. We are testing three candidate genes, ZYG11A, HS6ST1, and DIO2 for their expression during the breeding and non-breeding season in the anole brain. ZYG11A is both a promoter and enhancer gene and HS6ST1 plays a role in angiogenesis. DIO2 converts thyroid hormone T4 into the active version, T3, which plays a role in metabolism. Our research project is to evaluate whether the expression of these three genes is altered seasonally. We designed specific primers for our genes and tested them via PCR and gel electrophoresis. We obtained our results by performing a quantitative PCR (qPCR) test. This allowed us to analyze and determine if there is any significant difference in gene expression between breeding and non-breeding seasons in males and females. From these tests we will learn how these genes may play a role in behavior changes during the breeding and the non-breeding seasons.

Mikayla Rigsby

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Mikayla Rigsby
#2 Amber Jones
#3 Omar Moukha-Chafiq
#4 Corinne Augelli-Szafran
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Abstract Name: Determining the Efficacy of a Decitabine Analog, 4’-thionucleoside, in the Sensitization of Glioblastoma Cells to Temozolomide.

The dysregulated epigenetic landscape in glioblastoma (GBM), a malignant primary brain cancer, presents an avenue for improving treatment options. DNA methyltransferases, particularly DNA methyltransferase 1 (DNMT1), induce hypermethylation of tumor suppressor promoters, leading to altered gene expression and tumor growth. Treatment with the hypomethylating agent, decitabine, can inhibit DNMT1’s epigenetic gene regulation. Prior reports determined that pretreatment with decitabine sensitizes glioma cells to standard of care DNA damaging agent, Temozolomide (TMZ). Investigators at Southern Research developed a 4'-thionucleoside analog (4’-T-Nuc) as an effective DNMT1 inhibitorthan decitabine. We hypothesize that 4’-T-Nuc will be more effective than decitabine in the sensitization of glioma patient-derived xenografts (PDX) to Temozolomide. Utilizing Jx39P and D456 PDX models, we treated over a 7-day period with either hypomethylating agent (Decitabine or 4’-T-Nuc) at concentrations spanning 1nM to 5uM. In a separate assessment, Jx39P were pretreated for 48hrs with 4’-T-Nuc (160 nM), then subject to a singular treatment of TMZ (4μM). Cell Titer Glo was used to measure cell viability through ATP production. 4’-T-Nuc was determined to effectively reduce relative cell viability when compared to decitabine. In Jx39P, 4’-T-Nuc was significantly more effective in reducing cell viability alone and as a dual agent with TMZ. Future plans involve assessing 4’-T-Nuc's ability to extend the survival of mice with orthotopic brain tumors, determining its efficacy in TMZ-resistant GBM PDX models, and evaluating the impact of both hypomethylating agents on DNA damage and repair pathways. Our data collectively suggests that 4’-T-Nuc merits further investigation as a potential standalone anti-GBM agent.

Steven Rimmasch

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Steven Rimmasch
#2 Tracy Covey

Abstract Name: Molecular Dynamics Study of the Two-State Serine Protease APEH

APEH is a serine protease responsible for the degradation of acylated proteins. In doing so, it helps to regulate the proteome and maintain cell health. APEH activity has been proposed to have anti-inflammatory, anticancer, and anti-dementia activity. Published work has shown that tea extracts can activate APEH; however, specific chemical activators or allosteric binding sites on APEH are unknown. Previous molecular dynamics studies have also shown that the catalytic serine residue can occupy an active and inactive state, effectively turning the enzyme on and off. Taken together, the previous work suggests that APEH may have allosteric regulation. In this study, the multi-state catalytic serine in APEH is studied using molecular dynamics simulations to better understand the on and off states. We predict that the higher the probability the serine is in the active position, the more active the enzyme will be. These results are compared to monomeric serine proteases to highlight differences. Additionally, the effects of docking small molecules found in tea extracts on APEH's active-inactive state distribution will be discussed. This may help to establish a link between small molecule binding and protein activation.

Steven Rimmasch

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Steven Rimmasch

Abstract Name: Construction of a Genetically Encoded Oligopeptide FRET Sensor

Forster Resonance Energy Transfer (FRET) experiments offer a powerful means to assess biomolecular structural changes through alterations in fluorescent spectra. Leveraging the significant conformational shift observed in Periplasmic Oligopeptide Binding Protein (oppA) upon ligand binding, we employed Golden Gate Cloning to insert a FRET pair of fluorescent proteins into opposite sides of oppA's hinging mechanism. Our study builds upon the success of FRET-based sensors developed for analytes like glucose and calcium, utilizing the unique characteristics of periplasmic binding proteins. As with other periplasmic binding proteins, oppA undergoes a substantial hinge motion upon ligand binding, offering an ideal framework for FRET sensor construction. This presentation discusses the successful implementation of Golden Gate Cloning in engineering a FRET sensor for oligopeptides and explores the sensor's accuracy in measuring various peptide fragment concentrations. By combining genetic engineering and fluorescence spectroscopy, our work introduces a promising avenue for the development of biosensors with diverse applications.

Marianna Rios

CA - California State University - Fullerton

Discipline: Humanities

Authors:

#1 Marianna Rios

Abstract Name: Politics of The Hood: An Analysis of Hip Hop Lyricism

Hip-hop culture and the rap genre were created by youth from poor Black and Brown neighborhoods in the 1970s as an escape from the dangerous reality they were living in and to provide a means of expression. As these communities continued to experience discrimination, such as police brutality and racial profiling, hip-hop grew in popularity, becoming one of the few outlets of self-expression that did not result in real-life consequences. While Hip-hop culture and rap serve as entertainment, this paper will argue that Blacks used the genre as a tool for documentation, organization, and self-expression in response to oppression and discrimination. This research is based on secondary sources that provide a historical background of events, including the invention of mass incarceration and the "War on Drugs," which affected the Black community and the beginning of hip-hop. It will also include an analysis of primary sources focusing on hip-hop and racial discrimination to contextualize the circumstances under which these artists created these songs. This study will also analyze specific songs, such as "Changes" by Tupac, Public Enemy's "Black Steel in the Hour of Chaos," and N.W.A's "F*** the Police," to view how hip-hop artists used the art as a form of protest against racism in America. The purpose of this study is to demonstrate that hip-hop as well as rap lyrics were created for self expression and not just for the spread of mere violence, but rather to avoid violence by using the power of their voices

Desiree Ritchie

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Desiree Ritchie

Abstract Name: Finding Harmony in Design: Exploring the Connection of Music and Architecture Through Proportion

Both music and classical architecture have a strong foundation in proportion. Further research shows that the same systems of proportions are found in both areas. Common chords found in music can be translated into proportions found in architecture. For example, the octave has the same proportion as a 2:1 ratio. While there is a clear relationship, the question remains: does understanding one help in understanding the other? Does understanding music make one a better architect? Can designers benefit from musical instruction? To answer these questions, a comparative survey was conducted asking participants to determine which visual proportion best matched the sound heard. These questions range from basic chords and rectangles to a more complex comparison of the Fibonacci sequence to the golden ratio. The survey also asks about participants' background in both music and architecture, as well as general demographic questions. The demographics of the current survey are limited to students and faculty attending BYU and Utah Valley University, but further studies will provide a more comprehensive result. To analyze the results, a comparison will be conducted on the percentage of individuals who were correctly able to recognize the same proportions visually and audibly. This will then be cross-examined with the demographics, comparing those who have a background in music and/or architecture to those who do not. The expected result is that those familiar with one of the previously mentioned fields will better recognize proportions in both music and architecture. If this is proven true, it will show that having a background knowledge in multiple fields will help to create a more well-rounded and capable individual. It will provide insight on how to become better in one's chosen field.

Gabriella Rivera

VT - Norwich University

Discipline:

Authors:
#1 Gabriella Rivera
#2 Scott Caulfield
#3 Lucas Van Horn
Lucas Van Horn

Abstract Name: Balance and Jump Dynamics as an Indicator for Musculoskeletal Injury Risk In Collegiate Hockey Players

Hockey players must maintain dynamic balance to adapt quickly to the game's dynamic elements, stay on their feet longer, and perform skills like skating and stick handling more effectively. Poor dynamic balance, reduced jumping ability, muscle strength, and incorrect landing patterns can contribute to an increased risk of musculoskeletal injury in athletes. METHODS: A single force plate protocol was used to assess unilateral balance and jump dynamics in 31 male (21.7±1.1 yrs.) and 24 female (19.9±1.1 yrs.) collegiate hockey players. Unilateral balance and asymmetry were measured via the center of pressure (COP) and weight shift control asymmetry (%) and single-leg balance via two trial sets on the force plate. Jump height (in.) and jump shift (%) were measured via four counter-movement jumps tracking COP and ground reaction force (GRF) release from the force plate via vertical velocity(m/s). Injury risk classification was stratified derived from the most recent jump, balance, and stability scans used the base athletic population model. Group comparisons (sex) were made using one-way ANOVA. RESULTS: Maximal jump height and shift were higher in the male hockey players (19.2 ± 1.9in. vs. 13.6 ± 1.4in., p<0.05) and (2.7±6.2%. vs. 2±8.27%). The unilateral balance mean was lower in male hockey players (52.6 ± 8.7 vs. 55.9 ± 7.1), while the percentage of balance asymmetry was lower in female hockey players (3±1.3% vs. 0.2±1.6%). Injury risk classification was higher in female hockey players (3.2 ± 0.9 vs. 2.7 ± 1.2, p<0.05).CONCLUSION: Males recorded significantly larger values for jump height, an increased percentage of jump shift, and balance asymmetry. However, increased variances in female balance and jump dynamics led to a higher injury risk classification.

Yesenia Rivera Rayo

CA - California State University - Fullerton

Discipline:

Authors:
#1 Sarah Rafael Garcia
Yahir Gonzalez
Deborah Kim

Abstract Name: Ethnofiction Through Contemporary Narratives: Combining Digital Archiving with Creative Storytelling

Ethnofiction through Contemporary Narratives is a research and writing workshop class at California State University, Fullerton. Through project-based learning and direct mentorship, we research Black, Indigenous, People of Color (BIPOC) and LGBTQ+/feminist history, tracing 1960s to present time. We write weekly creative responses and read one another's writing, proceeding through a series of exercises to add density and texture to ethnographic description by including attention to scene, character, historical events, situations, and dialogue. To identify how past and current history and virtual storytelling practices relate to social privileges, power relations and the future, students learn how to use virtual storytelling elements and apply open-source resources (i.e., virtual timelines, storymaps, 3D captures) within multimedia literary projects produced over one semester.In this panel, three students who completed this class will share their research process, digital

storytelling outcomes and how this led them to re-present history in literary forms including an immigrant testimonio, re-presentation of Korean mythology, and Latinx sci-fi. We will collectively discuss the following questions: How do ethnofiction and the digital humanities impact storytelling? How does this form of creative archiving preserve ethnic and gender narratives, re-present history and re-imagine futures? What questions does ethnofiction raise about BIPOC, LGBTQ+ and women's history and the possibility of reclaiming stories through contemporary narratives? Who should tell these stories?

Rhys Rivers

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Rhys Rivers
#2 Sumit Paudel
#3 Yifan Zhang

Abstract Name: Studying antibiotic resistance in Enterococcus with a One Health approach

One health is the connection between animals, humans, and the environment. Our study uses this concept to understand community-acquired antibiotic resistance using Enterococcus as a model. In an urban environment, animals have a great potential to be a reservoir for antibiotic resistance genes (ARG). Urban environments also contain a great deal of pollution from businesses and transit. Metal pollution places pressure on bacteria, leading to the development of metal resistance genes (MRG) and ARG. We hypothesize that wildlife exposure and MRG in an urban environment have a strong correlation with community-acquired antibiotic resistance.Enterococcus is a gram-positive bacteria found in the gut of humans and animals and has a high potential to transfer between these populations. Our study uses wildlife sampling, MRG, and ARG identification, as well as the comparison of antibiotic-resistant Enterococcus strains of human and wildlife origin collected in metro Detroit. A total of 140 rodent and bird fecal samples were collected, giving 268 positive Enterococcus isolates. Antimicrobial Susceptibility Testing was performed for 16 antibiotics using Sensititre plates. Multidrug resistance was demonstrated by 17% of isolates. The samples had the most resistance to lincomycin (89.55%), followed by quinupristin/dalfopristin (32.84%) and nitrofurantoin (17.54%). Cadmium resistance was found in 76 (28%) of wildlife samples. So far, 35 (46%) of these samples have been identified as Enterococcus faecalis. Further species analysis is in progress for the remaining samples. Eighty-one clinical samples were recovered from VRE patients at Henry Ford Hospital. All tested clinical samples were multidrug-resistant, resistant to at least eight antibiotics. 74% were found to have Cadmium resistance. Further analysis is underway to compare animal and human isolates on Enterococcal species distribution and molecular subtypes.

Ayesha Rizvi

WI - University of Wisconsin-Madison

Discipline: Social Sciences

Authors:
#1 Ayesha Rizvi
#2 Thomas Massnick

Abstract Name: How has racial disparities in the criminal justice system contributed to mass incarceration?

Mass incarceration, a complex and profound concern, exacerbates racial disparities, necessitating an examination of the root causes. The United States criminal justice system consistently demonstrates racial inequity. This becomes evident when black men experience incarceration rates four times higher than their white counterparts. This disparity persists across socioeconomic status and beyond that, necessitating urgent rectification. Progress in the past two decades has led to an overall decline in incarceration rates, with the most significant reduction observed among the Black prison population. Reforms in drug-related law enforcement, charging, and sentencing, particularly in urban areas housing communities of color, have contributed to this positive shift. Despite this positive shift, racial biases persist beyond the statistical representations, perpetuated by public perceptions and influencing policy actions, resulting in disproportionate impacts on black individuals. This paper explores the complex relationship between racial disparities and mass incarceration in the United States. By utilizing a comprehensive methodology, including literature review, data collection, and analysis drawing from scholarly journals, firsthand experiences, and public responses, it sheds light on the multifaceted issues surrounding the criminal justice system. Racial disparities within the system significantly contribute to mass incarceration, posing profound implications for civil rights, public trust, and community well-being. The hypothesis that racial disparities in arrests, sentencing, and implicit bias contribute significantly to mass incarceration highlights the necessity to address these issues and promote an equitable criminal justice system. The paper aims to promote impactful discussions and interventions to rectify systemic problems, ultimately fostering a more just and inclusive society.

Megan Roach

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Megan Roach
#2 Benjamin Nelson
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#4 Karen Wozniak

Abstract Name: Antifungal Mechanisms of Action by Dendritic Cell Lysosome Proteins

Cryptococcus neoformans is an opportunistic fungal pathogen that primarily affects immunocompromised individuals and can cause cryptococcal meningitis. Approximately 152,000 cases of cryptococcal meningitis occur annually in HIV/AIDS patients, leading to 112,000 yearly deaths. Very few antifungal drugs are available to treat cryptococcal infection, and those are ineffective or toxic. In addition, fungal pathogens such as C. neoformans have become resistant to many types of treatment. Previous studies in our lab showed that proteins from the dendritic cell (DC) lysosome have antifungal activity against C. neoformans, including NOSTRIN, human neutrophil elastase (HNE), matrix metalloproteinase 25 (MMP25), myeloperoxidase (MPO), and coronin. In this study, we tested the antifungal activity of the compound NOSTRIN, one of the DC lysosomal proteins that has been known to exhibit these antifungal properties. We tested NOSTRIN against the C. neoformans strain H99 using different concentrations of the drug and calculated the minimum inhibitory concentration (MIC). Then, fluorescence microscopy was used to examine structural changes in C. neoformans following treatment. Results showed that NOSTRIN had a similar result compared to MICs performed with the antifungal drug Amphotericin B, with NOSTRIN around 0.25 ug/ml and Amphotericin B around 2 ug/ml. In addition, fluorescence microscopy showed that fungal cells treated with NOSTRIN are releasing intracellular contents following incubation, indicating damage to the fungal cell wall or membrane. In future studies, we will continue to examine NOSTRIN and other antifungal DC lysosome proteins by microscopy and using cryptococcal mutant libraries in order to identify their mechanism(s) of antifungal activity. By researching the presented topics, we hope to gain a better understanding of the effects that these proteins have on C. neoformans, which could potentially lead to more effective therapies for cryptococcosis.

Mikaela Robarge

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Mikaela Robarge

Abstract Name: My Language, my Country: Study of Language and National Identity Across Ireland and The United States

The present research explores the relationship between language and national identity between Ireland and the United States as it relates to hegemonic positioning in Gramsci's World Systems theory. From the perspective of linguistic composition, the United States and Ireland hold conflicting relationships between language and national identity. In the United States, citizens prioritize pro-English sentiment toward American identity that fails to account for the nation's growing linguistic diversity. On the other side, revitalization efforts by the Irish government to preserve Irish Gaelic after decades of linguistic censorship struggle to promote citizens' support regarding the importance of the language to Irish identity. The following research studies the respective populations' attitudes to language and whether speaking these languages makes them truly American or Irish. The 2013 National Identity III survey conducted by The International Social Survey Programme was used to examine these relationships by running tests between participants' country nationality to the participants' response to the level of importance that the respective language (English/Irish Gaelic) has on being truly American or Irish. Study outcomes as they relate to World Systems theory point to a larger importance of English to American nationality compared to Irish Gaelic to Irish nationality due to the two countries' positions within the cycles of hegemony and the fluctuations of power each language has within their hegemonic positions.

Olivia Roberts

SD - University of South Dakota

Discipline: Mathematics and Computer Science

Authors:
#1 Olivia Roberts
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Abstract Name: Musical Systems with $\mathbb{Z}n$ – Cayley Graphs

It is well-established that music theory uses mathematics to explain how music is created. The chromatic scale and pitch frequencies can be explained by modulo 12 arithmetic and geometric ratios. Using group theory, we interpret concepts from Western music theory. We show that in $\mathbb{Z}12$, chords, scales, the circle of fifths, and the first species of counterpoint can be explained using a Cayley graph with respect to generators 3 and 4. Using $\mathbb{Z}12$ as a model, we generalize to $\mathbb{Z}n$ where n is a product of two relatively prime numbers. Most major and minor chords can be constructed using paths on the oriented Cayley graph, beginning on the root of the chord. The circle of fifths can be explained by adding both generators at once. The unoriented Cayley graph gives way to a weaker form of counterpoint, with minimum distance elements forming a set of consonant elements. Then, we create partitions of consonant and dissonant elements using affine transformations to create a full generalization of counterpoint. We assume equal-tempered tuning for various $\mathbb{Z}n$ systems. As application, we have written code in Maple to hear chords, scales, and counterpoint in these musical systems.

Sophia Roberts

TN - Middle Tennessee State University

Discipline: Social Sciences

Authors:
#1 Sophia Roberts

Abstract Name: Stopping the Willow Project on Social Media: An Exploration of the Social Problems Process in a Sub-Environmental Issue

From casual sexism to catastrophic terrorism, social problems (SPs) are prevalent in vast ways all throughout society. Those relating to environmental and climate crises have and will continue to affect communities across class, gender, race, and geographic location. The Social Problems Process (SPP), a sociological theoretical model, encompasses an in-depth examination of the stages a SP passes through in efforts to achieve remediation. This project aims to explore the SPP of the environmental sub-SP of fossil fuel continuation and dependency as demonstrated by the Willow Project (WP). The WP is an accepted policy that allows for intensive oil drilling in environmentally vulnerable landscapes. This will result in exasperating current climate conditions, both locally and globally, by its contributions to climate change. The aim in exploring the WP here is to better understand the SPP in contemporary SPs and the role of social media. The present study uses qualitative content analysis, emphasizing frequency and themes, of WP related Instagram posts. A total of 44 posts were collected and analyzed across two account categories: activist/educational (n=5) and news/informative (n=5). Approximately 86% of the analyzed posts were collected from the activist/education account category (n=38). Primary themes derived included (1) taking action, (2) animal/local environmental consequences, (3) Biden contradiction, and (4) policy details/overview. Contrastingly, the news/informative account category produced minimal coverage prioritizing contextual information. These findings present as supporting evidence for the WP sub-SP passing through the initial three stages of the SPP (claimsmaking, media coverage, and public reaction). Pattern analyses reveal fearmongering tactics, assumption of audience's environmental knowledge, political framing tendencies, and an emphasis on animal impacts. This work contributes to filling in the literature gap exploring SPs within social media atop the acute focus on the connections between environmental SPs, public perception, and today's youth.

Kailynn Roberts

VA - Virginia Tech

Discipline: Natural and Physical Sciences

Authors:
#1 Kailynn Roberts
#2 Meghan Sedovy
#3 Scott Johnstone

Abstract Name: Connexin 43 Expression in Large Artery Endothelial Wound Healing

Impaired endothelial cell (EC) wound healing in blood vessels is a primary contributor to vascular stent failure and coronary thrombosis. Therefore, endothelial wound repair is essential for improving vessel patency and patient survival rates. It is essential to identify the regulators of normal endothelial healing and understand how these factors are dysregulated when healing is impaired. RNAseq data from McDonald et al. 2018 in non-injured vs regenerating murine EC in vivo revealed a significant increase in expression of gap junction protein connexin 43 (Cx43) throughout the EC healing process. Cx43 has been implicated in other tissue types as a regulator of wound healing and yet was primarily thought to be absent from large artery EC.

This injury induced upregulation indicates a role for Cx43 in EC healing. To study this, we developed a novel model of EC wound healing in mouse carotid arteries. Mouse carotids undergo ligation for a period of one minute resulting in EC denudation injury. Immunofluorescent imaging of the injured mouse carotid arteries revealed punctate staining indicative of Cx43 containing gap junctions in regenerating EC. To more quantitatively measure protein level expression changes in injured EC, mouse carotids were flushed with lysis buffer to isolate and collect EC for western blotting. The resulting samples expressed vascular endothelial cadherin, a marker for EC, without expressing smooth muscle marker, transgelin. Western blotting of injured mouse EC revealed increases in Cx43 protein expression that correlate temporally with EC healing. Macrophage specific Cx43 knockout mice were used to insure that increases in Cx43 expression were not due to macrophage recruitment to the injury site. Future investigations will focus on understanding the role of Cx43 in the EC healing process. To accomplish this, we will measure the rate of endothelial healing in endothelial specific Cx43 knockout in mice compared to littermate control.

Zachary Roberts

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Zachary Roberts
#2 Pia Muri
#3 Lyse Norian

Abstract Name: Testing the Antidiabetic Agent Acarbose in Mice with Renal Carcinoma: A Diet-Based Approach to Cancer Treatment

Immunotherapies are the standard of care for renal cancer patients, but only ~50% of patients respond to treatment. Because renal cancer cells use glucose as an energy source to sustain their proliferation, our lab studied the connection between diet and renal cancer using acarbose, an FDA-approved glucoregulatory agent that prevents the breakdown of complex carbohydrates into glucose, reducing the amount of sugar that makes it into the bloodstream after eating. In lean mice with renal tumors from the Recna renal carcinoma cell line, past research in the lab confirmed that acarbose blunted blood glucose elevation after meals and reduced renal tumor growth in a CD8 T cell-dependent manner. When acarbose was combined with anti-PD-1 immunotherapy, spontaneous lung metastases were significantly reduced. However, obesity and type-2 diabetes – characterized by high blood glucose – are common comorbidities in renal cancer patients and tend to result in worse clinical outcomes. Thus, to emulate clinical patients, we worked to develop a BALB/c mice model that would reflect both obesity and high blood glucose by using a standard high-fat diet plus streptozotocin, a toxic chemical that kills insulin-producing pancreatic beta cells. We found that using this approach, it was possible to generate mice with either obesity or high blood glucose, but not both. Low-dose streptozotocin produced unregulated type-1 diabetes, reducing body weight and survivability. After this experiment, we used acarbose and found it ineffective at reducing renal tumors and spontaneous lung metastasis in obese mice on a standard high-fat diet alone and a high-fat diet containing low levels of complex carbohydrates. Surprisingly, acarbose was also ineffective at slowing renal tumor growth in mice fed a high-fat diet containing starch. Future studies will examine how ACA interacts with other cancer cell lines and how obese mice respond to immunotherapy with acarbose.

Jacob Robinette

TN - University of Tennessee at Knoxville

Discipline: Visual and Performing Arts

Authors:
#1 Jake Robinette

Abstract Name: The Nature of Artificial Intelligence: How AI Can Be Used As a Tool in Design

Artificial intelligence has evolved into a powerful yet misunderstood tool very quickly over the last couple of years. Utilizing various AI softwares such as ChatGPT, Stable Diffusion, ahrefs, and Mid Journey, “The Nature of AI” examines AI’s application as a tool for designers and artists, specifically looking at its role in translating across different mediums. The core of the research centers on showing the comparison between the subjectivity of human interpretation to the stark objectivity of AI descriptions. This research initially grew from the project “Journals of Epistemology” in which extensive research in the New York public archives lead to creating visual imagery from archived journal entries with no visuals. This evolved into multiple projects with a commentary on how machine learning algorithms synthesize information, versus how humans naturally synthesize information. When seeing the images the viewers are presented with a layered experience. They witness the subjective overlay of human emotions alongside the algorithmically generated descriptionsThe research as a whole raises questions about the nature of interpretation, the role of emotions in art, and the boundaries between human and machine understanding. It provides insights into the inner workings of AI, showcasing practical applications in the design domain and contributing to a deeper understanding of how AI can be utilized to foster communication and creativity. This approach highlights not just improving our understanding of AI's capabilities but also how easily technology blends with the natural creativity of design.

Molly Robinette

AL - Auburn University

Discipline: Health and Human Services

Authors:
#1 Molly Robinette
#2 Yuki Yanagita
#3 Billy Lozowski
#4 Gretchen Oliver

Abstract Name: The Effects of Foot and Knee Kinematics on Knee Kinetics in Youth Baseball Pitching

Of injuries that keep MLB and MiLB baseball pitchers benched for the longest time, meniscal tears rank tenth and kept pitchers out of play for up to 438 days. Since they are defined as overuse injuries, reducing mechanical load at young age is crucial in preventing meniscal injuries. This study investigated stride leg foot and knee kinematics influencing peak knee adduction moments during youth baseball pitching. Forty youth baseball pitchers who were active on a team roster and injury free for the past six months participated (15.25 ± 1.21 yrs, 72 ± 9.6 kg, 1.77 ± 0.06 m). Participants pitched maximum effort fastballs for strikes at regulation distance. Pitching motion was collected at 100 Hz using an electromagnetic tracking system. Knee kinetics were calculated using an inverse dynamic method in MotionMonitor. The peak knee adduction moment was extracted between stride foot contact (SFC) and ball release. Foot progression angle, knee abduction angle, and flexion angle at SFC were obtained. Multiple regression was conducted to examine the relationship between foot and knee kinematics and knee adduction moment. The overall prediction model was statistically significant (F(3,37) = 8.60, R2 = .41, p < .01). The analysis revealed that knee abduction/adduction angle (β = -1.8, p <.01) and knee flexion angle (β = 1.5, p <.01) at SFC were predictors for the peak knee adduction moment, but foot progression angle was not (β = -0.7, p =.06). Our work shows a relationship between increased knee abduction angle at SFC and the increased peak knee adduction moment in youth baseball pitchers, which may result in increased compression force on the medial knee compartment. Correcting knee abduction at SFC using cues, strength, and neuromuscular training of the gluteus maximus

may reduce the peak knee adduction moment during the pitching motion, therefore reducing the risk of injury.

Calvin Robinson

TN - University of Memphis

Discipline: Natural and Physical Sciences

Authors:
#1 Calvin Robinson

Abstract Name: Examination of the Role of MAPK Activity on Placental Formation in Vitro Using Stem Cells

Mitogen-activated protein kinase kinase kinase 4 (MAP3K4) phosphorylates and activates several MAP2K (mitogen-activated protein kinase kinase) enzymes, including MAP2K3, MAP2K4, MAP2K6, and MAP2K7. Upon activation, MAP2K3/6 phosphorylate p38, MAP2K4/7 phosphorylate JNK, and MAP2K1/2 phosphorylate ERK. We hypothesized that the activation of these enzymes promotes placental and fetal maturation, prompting examination of these pathways. This study investigated wild-type and MAP3K4 kinase-inactive mouse cells in vitro in multiple biologically independent experiments. Trophoblast stem (TS) cells were treated with either DMSO (-) or 3 μM of CHIR 99021 for 96 hours. We measured the activity of p38, JNK, and ERK using polyacrylamide gel electrophoresis and Western blotting. We found that the p38 and JNK mitogen-activated protein kinase (MAPK) pathways were induced during differentiation of wild-type TS cells to syncytiotrophoblast (SynT-II) cells. In contrast, activation of the ERK MAPK pathway was reduced upon differentiation. MAP3K4 kinase inactivation resulted in a failure to activate JNK or p38 MAPKs and the inability to form SynT-II cells. Together, these data suggest a key role for MAP3K4 activation of JNK and p38 in the formation of the SynT-II cells of the placenta. Future studies will assess the activation of MAPK signaling in vivo during placental development.

Ian Robinson

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ian Robinson

Abstract Name: Effects of Beaver-engineered Wetlands on Biodiversity at Ogden Nature Center

The American beaver (Castor canadensis) is known to play an important role in ecosystem engineering, increasing community diversity in and around the streams where they create their dams (Wright et al., 2002). Wetlands formed by beavers are key habitats that increase water retention and foster animal populations that are in decline. To study the effect of beaver engineering supporting wildlife populations in more urban environments, 16 camera traps were placed along streams and canals in the Ogden Nature Center (ONC) to characterize differences in species number, distribution, and occupancy, comparing between areas directly adjacent to sites of beaver engineering and areas where water flow was not modified. Data were collected at 8 sites along two waterways in the ONC, between 25 May and 22 June 2023. Data collection sites were characterized as either beaver modified, or unmodified (control) areas. Twenty-one vertebrate species, including 15 species of bird were documented in the camera traps (6 more birds were documented but could not be identified at the species level). Beavers were documented at 4 of the 8 locations, most frequently at

one of the control locations. Preliminary analyses suggest that species richness and occupancy are significantly higher at beaver modified areas, particularly in waterfowl and racoons. A more quantitative assessment of diversity is underway and will be presented once complete.

Nicole Robinson

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Nicole Robinson

Abstract Name: Stephen Greene's Narcissistic Mentality And How it Aided His Career

Greene was an artist, illustrator, a painter, and designer during the 1940s and 1950s, most famously known for his abstract paintings. This painter, forgotten over time, was seen as narcissistic and pretentious during his life. Greene, a mentally flawed individual, became well-known for his strange figure drawings and abstract paintings. Despite being viewed as an individual who tends to be difficult to get along with, this artist’s warped perspective proved useful in his artistic endeavors; through years of learning and experimenting, Greene has been able to transform his unique mentality into a notable feature of his artworks. Greene’s unique quirks were visible in his art- and hold up to this day. Through many interviews, others have learned that Greene is an artist who focused mostly on himself, rambled, and tended to be uncoordinated in his efforts. These qualities have disintegrated over time, leading to Greene maturing mentally and focusing less on his own appearances, but more on the artworks he’s created. Stephen Greene shows how his flaws have formed his art, working against him on some occasions, yet working for him creatively in unique and interesting ways. Stephen Greene was able to have many successes in his lifetime, learned from his mistakes, and never quite changed exactly who he is- while still creating unique and notable designs. Greene was able to teach many, learn from many, and mature plenty in his career.

Kade Robison

UT - Utah State University

Discipline: Interdisciplinary Studies

Authors:
#1 Kade Robison
#2 David Britt
#3 Elizabeth Vargis

Abstract Name: Mitochondrial Targeting: A Novel Approach to Optimizing Cytomegalovirus Treatment

Cytomegalovirus (CMV) is the leading cause of sensorineural hearing loss, the most prevalent form of permanent hearing loss worldwide. Effective CMV treatment requires long term administration of ganciclovir (GCV), which inhibits CMV replication but is toxic to neutrophils, an essential component of the immune system. GCV toxicity often limits treatment duration, risking permanent hearing loss in thousands of infants each year.Prior undergraduate students in our lab determined that 80% viral inhibition can be maintained with reduced GCV concentrations when combined with an antiviral flavonoid therapy (QP188) in a mouse fibroblast cell model. QP188 consists of a hydrophobic flavonoid with antiviral and antioxidant properties, quercetin, encapsulated in Poloxamer 188 (P188), an FDA approved surfactant utilized as a drug delivery vehicle. This prior research also demonstrated that P188 targets the mitochondria of mouse fibroblast cells

but was unable to determine the if the mitochondrial affinity of P188 provided any benefit in combinatory CMV treatment.After extensive literature review, I learned that the mitochondria plays a significant role in CMV infection. CMV exploits host mitochondrial function, promoting viral infection by generating excess reactive oxygen species, altering apoptotic (programmed cell death) pathways, and manipulating cellular metabolism. Thus, I predict that interactions between P188 and the mitochondria of CMV infected cells improved CMV inhibition. Thus, current work is focused on understanding the role of Poloxamer 188 in antiviral treatments by assessing the effects of P188 on healthy and CMV infected mouse fibroblast cell models and comparing the delivery of quercetin in dimethyl sulfoxide (non-specific delivery) to QP188 (mitochondrial targeted delivery). Preliminary results show that P188 stimulates mitochondrial activity in healthy cells, as assessed using the MTT assay to measure cell metabolic activity, suggesting that P188 plays a more active role in the inhibition of CMV replication beyond its use as a drug delivery vehicle.

Makena Robison

CA - Loyola Marymount University

Discipline: Interdisciplinary Studies

Authors:
#1 Makena Robison
#2 Adrian Wasylewski
Adrian Wasylewski

Abstract Name: Interdisciplinary Approaches to Studying Climate Change: The Development of a Web-Based Closed-Loop Temperature Control System for an Aquatic Tank

The study of the effects of climate change on indicator species like intertidal mussels can indicate the health of ecosystems, but studying mussels in their natural habitat can be costly and labor intensive. This project set out to design an automated system to manage the study of mussels through the collaborative efforts of an electrical engineering and computer science team. The objective of the computer science team was to design a web application for climate researchers that can deploy automatic heat ramp interventions, centralize data collection, and provide time-delineated visualizations of the data. The web application is built upon the Next.js front-end framework and the Prisma ORM PostgreSQL database system and is hosted on Vercel. Through these tools, the user can store, access, and communicate data, specifically timelines, to and from the aquatic tank to initiate and monitor different experiments. In tandem, the objective of the electrical engineering team was to design a closed-loop temperature control system to provide a dynamic heat ramp to an aquatic tank, reflecting the temperature patterns of the intertidal zone. The system uses a Raspberry Pi to continuously monitor the temperature of the aquatic tank, activate an aquatic heating rod when necessary, and communicate with the designed web app. Using pulse width modulation, the Pi can accurately heat the tank at different rates to mimic real-world sea-temperature data. The final combined system operates by seamless communication between the closed-loop temperature control system and the web application through both automated and user-prompted HTTPS requests. The presentation will demonstrate a running trial where the web application sends a timeline to the heat ramp device which then initiates an experiment and returns temperature data.

Isabel Robles

CA - University of California - Merced

Discipline: Social Sciences

Authors:

#1 Isabel Robles
#2 Matthew Zawadzki

Abstract Name: Understanding the Impact of Rumination on Depression Among First-Generation and ESL (English as a Second Language) College Students

This paper dives into the unexplored relationship between rumination and depression among college students. Rumination, characterized by repetitive and self-focused thoughts, intensifies perceptions of inadequacy and failures, fostering a mindset fixated on past errors. This can influence confidence, belief in one's capacity to enact positive change, and can lead to heightened levels of depression. In studying these relationships, we focus the experiences of first-generation college students and those for whom English is a second language (ESL), as there is generally a gap of knowledge surrounding these students. Studies have revealed that first-generation and ESL students often grapple with imposter syndrome and language comfortability, which can significantly impact their mental health, specifically contributing to depression. Among first-generation ESL students, the toll of excessive rumination on mental health can be more prominent and lead to higher susceptibility of depression, compared to continuing-generation, non-ESL peers who face fewer complex challenges. Therefore, this research tests how rumination predicts depression and whether first-generation or ESL status moderates this relationship. To test these hypotheses, we collected data from 500 undergraduate students in a university in California's San Joaquin Valley. Each student completed surveys measuring rumination, depression, college generation status, and ESL. We hypothesize that those who have a constant amount of ruminative thinking will have higher levels of depression and that those who are first-generation and ESL students will show a higher associative relationship between rumination and depression.

Regan Rockswold

MN - St. Catherine University

Discipline: Natural and Physical Sciences

Authors:
#1 Regan Rockswold
#2 Kellie Agrimson

Abstract Name: Optimizing in vitro Editing of SPP1, NXF2, LRH1 in Testicular Cancer Cell Lines

Various factors, such as exposure to environmental toxins or radiation, can cause DNA damage and further elevate the risk of cancer in individuals. Our research project centers on the development of a molecular toolbox to investigate gene function within a human testicular cancer cell line, SUSA, using CRISPR/Cas9 and SiRNA biotechnology. By leveraging the power of these, we can modify specific DNA sequences to eliminate or knock down gene function. We have selected three genes for our gene editing toolkit, Secreted Phosphoprotein 1 (SPP1), Nuclear Export Factor 2 (NXF2), and Liver Receptor Homolog 1 (LRH1), to explore their influence on cell cycle progression and cell death when their functions are disrupted. We designed primers to amplify the genes, along with guide RNAs to serve as essential directives for the Cas9 enzyme to cut the targeted genes. Our current focus involves observing the gene cuts in vitro before introducing the guide RNA and Cas9 complex into our cell lines through electroporation. Going forward, we will utilize real-time RT-PCR to confirm the successful depletion of gene expression, thereby enabling us to assess the resulting changes in the cell cycle after gene deletion in future cellular experiments. This approach promises to shed new light on the intricate relationship between gene function and cancer, advancing our understanding of these critical biological processes.

Odalis Rodas

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Odalis Rodas

Abstract Name: How Manga Influenced Graphic Design

Japanese graphic novels, called manga, have remarkably impacted a variety of medias, such as video games, television, and the digital media, graphic design. In this paper, we delve into the profound impact of manga on graphic design, exploring how this unique medium has influenced specific design elements, including line quality, the integration of image and text, and the evolution of design styles. Furthermore, the evolution of design styles inspired by manga's genres has made graphic design a vehicle for conveying emotion, narrative, and aesthetics. Work from a few graphic designers influenced by the artistry of manga, specifically Mr. Tsuyoshi Kusano, will be showcased as well.

Ellie Roder

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

Authors:
#1 Ellie Roder
#2 Hannah Warner
#3 Gerlinde Höbel

Abstract Name: Phonotaxis Plasticity & Approach Medium: Speed & Directionality in Female Frogs when Swimming vs Walking

During the breeding season, male Eastern Gray Treefrogs (Hyla versicolor) form large choruses in woodland ponds to advertise for mates. Females select mates by listening for the male’s call and moving towards the chosen male guided by his call, a behavior called phonotaxis. Climate change may dry up parts of their habitat, which may affect mate choice and reproductive success of the frogs. We tested the hypothesis that the approach medium (land/water) affects phonotaxis behaviors. Because frogs ultimately lay eggs in water, we predicted that phonotaxis is more accurate/faster when females approach the male in water compared to on land. To test the effects of approach medium on phonotaxis behaviors, we conducted acoustic playback experiments in the lab, taking advantage of the fact that female frogs approach a speaker playing an attractive call like they would approach an attractive male at the pond. Females were tested in a “water” treatment (testing arena was a pool filled with water), and in a “land” treatment (arena was dry pool). We filmed the trials and recorded the following data: (1) distance of first jump towards the speaker, (2) angle of first jump relative to speaker location, and (3) time it took females to reach the speaker. Females took wider first jumps when starting their approach in water, but approached the speaker with similar accuracy and speed in both environments. This suggests that frogs can adjust their phonotaxis/mate choice behavior in response to environmental change altering the relative proportions of land and water in their breeding habitat.

Brianna Rodgers

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Brianna Rodgers

Abstract Name: A Proposed Model Addressing Food Insecurity and the Wellbeing of International Students at Missouri State University

International students can face numerous hardships including culture shock, language and communication barriers, increased homesickness, feelings of isolation, and increased stress within both their personal and academic environments. In addition, food insecurity amongst the international student community can cause harmful effects on their physical and mental health, eventually impacting their academic success in higher education. This paper proposes a collaborative model between international services and an on-campus food pantry to expand food distribution aimed toward addressing the specific needs of international students. Missouri State University, a midsize, midwestern public university focused on public affairs, poses as a model for concerns and solutions surrounding this issue. Further, a literature review will provide an understanding of the effects of food insecurity on international students as well as the cultural impacts of pursuing higher education abroad.

Cameron Rodgers - Johnson

AL - University of Alabama at Birmingham

Discipline: Visual and Performing Arts

Authors:
#1 Cameron Rodgers - Johnson

Abstract Name: The Seven Trumpets - Using Music Composition to depict religious texts surrounding the Great Tribulation

The Great Tribulation is stated to be a seven-year period that is to occur following the rapture, but prior to the second coming of Christ. In the Book of Revelation, seven trumpets are sounded, one at a time, to cue apocalyptic events seen by John of Patmos in his vision. The trumpets are revealed after John sees a vision of the great crowd from every tribe and nation standing the throne offering worship to the lamb of God. Each trumpet will be blown by a different angel, however the angels remain unnamed, only depicted by the events that follow them.The first trumpet brings upon devastation to the Earth itself.The second trumpet shall be targeted towards the seas.The third trumpet casts a deadly effect onto the water supply which brings upon mass death to many people.The fourth trumpet attacks the realms of space, affecting the sun, moon, and the stars.The fifth trumpet (first woe) releases Satan, described as locusts, with the power of demonic influences.The sixth trumpet (second woe) brings an army of 200 some odd million angels to form a demonic army which will bring death to one third of all remaining people on Earth.The seventh, and final trumpet (third woe), is considered to be the announcement of Christ's reign and return to the throne as king of the heavenly world.The piece, scored for trumpet ensemble, is centered around the themes presented in each of the chapters from the Book of Revelation that dicusses the Great Tribulation. Each of the seven movements depicts the scenes that transpire as each of angels sound off their calls upon the Earth. Movement one serves as the opening call as hails of choas begin on Earth. (Movements two - seven to be completed at a later date).

Samantha Rodriguez

DC - American University

Discipline: Social Sciences

Authors:
#1 Samantha Rodriguez
#2 Tazreena Sajjad

Abstract Name: Reagan's Immigration Crisis

One year after refugees were granted the right to “non-refoulment”, the Reagan Administration started their “inditement-at-sea” program which stopped Haitian boats before they reached U.S. soil and sent them back to an authoritarian dictatorship where they faced risk of persecution. The purpose of this research is to understand how official discourse during the Reagan Presidency reflected the two distinctly different treatments of Cuban and Haitian immigrants. Despite being aware of the political, anti-democratic, situation in both countries, the Reagan Administration fought to make it more difficult for these two groups to seek legal and political protections while also demonstrating policies that favored Cubans over Haitians. Securitization theorists suggest that Cubans and Haitians were viewed as a threat to national and economic security which was increased by tensions due to the Cold War, while scholars who adopt a more humanitarian approach highlight the social-colonial, racialized, and nativist views pertaining within Reagan's official discourse and immigration policies. To understand how the Reagan Administration framed differential policies toward Cubans and Haitians, this research paper carries out an interpretive discourse analysis of legislative policies, Reagan’s diary entries, the Reagan Archive Immigration Files, and National Security Council meeting minutes and memos. Reoccurring themes in the primary and secondary sources were coded into categories such as anti-immigration discourse, pro-immigration discourse, anti-communist discourse, negative representations of Haitian relations, positive representations of Haitian relations, negative and positive Cuban relations, among others. The results of the study showed that Reagan's official discourse on Cuban and Haitian refugees had a significant impact on immigration policies. By conducting this analysis, the study aims to shed light on how the administration justified its immigration policies towards these two groups which could set a historical precedent into immigration policy and possibly lead into a broader cycle of U.S. immigration “crisis” and reform.

Lindsey Rodriguez

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

Authors:
#1 Lindsey Rodriguez
#2 Catherine Sullivan
#3 Bryant Hernandez
#4 Vilupanur Ravi

Abstract Name: Surface Modification of Metallic Alloys

Diffusion coatings offer an effective method to modify metallic surfaces. This can be achieved through a process known as halide activated pack cementation that involves vapor deposition and solid state diffusion. Typically, a single element is deposited in this process; however, depositing two or more elements simultaneously may be useful to achieve multiple performance improvements. In this study, pure elements and selected alloys were chosen as substrates onto which chromium and silicon were co-deposited. Chromium is expected to provide corrosion resistance while silicon is likely to improve the erosion resistance, thereby providing dual benefits in a single process. The coatings were characterized using X-ray diffraction as well as optical and scanning electron microscopy. Hardness measurements were also performed. The results will be presented and discussed, with a focus on the relationship between alloy composition and coating characteristics.

Josue Rodriguez

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Josue Rodriguez
#2 Benjamin Schelske

Abstract Name: Evaluation of Dielectrophoretic Response of Naïve and Drug-Resistant Melanoma

Modern day cancer treatment relies on a cycle of chemotherapy and removal of cancerous tissues. Due to the mutating behavior of cancer cells, however, this procedure may leave behind adapted cells that have acquired a resistance to chemotherapy lying in remission. During this time, these drug-resistant cells may also circulate around the body, spreading the affliction and metastasizing in the organism. This chain of events propagates the medical cancer cycle by requiring more chemotherapy and more excision, continuing until total remission or death. Effective measures to evaluate chemotherapeutic efficacy and assess drug-resistant cells will reduce the work and cost during treatment. Current evaluation methods have shortcomings; biomarking requires custom signaling agents for each type of cancer and each type of drug, limiting its applicability, while the evaluation of cultures from a patient's cancer is time intensive. An attractive alternative to these practices is the use of dielectrophoresis (DEP) to discriminate cells by their electrophysiological profile. DEP is selective without the use of biomarkers, and single-cell DEP response can be monitored instantaneously. This response is dependent on cell phenotypic features such as morphology and composition, notably membrane folding and glycosylation. Therefore, monitoring the highly selective DEP response may enable assays acute to biophysical differences between drug-resistant and non-resistant melanoma cells. To work towards a methodology that can discriminate between drug-resistant and non-resistant melanoma cells, cell specific DEP spectra will be obtained for both cell types using DEP field-

flow fractionation, enabling the comparison of DEP response to applied frequency. In addition, spectral differences of melanoma cells will be investigated after exposure to chemotherapeutic agents. The expected differences in DEP spectra, related to cell physical properties, may inform on mechanisms related to cell drug response. Uncovering correlation of DEP response and drug resistance may improve individual patient treatment outcomes.

Jessi Rodriguez

MI - Michigan State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jessi Rodriguez
#2 Saumya Nigam
#3 Ping Wang

Abstract Name: Mesoporous nanoassemblies as delivery agents and high-quality tracers for magnetic particle imaging of lungs in a mouse model

Superparamagnetic iron oxide nanoparticles (SPIONs) are tested for various theranostic applications. Structural alterations of these nanoscale particles can result in changes in their physico-chemical properties, further emphasizing their tailored use in nanomedicine. Therefore, we hypothesize that the self-assembled ordered architectures would increase surface area within its pores for hosting therapeutic payload, and promote their imaging capabilities for magnetic particle imaging (MPI). In this study, mesoporous nanoassemblies (MNAs) of SPIONs were synthesized using a simple solvothermal method. Characterization was performed using X-ray diffraction, transmission electron microscopy, magnetometry, porosity and surface area measurements, optical emission spectroscopy, dynamic light scattering, and zeta potential. Next, their surface was coated with a cationic polymer, polyethylenimine, which enhances aqueous stability and generates a cationic surface to facilitate complexation with negatively charged. Compared to their conventional spherical counterparts, their assembled structure provides larger surface areas for molecule complexation. For MPI tracer performance evaluation, agarose phantoms of varying iron concentrations were imaged, and a linear relationship between signal intensity and corresponding concentrations was exhibited. Additionally, these MNAs exhibited 2-fold increase in their signal intensities when compared to commercial spherical SPIONs VivoTrax®. Cellular uptake and biocompatibility were evaluated with lung epithelial cell line (A549), revealing the MNAs as cytocompatible. As intended for MPI-guided drug delivery to lungs, investigations of delivery performance and lung localization post-inhalation in CD1 wildtype mouse using MPI monitoring is ongoing. Using a laboratory nebulizer, the MNAs were aerosolized, administered to the airstream of mice and monitored for two weeks. Afterwards, mice will be sacrificed and lungs will be harvested for further histological examinations of iron content, distribution within lung tissue and localization in epithelial cells. By the end of this study, we intend to validate the use of these MNAs in mouse models as they hold strong promise for theranostic applications for lung disesases.

Alyssa Rodriguez

GA - Spelman College

Discipline: Natural and Physical Sciences

Authors:
#1 Alyssa Rodriguez
#2 Dr. Indrajit Chowdhury
#3 Dr. Saswati Banerjee

Abstract Name: Investigating the Role of Neuregulin 1 (NRG1) Signaling in the Functionality of Rat Luteal Cells

Alyssa Rodriguez1, Saswati Banerjee2, Indrajit Chowdhury3 1Department of Biochemistry & Chemistry, Spelman College, Atlanta, Georgia 2Department of Physiology, Morehouse School of Medicine, Atlanta, Georgia 3Department of Obstetrics & Gynecology, Morehouse School of Medicine, Atlanta, Georgia The corpus luteum (CL) is a transient ovarian endocrine gland and develops from an ovulated dominant follicle in the ovary. The preovulatory surge of pituitary luteinizing hormone (LH) at ovulation and differentiation of residual follicular granulosa cells (GCs) and theca cells (TCs) with the disappearance of the basement membrane between GCs and TCs is responsible for luteinization of the ovulated dominant follicle. CL growth and differentiation are tightly regulated by survival and cell death signals, including endocrine (LH), intra-ovarian regulators, and cell-cell interactions. Neuregulin 1 (NRG1) is a small peptide and a member of the epidermal growth-like factor family that acts through the erythroblastoma (ErbB) family of receptors. Interestingly, NRG1 roles in CL are unknown. Therefore, we examined the NRG1 expression in rat CL and its role in rat luteal cells (LCs). LCs were cultured and treated with or without exogenous NRG1 in a dose-dependent manner for 24 hours. The total protein was isolated and analyzed for various markers under these experimental conditions. In further studies, ovaries from adult female pregnant rats were collected, fixed, and immunostained for the spatial and temporal expression patterns of NRG1 and ErbB receptors in the CL. Our preliminary results suggest that NRG1 and ErbB receptors are differentially expressed in CL during pregnancy. Whereas in vitro, exogenous NRG1 treatment promoted activation of ErbB signaling and supported LC proliferation. Thus, NRG1 signaling may support CL growth and differentiation. Funding National Institutes of Health (1 SC1 GM 30544-01A1, ISC3GM113751, and G12RR03034) National Institutes of Health National Center for Research Resources (C06RR018386)Merck & Co. (MRLCPO-23-168913)

jasmine Rodriguez

GA - Georgia Southern University

Discipline: Natural and Physical Sciences

Authors:
#1 Jasmine Rodriguez

Abstract Name: Recombinant expression of the kinase domain of atypical MAPK4

Mitogen-activated protein kinases (MAPKs) are crucial in regulating biochemical signaling pathways in cells. These pathways typically control gene expression, cellular growth, and survival. It is especially important in carcinogenic outcomes due to abnormal MAPK signaling being linked to enhanced cell proliferation and resistance to apoptosis. Accordingly, several proteins participating in these pathways have been targeted by various cancer drugs. Interestingly, some members of the MAPK family remain relatively understudied despite the family of kinases being well-studied and well-characterized. This project focuses on an atypical MAPK, MAPK4. Unlike the other MAPKs, the roles of MAPK4 remain largely unknown. Similarly, the structure of MAPK4 remains to be determined. In addition to attempting to understand its biological roles, MAPK4 has also been shown to be involved in breast cancers, which provides impetus to study this protein. In this project, we attempt to express the kinase domain of MAPK4 recombinantly. The construct was designed based on AlphaFold2 structure prediction. Recombinant expression in E. coli was attempted first by varying expression conditions. Interestingly, no significant change in expression levels were observed. However, purification remains to be a challenge. As an alternative, insect cell expression is also being pursued by generating a bacmid that encodes for MAPK4. This preliminary work is critical to better understand the structure and function of MAPK4 as well as to establish screening pipelines for the identification of MAPK4 inhibitors which can be used in cancer therapy.

Brittany Rodriguez

CA - California State University - Fullerton

Discipline: Health and Human Services

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#1 Brittany Rodriguez
#2 Anelisa Razo-Castaneda
#3 Garrett Deiro
Anelisa Razo-Castaneda
Garrett Deiro

Abstract Name: GROWTH: Global Review of Factors in Whole-child Motor Development

Objective: Spontaneous movements, such as arm waving and leg kicking, observed in infants are not only adorable to watch but also hold significance in the child's motor development. The transition from these movements to crucial motor skills like reaching and walking is influenced by various environmental and individual factors (e.g., home environment, caregiver interactions, etc.). To gain a comprehensive understanding of the relative importance of these factors in shaping early motor development, we are conducting a systematic literature review.Methods: Our review process consists of two levels. In level one, we performed an EBSCO search of journal articles published from 2000-2023, utilizing specific search criteria and keywords related to motor development. This initial search yielded 84 relevant studies. In level two, we employed a systematic coding manual to meticulously review and extract information from the study purpose, method and results. We coded for factors under assessment, study design, participant age, characteristics, measurement methods, analysis techniques, and findings.Results: Preliminary analysis of our ongoing review reveals that environmental factors are studied more often than individual ones. Cross-sectional studies dominate the research landscape, with typically developing infants and premature infants being the most commonly studied population.Conclusions: The insights derived from this systematic review will not only facilitate the identification of connections within existing literature but will also provide a robust framework for future research aimed at determining the critical factors influencing motor development. This framework is particularly essential, considering the relevance of these factors in atypical development, such as Autism Spectrum Disorder.

Andrea Rodriguez

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
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#3 Amber Johnson

Abstract Name: Understanding How Interpersonal Social Support Can Alter Perceived Stress and Blood Pressure Among African American Women

Introduction: Previous studies have shown that perceived stress has been associated with an increased risk of elevated blood pressure (BP). However, few studies indicate how social support can influence perceived stress and BP. Therefore, this study hypothesized that social support would moderate the relationship between

perceived stress and BP among Black women.Methods: Fifty Black women (Mage=38 years) completed the Perceived Stress Scale (PSS) and the Interpersonal Social Evaluation List (ISEL). The PSS measures potential stressful situations and the ISEL measures social support through appraisal, belonging, and tangibility. Two BP readings for systolic (SBP) and diastolic (DBP) were averaged for each participant. Linear regression models determined the relationship between perceived stress, social support scores, and BP. Results: PSS score was not associated with DBP (B=-.325, p=.243,95% CI [-.879, .229] or SBP (B=-.789, p =.105, 95% CI [-1.749, .170]). ISEL also did not predict DBP (B=-.649, p=.271, 95% CI [-1.822, .524] or SBP (B=.003, p=.997, 95% CI [-2.042, 2.048]). Lastly, no moderation effect was observed for PSS and ISEL on DBP (B=-.009, p=.167, 95% CI [-.022, .004] or SBP (B=-.013, p=.245, 95% CI [-.036, .009]). Conclusions: These findings are contrary to what has been reported previously in the literature. This may be due to a small sample size (n=50). As this study is an ongoing pilot study, the preliminary evidence may differ with a larger sample size. Continued research is needed to understand how social support can reduce stress-related cardiovascular disease risk.

Arianna Rodriguez

GA - Kennesaw State University

Discipline: Natural and Physical Sciences

Authors:
#1 Arianna Rodriguez
#2 Allisa George
#3 Catrina Sims-Robinson
#4 Kawsar Chowdhury
#5 Vishnu Suppiramaniam
Allisa George

Abstract Name: Modulation of Synaptic AMPA-Glutamate Receptors by Polysialic Acid: A Potential Therapeutic Strategy for Ameliorating Neurological Disorders

The α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic (AMPA) subtype of glutamate receptors is a crucial mediator of fast excitatory neurotransmission within the mammalian central nervous system. Precise regulation of AMPA receptors is essential for normal synaptic transmission. Numerous endogenous molecules play pivotal roles in modulating the functional characteristics of AMPA receptors. One such molecule is polysialic acid (PSA), a highly negatively charged carbohydrate covalently attached to the neural cell adhesion molecule (NCAM), which is prominently expressed in hippocampal synapses. Although previous research has demonstrated that PSA-NCAM can influence the single-channel properties of purified and reconstituted AMPA receptors, its impact on native synaptic AMPA receptors has remained unexplored.In this study, we employed the isolation and functional reconstitution of synaptosomal AMPA receptors in lipid bilayers to investigate the effects of PSA on synaptic AMPA receptors. Our findings revealed that PSA, in a concentration-dependent manner, exerts several noteworthy effects on AMPA receptors. It enhances the single-channel open probability, prolongs the mean open time, and reduces the mean closed time of these receptors. Notably, the well-known AMPA receptor desensitization blocker, Cyclothiazide, was unable to block the effects of PSA. This implies that PSA can modulate AMPA receptor channel properties independently of desensitization blockade, a phenomenon observed in certain pathological conditions.Taken together, our results indicate that PSA enhances the single-channel activity of synaptic AMPA receptors. Beyond reducing the rate of desensitization, PSA appears to potentiate AMPA receptors through alternative mechanisms. A comprehensive understanding of the dynamics of the interaction between PSA and AMPA receptors holds the potential to expand the utility of PSA as a small molecule therapeutic compound in various disease states characterized by AMPA receptor dysfunction.

Alyssa Rodriguez

CA - Loyola Marymount University

Discipline: Natural and Physical Sciences

Authors:
#1 Alyssa Rodriguez
#2 Dr. Maria Christina Vasquez

Abstract Name: Osmotic performance of the mussel Mytilus galloprovincialis across increasing salinities

Climate change is a major contributor to causing drastic changes in ocean salinity, temperatures, and acidification. Mussels like the species, Mytilus galloprovincialis, act as biological indicators of environmental changes and studying effects of abiotic stress (i.e., heat, salinity) on mussel metabolic rate provides a metric for understanding changes in energy demand under stress. Climate change is predicted to increase precipitation rates which may alter seawater salinity exposing mussels to hyposalinity. However, there is little information about the osmotic stress tolerance of M. galloprovincialis in the face of climate change. Thus, the goal of this study was to determine the effect of variable salinity on the metabolic rate of M. galloprovincialis from two different sites as a predictor of climate change effects on marine invertebrates. Mussels (N = 300) were collected from Marina Del Rey and Ballona Creek, CA and exposed to 7 days of salinity stress (ranging from 5-40 ppt). Metabolic rate was measured following stress exposure and an osmotic performance curve was developed across all tested salinities. Results showed prime mussel metabolism at the average ocean salinity (34 ppt) and reduced metabolism under exposure to salinity extremes (5 and 40 ppt). Although Ballona Creek seawater variation is more variable than Marina del Rey, we did not identify a difference in metabolic rate between sites. Thus, our study suggests that M. galloprovincialis mussels exposed to hyposalinity will be energy limited and this may influence mussel survival under future climate change scenarios.

Lisa Rodriguez

CA - California State University - Fullerton

Discipline: Education

Authors:
#1 Lisa Rodriguez
#2 Lisa Erwin-Davidson
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#4 Russell Johnson

Abstract Name: Introduction to Disability and Critical Race Theory for Pre-Professional Educators and Clinicians

Students of color are disproportionately overrepresented in disability diagnoses, leading to placement in segregated, more restrictive classrooms, limited access to the general education curriculum, and reduced academic and occupational opportunities after graduation. Scholars studying the compounded effects of systemic racism and ableism in education note the limited instruction of these issues in pre-professional, higher education. The central aim of this project is to elucidate the intersections of race and disability in the delivery of educational services to school-age learners with communication disabilities who require extensive support to make progress on their academic curricula. Under the advisement of knowledgeable faculty, this author conducted a literature review to inform the creation of two 30-minute introductory course modules. The modules utilize Disability and Critical Race Theory as an underlying framework to educate pre-professional educators and speech pathologists on historical and contemporary knowledge of the interrelationships of race and disability in education. We will first pilot the two-course learning modules by

inviting undergraduate and graduate students from CSUF to complete the modules on Canvas. The participants will take pre- and post-test module evaluations using Qualtrics-delivered surveys to determine the modules' social validity and to critique speed, flow, and content usefulness. The modules offer practical tools for addressing educational, attitudinal, and practice barriers preventing students of color with disabilities from maximizing their educational and life potential. These modules will begin conversations within university departments responsible for graduating students likely to interface with the public and provide human service. We believe this is one step toward increasing awareness of the disproportionality of race and dis/ability in pre-professional education.

Laura Rodriguez-Requeno

CA - California State University - San Bernardino

Discipline: Health and Human Services

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Abstract Name: Noise Affects Quality of Care Given by Nurses

Problem:Excessive noise in healthcare settings, such as call bells and loud machines, negatively affects patient care by impacting nurse concentration levels and increasing stress. This can result in lower quality of care and higher burnout scores among nurses.Purpose:This study aims to identify effective and noninvasive strategies to reduce noise levels in the Intensive Care Unit (ICU). By implementing interventions, the goal is to alleviate nurse stress and enhance the quality of care provided to patients.Method:The study utilizes a cross-sectional research approach conducted in four different acute care settings across two southern California hospitals. An anonymous survey consisting of eight questions was administered to gather initial grievances from nurses before implementing any changes. Participants were assured that no identifiable data would be collected or shared, ensuring complete anonymity.Innovation and resulting change:The pre-intervention survey involved 150 participants, with 135 being nurses and 15 holding supervisory positions. Among nurses, 68.1% agreed that the unit was too loud, and 64.4% felt uncertain about the availability of support from supervisors. Among supervisory staff, 73.3% believed the unit was too loud, and 66.7% were unsure how to access appropriate resources for implementing changes. Common concerns included training, improved/new technology, and staffing issues.Limitations:Limitations of this study include the small sample size, the use of a cross-sectional research method, and the time required to implement changes within the hospital.Implications and significance of the findings:Based on the data analysis, noise reduction interventions can lead to improved patient outcomes by reducing nurse stress. These findings have implications for research, practice, leadership, and education, emphasizing the importance of addressing noise as a contributing factor to nurse well-being and the quality of patient care.

Cailey Rogers

NC - Elon University

Discipline: Humanities

Authors:
#1 Cailey Rogers
#2 Janet Myers

Abstract Name: “Phantom or Reality”: Women’s Liminality in Fin-de-Siècle Gothic Short Stories

This project seeks to examine the evolution of the Female Gothic genre by analyzing how the prevalence of spectral figures in fin-de-siècle ghost stories by women writers serves as a symbol of women’s liminal status and transparency in the patriarchal world. My research extends recent scholarship by Diana Wallace, Vanessa Dickerson, and Ellen Ledoux, who are redefining the Female Gothic genre by studying how women writers complicated and expanded on traditional Gothic tropes found in early 18th and 19th century feminist literature. Using their work as a foundation, my project centers on three understudied short stories by women authors including Lettice Galbraith, G.M. Robins, and Rosa Mulholland from the collection Avenging Angels: Ghost Stories by Victorian Women Writers (2018). With the combined application of feminist criticism and historical research on the Victorian occult, this inquiry creates a dialogue between scholarly and literary texts to ask: How did fin-de-siècle women writers reimagine conventional Female Gothic tropes as a means of resisting patriarchal archetypes that deemed women as vulnerable, irrational, helpless beings? How did the popularity of the ghost story and emerging beliefs about the supernatural and the occult provide a space for women to exert agency in their writing? The conclusion to this study finds that the recurrence of liminal ghostly figures in fin-de-siècle short stories serves both as a representation of women’s liminality and inferiority in the domestic sphere and as a means of rebellion within itself. Women in these stories display agency when they enact revenge, disrupt the male household, and resolve ghost hauntings to avenge their own oppression and uncover the dark and hidden realities behind women’s experience in the home, which often figures as a domestic carceral.

Ethan Rogers

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Ethan Rogers
#2 Cheng Wang

Abstract Name: Designing StoX-Net: A Deep Neural Network Leveraging Emerging NVM Technology for Efficient In-Memory Computing

Crossbar-based in-memory computing (IMC) has emerged as a promising platform for hardware acceleration of deep neural networks (DNNs). However, the energy and latency of IMC systems are dominated by the large overhead produced by peripheral analog-to-digital converters (ADCs), which consume up to 60-80% of chip area and energy. Methods of limiting ADCs’ costs, such as sparse DNNs or aggressively-quantized training, do not fully take advantage of the speed and parallelism offered by IMC. To address the ADC bottleneck, we propose training a DNN model to capitalize on emerging non-volatile memory (NVM) technology’s capability of converting analog signals to binary values, eliminating IMC’s sole reliance upon the ADC. Specifically, we propose to implement stochastic processing of array-level partial sums (PSs), leveraging the probabilistic switching of spin-orbit torque magnetic tunnel junctions (MTJs). To mitigate accuracy loss, we develop PS-quantization-aware training that enables backward propagation across stochastic PS throughout bit-streamed and bit-sliced operations. Additionally, the network is trained using heterogeneous sampling lengths at MTJs, where multiple samples allows for accurate stochastic conversion. Our proposed PS processing eliminates the costly ADC, achieving significant improvement in energy and area efficiency. Compared to similar studies, we see up to a 0.5% increase in accuracy on classification tasks with a 130x lower energy-area-delay-product (EADP) seen at the hardware level.

Gabriela Rojas

CA - University of La Verne

Discipline: Natural and Physical Sciences

Authors:
#1 Gabriela Rojas
#2 Jerome Garcia
#3 Derick Han

Abstract Name: The Effects of Alcohol Consumption on Alzheimer's Disease, a Systemic Approach

Alzheimer's Disease (AD) is a detrimental neurodegenerative disease that can develop over time due to Tau tangles and Amyloid Beta (AB) plaques that causes neuronal death and thus hinders cognitive function. Recent studies have shown a positive correlation between alcohol abuse and AD development. We hypothesize that the alcohol metabolite, acetate, may play a role in the development of AD. Acetate can be converted to Acetyl-coA a metabolite that induces acetylation, a protein translational modification. Taken together, high acetate concentrations, due to alcoholism, can promote acetylation of liver proteins and mitochondrial reprogramming resulting in liver dysfunction. HEPG2 liver cells were treated with increasing concentrations of acetate (0, 0.5, 1, 2.5,5, and 10 mM) and analyzed within 24 and 48 hours of treatment. MTT, Trypan Blue, and Western blotting experiments were done to analyze the effects of acetate on HepG2 cells. No major changes were shown regarding HEPG2 viability or cell death. However, acetylation measured through western blotting showed an upregulation trend with increasing concentrations of Acetate. Acetate treatment also showed an upregulation trend for mitochondrial proteins like COX IV and Citrate Synthase. However, proteins like glutamate dehydrogenase showed an upregulation but then a downregulation at higher concentrations. Overall, increases in acetylated proteins and mitochondrial reprogramming may play a role in liver dysfunction that ultimately leads to AD development.

Angela Victoria Rojas Rivera

VA - George Mason University

Discipline: Health and Human Services

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Abstract Name: Investigating the Tumor Interstitial Fluid Extracellular Vesicles Repertoire in Vivo

Metastasis is the major cause of suffering and death for patients who were diagnosed with cancer. Extracellular Vesicles (EVs) resident within Interstitial fluid (IF) of the tumor tissue microenvironment plays an essential role in cell-cell communication processes driving tumor progression. Tumor IF EVs are an unappreciated source of information surrounding a tumor that could provide insights into mechanisms that aid tumor immune escape and metastasis. We developed a method to isolate the IF from an excised tumor without damaging the underlying tissue cellular morphology. Our team discovered that the key mitophagy initiator molecule, PINK1, is exported into an EV in vivo. It has been shown that the tumor suppressor p53 is tagged for degradation by PINK1. We hypothesize that p53 is exported into PINK1+ EVs to aid tumor formation. To test this hypothesis, we used the syngeneic BALB/c animal model and injected 106 4T1 triple

negative breast cancer cells into the mammary fat pad. After 14 days, N=5 mice were treated with anti-PDL1 and N=5 were treated with a loading control. After 48 hours, the animals were sacrificed. tumor IF collected, and EVs were purified by centrifugation. We performed IHC on the metastasis against F4/80, CD206, Ly6G/C, CD11b, Arginase-1, and PINK1 to determine mitophagy level and the immune cell infiltrate. We found PINK1 and phospho-p53 were elevated in the IF EVs. By IHC and mass spectrometry we found that the treated tumors had greater immune cell infiltrate such as markers for neutrophil degranulation and T-cell activation indicative of the drug treatment's effect on the tumor. In conclusion, we have developed a MS analytical workflow which eavesdrops on the tumor pre- or post-treatment state using IF EVs as a novel tumor biomarker. Moreover, we identified a potential pro-tumor adaptation mechanism through the PINK1/p-p53 EV secretion.

Nayely Rolon-Gomez

CA - Pasadena City College

Discipline: Engineering and Architecture

Authors:
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#2 Atilla Ozgur Cakmak

Abstract Name: Simulating Multifunctional Nano-Optic Surfaces for Higher Efficiency Solar Energy Conversion

Solar irradiance, while abundant, poses challenges for traditional photovoltaic cells due to limitations in capturing specific wavelengths, storing energy, sensitivity to incident angles, and addressing bandgap mismatches. In response to these challenges, thermophotovoltaics has emerged, converting heat into electricity by utilizing thermal radiation from a high-temperature source to excite electrons in a photovoltaic cell. Additionally, metasurfaces positioned ahead of solar cells have been explored as alternative sources that absorb incoming solar energy, undergo heating, and subsequently emit an optimized spectrum for efficient low bandgap solar cell utilization.In this project, we employ the open-source simulation tool S4 (Stanford Stratified Structure Solver) to refine the design of a metasurface absorber/emitter for thermophotovoltaic applications. Utilizing the S4 Python API, we conducted an extensive parameter sweep, varying structural dimensions, frequencies, and incident angles to comprehensively explore the design and optimize performance. Guided by analytical calculations, the metasurface functions as a highly efficient filter, selectively transmitting wavelengths within the bandgap of the underlying germanium dielectric while reflecting most inefficient wavelengths. Notably, this selective transmission occurs with minimal polarization dependency and sensitivity to incident angles, ensuring consistent performance across varying conditions. The precision of our exploratory simulations closely aligns with analytical solutions, validating the accuracy and reliability of the S4 tool as an accessible alternative to expensive commercial solvers.

Natalia Roman

CA - Dominican University of California

Discipline: Social Sciences

Authors:
#1 Natalia Roman

Abstract Name: The Psychology Behind Political Ads: The Use of Social Identity and Intergroup Emotions Theories

During an election, people are asked to make decisions about candidates. How do people make decisions? What influences these decisions? Research in psychology, specifically the social identity theory and intergroup emotions theory, has found that people make decisions based on group interests. Social identity biases can also lead to bad decision-making and loss. To what extent do political ads use social identity theory and intergroup emotions theory? Content analysis will be used to analyze 40 political ads from four presidential elections: 2008, 20012, 2016, and 2020. It is important to understand these theories and how they relate to political ads because it can lead to a better understanding of how and why political ads work. This thesis will contribute to the research because there has been research done on the theories and political ads separately, but no study conducted on how the two intertwine. I expect to find the political ads include cues that tap into group identity to influence voters because these theories have been shown to influence how people make decisions.

Pablo Romero

CA - Pasadena City College

Discipline: Natural and Physical Sciences

Authors:
#1 Pablo Romero
#2 Eugenia Vasileiadou

Abstract Name: Fluoride-Ion Batteries: Next Generation Sustainable Batteries to Lithium-Ion Batteries

Lithium-ion batteries (LIBs) are central in modern life, where they are found in products from smartphones to laptops to electric vehicles. The demand for efficient and sustainable batteries is higher than ever, with the predicted depletion of lithium sources after the year 2050. As an alternative to LIBs, next-generation fluoride-ion batteries (FIBs) are now being studied since fluorine is more abundant than lithium. This was a 6-month mentee-mentor internship at Caltech, the Caltech Connections program, an outreach program that pairs graduate students and postdoctoral scholars from Caltech as mentors with undergraduates from local community colleges. The topic of research is Lithium-Ion batteries and Fluoride-Ion batteries. The research methodology includes; solid-state synthesis, materials characterization, electrochemical analysis, in-situ/operando capacity measurement, fabrication of battery-cast electrodes, crystallography and material visualization, and structural analysis. Conclusions and future work are; LiCoO2 (95% wt) electrodes were produced through solid state grinding and mixing, which were then punched into half-inch electrodes, the lithium battery coin cell was assembled in an Argon glove box, the specific capacity of the battery was measured by charging/discharging the battery, BiF3 crystal structure is currently being studied to evaluate the material to make BiF3 electrodes, future work includes assembling a coin cell battery with BiF3 electrodes.

Iliana Romero

CA - University of California - Merced

Discipline: Business and Entrepreneurship

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#1 Iliana Romero
#2 Todd Sorensen

Abstract Name: Examining the Task Differences of Hispanic Americans' in the 21st Century Labor Market

Social movements address discriminatory treatment and marginalization experienced by groups of individuals. The Chicano Civil Rights Movement and 2006 Immigration Reform protests are no different. These social movements emerged from shared marginalized experiences Hispanic Americans faced in the United States. The movements inspired socially mobilized events, including the East Los Angeles Walk-Outs and a Day Without Immigrants strikes. Like many social movements, the Chicano Movement and 2006 Immigration Reform highlighted serious conflicts within our government and society; however created, an empowering spotlight for Hispanic Americans. One part of the Chicano Movement was to push for curriculum changes that would give students more choices to pursue non-stereotypical occupations. The research analyzes the labor market outcomes of Hispanic Americans, several decades on from the social movements to examine how persistent occupational segregation is. Using data collected from the American Community Survey, we examine occupational differences between Hispanic Americans and Non Hispanic Americans, focusing on the task components of their jobs.

Khristine Rondon

GA - Kennesaw State University

Discipline: Health and Human Services

Authors:
#1 Natalie Rondon

Abstract Name: Psychedelic Social Media: The Rhetorical landscape of Ketamine Therapy in Georgia

Studying the rhetoric behind psychedelics has been an important feat for researchers, as it impacts science, policy, and communication between researchers and the landscape of psychedelics. Although not a classic psychedelic, ketamine therapy is an emerging type of therapy with promise for treating multiple conditions. e.g., depression, anxiety, and mood regulation, due to its ability to affect neurotransmitters like antidepressants. -(1A, 1B). However, due to the stigma around the drug, there are social side effects to consider. It's an almost inaccessible drug for marginalized populations in Georgia that could benefit from ketamine therapy who also stand against higher rates of stigmatization. Specifically, people who aren't able to access it due to shortage, geographic location, price or knowledge of it. Our analysis will use insight on clinics in Georgia, a state known for conservative laws. And allow the reader to conclude a thorough understanding of the rhetorical strategies surrounding these clinics websites and social media to their audience. Our hypothesis is that ketamine therapies are inaccessible for people with lower income.

Leanna Rondon

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Leanna Rondon

Abstract Name: The Functional Impacts of Mutant Pacs-1 on Neuronal Morphology

Pacs-1 Syndrome is a rare neurodevelopmental disorder that causes neurodevelopmental delays, seizures, and craniofacial dimorphisms. Pacs-1 syndrome is caused by a genetic de novo mutation that is localized in the Pacs-1 protein that is used for transport in the trans-Golgi network(TGN). PACS was found in a study in 1998 that unveiled that this protein’s function was in the TGN to direct the localization of phosphorylated furin. PACS-1 has since been found to have a role in regulating calcium flux and genomic stability. In this study, we

aim to use C.elegans to model human Pacs-1 syndrome and examine the functional impacts of an R to W change in the neurons.Through investigating the well characterized mechanosensory neurons within C.elegans labeled with a transgenic marker, we intend to uncover the functional impacts of mutant Pacs-1 on neuronal morphology. Prior experiments have shown that certain Pacs-1 mutants from two other genes exhibit defective neuronal morphology. Utilizing this information we want to discern other types of mutant PACS-1 genes on the neuron structures. The goal for our study is to contribute to better understanding the functions of the Pacs-1 proteins and its functional relevance on mutant Pacs-1 in the nervous system.

Leah Rook

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
#1 Leah Rook
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Abstract Name: Improving Physical Activity in Rural and Older Cancer Survivors

Background/Study Purpose: Higher physical activity levels have been associated with lower cancer-related mortality as well as all-cause mortality rates. Those living in rural areas have less access to exercise opportunities; and therefore, lower physical activity levels. The purpose of this study was to implement a 12-week virtual exercise program to increase moderate-intensity physical activity among older cancer survivors living in rural areas. Methods: Rural, elderly cancer patients were recruited to join the study. Baseline measurements of activity were taken for 7 days using an ActiGraph device worn on their dominant wrist with a Velcro strap and a Fitbit device to monitor step counts. The patients participated in a 12-week virtual exercise program. Immediately post intervention, activity was monitored for an additional 7 days to examine the changes in moderate physical activity from pre-intervention to post intervention. Results: Paired samples t-test indicated a statistically significant increase in light-intensity physical activity (minutes per day) from baseline ($M = 157.71$; $SD = 46.01$) to post intervention ($M = 178.24$; $SD = 65.58$), $t(9) = 2.31$, $p = .047$. There was no statistically significant increase in moderate-intensity physical activity from baseline ($M = 107.57$; $SD = 46.46$) to post intervention ($M = 120.35$; $SD = 50.76$), $t(9) = 2.25$, $p = .051$. There was no vigorous-intensity physical activity captured at baseline or post intervention among the participants. As by step counts measured by Fitbit, paired samples t-test indicated a significant increase from baseline to post intervention, $t(9) = 2.60$, $p = .029$. The average increase in daily step counts was 997±1214 steps. Conclusions: The virtual exercise intervention was effective to increase light-intensity physical activity but not moderate-intensity physical activity among older, rural cancer survivors. The current preliminary analyses included $n = 10$, and data collection is ongoing for another 40 participants to be included.

Grace Rooney

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Development of a Biocatalytic Platform for Scalable Synthesis of Muconic Acid

Ring-cleaving dioxygenases (RCDs) are a class of enzymes responsible for selectively breaking open the ring of benzene derivatives to provide a carbon source for microorganisms in bioremediation. RCDs produce highly conjugated acids and aldehydes that can be used as building blocks for organic synthesis. Numerous studies have documented the activity profiles of various RCDs, but few have focused attention on isolation of the enzymatic products. Our research aims to synthesize these ring-opened products on a milligram to gram-scale. To achieve this goal, we sought to develop a scalable enzymatic method for the synthesis of muconic acids using the well-studied RCD CatA. To develop an efficient and economical approach to muconic acid synthesis, we analyzed various enzymatic preparations, including whole E. coli cells and clarified lysates harboring the enzyme CatA. Experiments on analytical and preparative scale demonstrated that clarified cellular lysates provided efficient access to the desired product with high turnover numbers and commensurate high product yields. Furthermore, we developed a non-chromatographic purification method for muconic acid isolation, reducing organic solvent use and improving the sustainability of our approach.

Fabiana Roque

FL - Miami Dade College

Discipline: Social Sciences

Authors:
#1 Fabiana Roque

Abstract Name: The Unspoken Population of the U.S: The Homeless Population

Homelessness has emerged as a nationwide human rights violation. Homelessness is stigmatized with criminalization, violence, and aggressive policies that violate, rather than protect, the rights of the people involved. How much federal attention and aid is being directed to this issue and why are the U.S. homelessness rates rapidly increasing each year throughout the nation? The methodology includes an in-depth analysis of percentages of homeless residents across the nation and which of those are being financially supported by government organizations and state authorities in their current crisis. It explores risks (both physical and emotional risks) that are consecutively taken by America’s deprived residents in order to survive. America’s homelessness problem only seems to continue increasing. Our nation’s civilians have a negative stereotype engraved in their minds that a homeless person is someone who has some sort of addiction that caused them to lose their jobs and now lack money and shelter. Thoroughly examined research demonstrates that there are multitudes of other reasons that cause homelessness. Anyone can become homeless. Research suggests that as a society, we need to educate ourselves more about this sensitive issue in our communities. We are all guilty of staring off into the opposite direction of someone begging for food or money in the street while sitting inside our cars. We are guilty of misjudging someone’s current financial or living situation. Homelessness is not spoken about enough, society tends to keep this topic on the down-low or below radar so it doesn't seem like we as a society don't care about our needy civilians. This study proves that not enough attention or aid is being provided to American homeless residents, and basic human rights are currently being violated.

Fatima Rosales

CA - Occidental College

Discipline: Social Sciences

Authors:
#1 Fatima Rosales

Abstract Name: ‘Music is how I translate my life’: Exploring the Identity Work of Non-Men in Musical Practice

How do non-men use music to construct identity? I explore the process of making music as a site for the construction of gender identity- music and identity are co-created in the act. I analyze the construction of identity and the self through 16 qualitative in-depth interviews with participants who identify as non-men. All participants in this study had experience with music-making, with backgrounds from diverse scenes and styles. Participants’ responses illustrate that music making is a practice in identity construction. Music making offers individuals an avenue for reflection and engagement with gendered norms. The musical practices and meanings that are ascribed to them affirms the identity work that non-men enact in musical spaces. Furthermore, their practices have the potential to take up struggles for agency that disrupt gendered norms and hierarchies. Music is used to resist gendered norms through strategies of resistance and redefinition, allowing for spaces of possibility. I analyze these themes in non-men’s use of sound, voice, and persona in their musical practices.

Eden Rose

UT - Utah State University

Discipline: Humanities

Authors:
#1 Eden Rose

Abstract Name: Gone Without Saying Goodbye

Between the years 2002 and 2008, Colombia was affected by a scandal called "Los Falsos positivos". This scandal involved innocent civilians being presented falsely as guerrilla fighters and being killed, to inflate the appearance of government success. The poem, "Falsos Positivos (Su Voz)", explores the aftermath of a victim of the "Falsos Positivos" scandal. It is from the perspective of a young boy who was killed, talking to his mother. He is trying to tell her to not look for him or wait for him to come home for dinner because he has been killed and will never come home again. This painting shows the mother who is waiting at the front door for her son to come home. In the painting, the son (as a ghost) is off in the distance waving to his mother. She cannot see him because he is dead, and she still thinks that he will be returning back home. I learned about the deception, violation of human rights, and major systemic issues within the Colombian government. I would like to continue to learn about the long-term effects on the victims and their families, and how the Colombian government is being held for the heinous crimes that they committed. I selected this topic because although it was a significant scandal in history, it was something that I had no idea about before taking SPAN 3570. Although I have no personal connection to the scandal of "Los Falsos Positivos", I see the importance of learning about and remembering how a selfish political decision made by the government altered the lives of those living in Colombia forever.

Olivia Rose

MN - University of Minnesota - Rochester

Discipline: Social Sciences

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#4 James Winchip
#5 Robert Dunbar

Abstract Name: Perception of Peer Criticism at Different Academic Levels on a College Campus

This study emphasizes the value of expressing a diversity of opinions and cultivating an environment that encourages constructive and inclusive discussions on sensitive topics. Our study explores how students' perceptions of peer criticism influence how comfortable they are at expressing a range of opinions on college campuses. Students at the University of Minnesota Rochester responded to a quantitative research survey to assess their levels of comfort with self-expression and concerns about peer criticism on non-controversial and controversial topics related to gender, politics, race, religion, and sexuality. The findings reveal nuanced differences in the reluctance and concern of students at different academic levels to engage in these discussions. Students taking lower-division courses are more reluctant to discuss topics related to religion, race, and non-controversial topics, and are most concerned about peer criticism when discussing race, sexuality, gender, and non-controversial topics. Students taking upper-division courses are more reluctant to engage in discussions about gender, sexuality, and politics, and are most concerned about peer criticism when discussing politics and religion. The findings suggest that, while students may be concerned about peer criticism, this does not always dictate their willingness or reluctance to discuss the topic. The findings provide insight into the evolving attitudes, concerns, and comfort levels among students across various topics and academic levels. Regardless of a student's reluctance to speak up or concerns about peer criticism, efforts should be made to encourage students to confidently navigate complex subjects, fostering meaningful interaction with professors and peers. While the research itself does not explain these variances, the insights provided have implications for administrations and educators seeking to create an inclusive and supportive campus environment that encourages expression and a diversity of opinion.

Olivia Rose

MN - University of Minnesota - Rochester

Discipline: Natural and Physical Sciences

Authors:
#1 Olivia Rose
#2 Greta Lee
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Abstract Name: Investigation of Antibiotic Resistance & Microbial Contamination in Urban Water Samples

This study investigates antibiotic resistance in urban water sources across Rochester, MN. Rochester has a variety of water sources, among which we investigated Zumbro River, Foster Arends Lake, and Cascade Lake. Of note, both lakes are former gravel-mines converted in recent years to public recreational parks. It is not unusual for the swimming beaches at the two lakes to be closed due to elevated bacterial counts that exceed safety guidelines. Multifactorial and confounding reasons govern the elevated bacterial counts such as

fecal contamination from the abundant bird population and input of feces from dog swimming areas. Bacterial introduction via feces and other mechanisms can contaminate the local water sources with antimicrobial resistance genes. If these genes are located on plasmids, these genes can readily be shared by horizontal gene transfer and contribute to greater local resistance across bacterial species. For this study, water samples were collected from both man-made lakes and the Zumbro River. Using serial dilutions of water samples, bacteria were cultured on trypticase-soy agar plates including antibiotics, spectinomycin, chloramphenicol, ampicillin, and enrofloxacin. The prevalence of antibiotic resistance was determined by tabulating colony-forming units and extrapolation to bacterial counts per mL of source water. Interestingly, the water samples collected from the river revealed the greatest abundance of antimicrobial resistance. This aligns with the public wastewater facility moving treated wastewater into the river, which includes resistant genes to a diversity of antibiotics that are understood to be elevated in hospital wastewater and neighboring sewage systems, as Rochester is home to multiple hospitals. Ongoing research may contribute to identifying possible locations of greater concern regarding water quality and antibiotic resistance. We hope to expand testing of our local water sources for contamination to include antimicrobial resistance. We are committed to better understanding and improving the quality of local water resources.

Benjamin Rosenberg

MN - Hamline University

Discipline: Mathematics and Computer Science

Authors:
#1 Benjamin Rosenberg

Abstract Name: Locust of Control: Modeling Locust Motion as a Markov Process

An accurate model of locust motion would be an invaluable tool for reducing the economic and agricultural impact of locust swarms. Emergent structures in the collective motion of locusts suggest that their directional movements are not simple random walks (or hops). To develop a next-simplest model, we analyze locust motion as a discrete sequence of direction-independent motion states: stationary, walking, or hopping. In line with other contemporary models of locust motion, we propose that these states can be effectively modeled as a Markov process. We test that hypothesis by evaluating a Markovian model for videos capturing nearly 20,000 individual locust trajectories at 25 frames per second. The sojourn time, a key characteristic of random processes, measures the length of time elapsed between state changes. Under our null hypothesis that locust motion states are a Markov process, we expect: (1) that the distributions of individual sojourn times within a given state follow a geometric distribution; and (2) that the distribution of state changes within all non-overlapping, equal-duration segments of the data follow a Poisson distribution. Using goodness-of-fit tests, we compare the distributions of empirical data to the expected distributions. We find sufficient evidence to reject our null hypothesis on timescales longer than 6 frames. In the context of Poisson variables, his suggests that locusts' motion states may be independent of their neighbors but not independent of their own histories. Additionally, an algorithm was developed to evaluate the relationship between the frame rate and the shortest possible sojourn time. Though further research is needed, our results suggest a need to account for time variance in agent-based modeling of locust motion.

Sofia Rosenberger

MI - Hope College

Discipline: Natural and Physical Sciences

Authors:
#1 Sofia Rosenberger

Abstract Name: Ubiquitination of xCT: Impacts on The Protein's Stability, Turnover Rate, and Localization

System xc- imports cystine and exports glutamate. Its presence on the plasma membrane has been shown to increase directly with oxidative insults. Ubiquitin, a small protein, is directly involved in the trafficking and degradation of numerous proteins within cells and has been shown to bind to System xc-. Moreover, upon oxidative insult, protein ubiquitination increases. However, it is not understood how ubiquitination of the transporter impacts its activity. Therefore, the objective of this project is to directly assess how ubiquitination affects the protein's stability, turnover rate, and localization in the context of oxidative stress. We expressed System xc- in COS7 cells transfected with increasing levels of ubiquitin and observed a decrease in xCT expression and increase in xCT turnover rate. However, we also observed an increase in membrane localization. Ultimately, this work will allow us to better understand the mechanisms by which System xc- activity is regulated under oxidative stress.

Hadley Rosengrant

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Hadley Rosengrant
#2 Elizabeth Sztul
#3 Peyton VanWinkle
#4 Olgierd Talarowski

Abstract Name: Exploring the role of the ancient and ubiquitous protein: Jagunal homolog 1

Jagunal homolog 1 (Jagn1) is a transmembrane endoplasmic reticulum (ER) protein that cycles between the ER-Golgi interface. Jagn1 is highly evolutionarily conserved and expressed in the vast majority of eukaryotic cells. Jagn1 cannot be placed in a protein family, but its tetraspanning topology and presence of sorting motifs suggests it may "escort" cargo proteins in both retrograde and anterograde directions between the ER and Golgi. Jagn1 was identified in a screen of lethal mutations in D.melanogaster and was shown to be essential for protein trafficking during egg development. Later studies demonstrated that humans with homozygous JAGN mutations exhibit Severe Congenital Neutropenia (SCN) due to impaired neutrophil maturation. SCN neutrophils have enlarged ERs, suggesting an ER to Golgi trafficking defect. In addition to neutropenia, patients present with systemic symptoms unrelated to immune system functioning. This suggests that Jagn1 plays an essential role in some key cellular process(es). To understand the molecular mechanism of Jagn1, we aim to identify interacting proteins as well as effects of Jagn1 absence on cellular function. We have generated Jagn1 constructs tagged with the BirA* biotin ligase, that when supplemented with biotin, will biotinylate neighboring proteins. Putative interactors have been identified and binding affinity to Jagn1 is being assessed. We have also generated three Mouse Embryonic Fibroblast (MEF) knockout cell lines, each with a differentially truncated Jagn1. Preliminary analyses indicate that these cells display defects in adhering to/and spreading on plastic after plating. This correlates with observed defects in surface-localized integrin-a5 and establishment of paxillin-containing focal adhesions. Live imaging assays have shown defects in cell movement, adhesion, and polarity in comparison to wild-type MEFs. This suggests Jagn1 may facilitate trafficking of integrins and/or extracellular matrix proteins to the cell surface. This is relevant in context of maxillofacial, musculoskeletal, and neurological defects observed in SCN patients.

Joshua Rosenstein

VT - Middlebury College

Discipline: Business and Entrepreneurship

Authors:
#1 Joshua Rosenstein
#2 Arthur Kneeland

Abstract Name: Win-Win Opportunities: How Diversifying Farm Operations can Lead to On-Farm Environmental and Economics Gains

Existing research on farm diversification practices tends to focus on the accompanying environmental benefits, such as improved soil health, more effective weed and pest management, and increased biodiversity. Yet, less attention has been devoted to the economics of these practices. This project aims to determine the profitability of two farm diversification practices, cover crops and a more diverse crop rotation, in comparison to a typical corn-soybean rotation in rural western Wisconsin. This analysis was done with USDA data on the costs, yields, and selling price of corn, soybean, and rye. The data was then aggregated with information from literature, surveys, field experiments, and local experts to determine reasonable and conservative estimates of the financial effects of implementing a simple rye cover crop or adding rye into the crop rotation. This showed that diversification practices are less profitable in year 1 (short-term) than the corn-soybean rotation, but both are more profitable in year 5 (long-term) compared to the corn-soybean rotation. Also, both practices help reduce the economic losses that occur during a drought. Since every farm is managed differently, the exact results found in these analyses cannot be expected on every farm, but the results highlight the general economic trends associated with these two diversification practices.

Jared Ross

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Jared Ross

Abstract Name: Definition Through Distance: Animals as the Sartrean Other

This essay examines animals and their place as “the Other” in Sartrean literature. In Being and Nothingness (1943), Sartre by and large centers his writings around human consciousness in establishing our experience of the Other, or the engagement with a free and independent consciousness beyond our own. Animals are notably absent in this analysis. Scholar Florence Burgat notes that Sartre had little interest in incorporating animals on the grounds that they do not share a human consciousness. I argue, however, that by holistically considering his conception of the Other, we can read Sartre against himself regarding animals. Pairing the nuance of our experience with the Sartrean Other alongside John Berger’s discussion of anthropomorphism and its effects on human-animal relations, I suggest that we encounter animals in such a way that they resemble human consciousness and are thus the Other. Further, holding this to be true, we might receive “the look” from animals when considering how they perceive us and the world around them—in doing so, we become an object to their subject. It is precisely in this objectification that we experience the look. The value of these questions lies in Steve Martinot’s analysis of Sartre’s position. He claims that the look is a way of communication or dialogue between independent consciousnesses, a reciprocal cycle of objectification and subjectification wherein relations are constructed, defined, and maintained. Relying on Martinot’s claim, I extend this notion to human-animal relations and hold that by experiencing them as the Other and thus receiving the look, we engage in a form of dialogue which positions us to better examine ourselves and our own relationships to animals.

Alicia Ross

TX - Tarleton State University

Discipline: Health and Human Services

Authors:
#1 Alicia Ross
#2 Alexis Turbeville
#3 Emili Oznick
Alexis Turbeville
Emili Oznick

Abstract Name: The Impact of Community-Based Resources on At-Risk Children

This mixed methods study with an emphasis on qualitative uses a focus group interview approach to understand impact of community based resources in a rural community. This research uses a purposive non-probability sampling approach to recruit 32 participants who are receiving services from the community-based resource.

Shaqyna Ross

MI - Wayne State University

Discipline: Social Sciences

Authors:
#1 Shaqyna Ross

Abstract Name: Exploration of Medical Mistrust Amongst African Americans and Arab American Youth

This research examines two large overlooked minority young adult groups in America who experience racial discrimination in healthcare. This paper argues that the effects of trust in a provider are associated with medication adherence, continuity of care, improvements in self-reported health, and decision making when seeking care. Racial discrimination in health care access and quality of care has resulted in a long standing and ongoing medical mistrust of healthcare providers and the health system for many racially demean groups. Adolescents and emerging adults are very important considering youth are beginning to become more independent and are taking on greater responsibility for their own health care. Medical mistrust studies have predominantly been studied in adult populations, but there has been a huge gap in the research studying medical mistrust in youth which is where early intervention can clearly be beneficial. Due to mutually dependent challenges that minority youth face such as racial discrimination, environments with social disadvantages, and medical mistrust they often have social complexes. With this being said minority youth often have a lot of involvement with health care systems from multiple different access sites, but this leads to them often failing to achieve positive health outcomes. To gauge medical mistrust, surveys will be given to minority youth between the ages of 16 to 18 years old and 19 to 25 years old in clinic settings and in the community. The population the survey will be given to will include African American and Arab American youth in metro Detroit, Hamtramck, and Dearborn. There are studies that look at the concept of adolescent trust in their providers, and also how it relates to the youths' health outcomes. It's shown that youth with higher levels of trust in their provider consistently receive more chronic illness care than those who receive medical mistrust.

Emma Ross

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Emma Ross
#2 Yao Abusa

Abstract Name: A benchtop route from elemental Se to superior thermoelectric β-Ag2Se

β-Ag2Se is a remarkable material for thermoelectric applications, but enhancing its performance through doping techniques has remained a challenge. Over the past years, research has been devoted to interstitial, vacancy, and substitutional doping into the parent β-Ag2Se structure, aiming at tuning the material's charge and heat transport properties to enhance thermoelectric performance. The transformation of β-Ag2Se into a-Ag2Se at ~134°C and the low solubility of dopants are the main obstacles for the doping approach. Here, we will discuss our efforts to develop a facile, safe, scalable, and cost-effective benchtop approach to successfully produce pristine and metal-doped β-Ag2Se at near room temperature. This research will display our progress in creating a safe, straightforward, and inexpensive synthesis procedure to obtain pure and metal-doped β-Ag2Se at near room temperature. Our research will also address our progress in enhancing the electrical and thermal transport properties of β-Ag2Se upon metal-doping – resulting in an increase in zT from ~0.65 (pristine) to ~1.30 (metal-doped β-Ag2Se) at 120 degrees Celsius. Additionally, we will compare the results of different metal dopants and the trends we discover. In conclusion, this new proposed synthesis procedure offers a new route to create β-Ag2Se of the highest caliber with negligible energy input while investing in superior energy sources.

Amanda Rostron

IL - Eastern Illinois University

Discipline: Health and Human Services

Authors:
#1 Amanda Rostron
#2 Olivia Hallam
#3 Heidi Ramrattan
#4 Angela Anthony

Abstract Name: Retrospective Analysis of Auditory Processing and Comorbid Disorders

This retrospective analysis delves into the intricate relationship between Auditory Processing Disorder (APD) and Language Processing Disorders (LPD). Through a comprehensive review of existing literature, clinical case studies, and diagnostic methodologies, this study seeks to explain the underlying connections, shared characteristics, and potential causal factors between these two neurodevelopmental conditions. The analysis highlights the challenges in accurately diagnosing APD and LPD due to overlapping symptoms and variability in presentation. Additionally, the study explores the implications of misdiagnosis or co-occurrence of these disorders on individuals' academic, social, and emotional well-being. By synthesizing findings from diverse sources, this analysis contributes to a deeper understanding of the complex interplay between APD and LPD, paving the way for improved assessment strategies, tailored interventions, and enhanced support for individuals experiencing these challenges.

AKir Rowe

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Akir Rowe
#2 Hali Hutchinson
#3 Kingdom Wanjoku

Abstract Name: Cultivation of bacteria from PCB-contaminated sediments PCB Degradation

Polychlorinated biphenyls (PCBs) are toxic chemicals popularly used in electrical manufacturing companies from the 1930s - 1970s. PCBs, colloquially known as ‘forever chemicals’, are known to cause significant health concerns and are notoriously difficult to remove from an environment. PCBs are currently banned in the US; however, they can still be found in the environment due to improper disposal methods. This research aims to better understand ecological networks, genomic novelties, and potential bioremediation of microbes from PCB-contaminated environments. Microcosm cultures were developed to resemble the original conditions of the environmental samples, containing PCB-contaminated mud from Woods Pond, Lenox, Massachusetts, and filtered pond water with three different treatments: aerobic, anaerobic, and anaerobic with the addition of sulfate. These cultures have been growing for five months, showing signs of active microbial metabolism (e.g., rust patches in sediment gas production). The microcosms were used as inoculum for agar containing PCBs, and 30 PCB-tolerant colonies were isolated, with some belonging to known PCB-degrading taxa of Paenibacillus, Clostridium, Rhizobium, Methylversatalis, and Sphingobacteria. Future analyses will be conducted to (a) identify the microbial diversity within the microcosms via 16S rRNA amplicon sequencing, (b) explore the metabolisms within the microcosms, and (c) further characterize the isolated PCB-tolerant bacteria. This data will aid further research to determine if and how these microbes metabolize PCB compounds.

Indigo Rowland

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Indigo Rowland

Abstract Name: A Compositional Analysis of Aged Latent Fingerprints Post-Rehydration

Fingerprints are a widespread means of identification and are commonly used in forensic practice. However, the ability to develop fingerprints decreases over time due to rapid evaporation as a fingerprint ages. Our previous research has shown that rehydration is an effective method that enables the development of high-quality aged latent fingerprints on non-porous surfaces. Unfortunately, the scientific process allowing for fingerprint rehydration was unknown and, without a mechanistic understanding of the process, the method therefore could not be implemented in forensic laboratories. The purpose of this project was to identify what specifically occurs when a fingerprint is rehydrated so that this novel methodology can be utilized in forensic laboratories and defended in a court of law. Fingerprints were deposited and aged (evaporated) on a glass substrate before rehydration for 30 minutes at 80-85% relative humidity in a sealed humidity chamber. The fingerprints were imaged under a microscope at 4x and 10x magnification after deposition, evaporation, and rehydration to assess what was occurring at the rehydration interface of the fingerprint. Protein and lipid dye stains were used to assist in the microscopic identification of the rehydration component of the fingerprint. Results indicate that there are trace amino acids located in the rehydration interface of the fingerprint that are rehydrating and restoring the fingerprint to its depositional condition. Though additional research is necessary

to identify the specific trace amino acids present in the interface, this research has important implications in both enabling the widespread implementation of this method in forensic laboratories and satisfying the admissibility requirements for rehydrated fingerprint evidence into a courtroom. Furthermore, when implemented in forensic laboratories, this method will enable latent fingerprints from cold cases to be rehydrated to their original ridge width and analyzed using present technology and databases, therefore enabling the possible resolution of these cold cases.

Kai Rowlands

WI - Marquette University

Discipline: Natural and Physical Sciences

Authors:
#1 Kai Rowlands
#2 Kevin Bandura

Abstract Name: Commissioning the timing of the GBO Outrigger telescope for the localization of fast radio bursts

The construction of the Canadian Hydrogen Intensity Mapping Experiment (CHIME) Outrigger at Green Bank Observatory (GBO) was just recently completed in the spring of 2023. CHIME and the Outrigger have been outfitted to detect fast radio bursts (FRBs), mysterious transient radio pulses of unknown origin. In order to detect and locate these FRBs, we implement very-long-baseline interferometry (VLBI) which effectively creates a telescope with a dish the size of the distance between the two telescopes. To implement VLBI, clocks at each location have to be paired accurately in order to document the different arrival times of the signal in each location. As well, this accurate pairing will assist in triangulating the location of FRBs, identifying the galaxy of origin and their location within that galaxy. Ensuring the atomic and GPS clocks at the GBO site are operating at a certain level of precision is essential to the implementation of VLBI. The task at hand is ensuring that the Outrigger is in sync with the CHIME telescope in British Columbia, Canada, down to the nanosecond (10-9 s). By calculating the Allan Deviation and the Tau Shifts of the clocks at GBO we have been able to test the effectiveness of the clocks and diagnose issues and current shortfalls at the Outrigger. Currently, we are progressing toward reaching the desired level of calibration to begin sub-milliarcsecond detections.

Mia Roxbury

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Mia Roxbury
#2 Marietta Monaghan

Abstract Name: The Significance of Preserving Historic Architecture While Promoting Progress

History can be defined as the study of change, adaptation and progress. Life as we know constantly changes from the way we learn to how we create buildings. It is important to mention that people do not only create history, but so do their creations. The question is why preserve it and what purpose does this serve in a progressing environment? This research features first-hand insight on how a specific historical site stays up to date with society while paying tribute to its complex upbringing. In this presentation, we will take a look into

Darlington School, a private historical institution that has presented several points of discussion that highlight the significance of preserving historic architecture while promoting progress. Darlington School's motto is: “Wisdom more than knowledge, Service beyond self, Honor above everything.” Wisdom is gained through experiences by trying new things and reflecting on the process of how those things came to be. In order to serve someone effectively, you must look inward and identify what kind of energy you are putting forth, and adjust so that you affect others in a positive way. To honor is to pay respects to someone or something higher beyond yourself because of what they are and the purpose they have served. It feels as if this motto not only represents the students, but the history of the building itself for the purpose it’s served over the years. Given this information, we will dissect an interview from an alumni who shared their experience being a student here by discussing the school’s history, the physical appeal and the community built internally and externally. With this approach, we expect to ultimately define the purpose for preserving historical buildings while promoting progress.

Emma Roy

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Emma Roy

Abstract Name: Only Murders in the Paper: How Publications Enthralled Chicago, Elevated America's First Serial Killer, and Evaporated Public Interest

This project seeks to determine how the American public, especially that of Chicago, reacted to and engaged with the rapid reports following the H. H. Holmes murder case of the late 1890s. Existing conducted research emphasizes Holmes as an individual, while brushing over the broader context surrounding the public’s response to the horrors, arrest, trial, and execution. I analyze the public’s reaction primarily via newspaper articles following the case’s progression, including the dramatic use of yellow journalism and frequent publication dates. My most-consulted sources include newspapers from Chicago, Los Angeles, and Atlanta, as well as Holmes’s autobiography, written during his incarceration. This research connects the pedestal of a prolific serial murderer’s legacy to its foundation. Holmes has gained lasting notoriety for his deeds, but the public who survived, remembered, and followed the case have faded from collective memory and academic research. Holmes’s legacy remains as America’s first serial killer, a title that encapsulates much of the theatrics surrounding his reputation. Yellow press riveted audiences, sculpted the public response, and forged Holmes’s image. I conclude that the citizens of Chicago and elsewhere were incredibly invested in the H. H. Holmes case. It was only after the final resolution that public interest evaporated, rendering their reactions obsolete in the minds of researchers, when it is the very same public interest that elevates characters like Holmes to their pedestals in the first place. A focus on that aspect of this episode will provide greater insight into how historical events are often created, remembered, and forgotten.

Sophia Rubino

CA - Chapman University

Discipline: Interdisciplinary Studies

Authors:
#1 Sophia Rubino

Abstract Name: Radical Misogyny, Insidious Trauma, and Amber Heard: Reviewing The Fascist State of

Minds Cultivating Male-Supremacy

Utilizing Ann Cvetkovich's An Archive of Feelings: Trauma, Sexuality, and Lesbian Public Cultures as a primary source, this paper seeks to gain a critical understanding of female-specific trauma, reviewing the notorious defamation trial of Amber Heard versus Johnny Depp. I will examine this trial using two terms – "insidious trauma" and "radical misogyny" – that I believe best encapsulate the situation created out of the live-streamed trial and the reactions on social media, namely X and TikTok. Most effective in Cvetkovich's explorations here is employment of "insidious trauma" – engendered with its earliest meanings by Laura Brown — made insidious by the lack of outrage given toward the act of violence in its wake and support toward the victim. The term, as argued by both authors, can do powerful work as the traditional usage of trauma/PTSD "cannot do justice to the traumatic effects of a sexism that does its work precisely by being constructed as normal" (163). Critical in rejecting universalizing readings of trauma, insidious trauma ousts the moments of reified patterns of intolerance toward a female or feminized Other that infiltrates everyday experience and into a space for critique and social change. My term, "radical misogyny," which will be parsed through in depth, makes misogyny radical in the same way that trauma can become insidious: through minimal response, perhaps even normalized entirely. These terms lie at the heart of my feminist-based research, alongside the work of psychoanalyst Christopher Bollas, namely using what he describes as "the fascist state of mind," which I argue stands at the basis of our misogyny-based society. Amber Heard's situation as publicly displayed is exactly what epitomizes the traumatic treatment of the female subject, the archive and impact of which will circulate forever in the digital age.

Brianna Rucker

VA - Norfolk State University

Discipline: Social Sciences

Authors:
#1 Brianna Rucker
#2 Susan Ha

Abstract Name: Understandind the Social Norms of Generation Z and the Generational Dependency of Online Media

In past forms of research, there has been a common occurrence of a decline of mental and social standards in society that is connected to a person's dependency on internet resources. More specifically, members of Generation Z, the generation that was born with some form of technology in hand. This generation is the most recent community to be influenced by the new trend of technological innovations. The most prominent outlet that has affected Gen Z and swayed their social demeanor is online media. Studies have been conducted on this group and their dependency on social media to understand their mental stability, self-esteem, and independence compared to previous generations. This concept is especially prominent throughout the COVID-19 pandemic. I propose to demonstrate how the social norms of Generation Z have been influenced by online media, leading to their dependency on internet resources and shift in social demeanor. My research will enlighten my readers about the repetition of generational downfalls as well as guide my readers to understand that the things people absorb online can impact their behavior in the real world. I have scoured through many scholarly articles to unravel varying reasons as to how instances from the past have reshaped Generation Z to behave the way they do today. We are going to discuss why people are so reliant on gaining satisfaction from online outlets despite the shift in society's social demeanor. Regardless of the evolutionary technological devices, humanity will only be able to advance so far with our lives online before it's too late to turn back to what's important for us in the real world. With this demonstration of how the social norms of Generation Z have been influenced online, I will establish why their dependency on Internet resources should not be considered an impossible hurdle to overcome.

Shubeeb Rudd

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Shubeeb Rudd

Abstract Name: Religious Precedents for Consumerism in the American Cattle Meat Industry: Islam and Cultured Meat

Commercialized cultured meat and Muslim meat markets are both currently experiencing periods of growth, expansion, and influence, especially in the western world. New developments in bioengineering and technology at large continue to demand the attention of consumers. This accelerating commercialization of cultured meat implores the adaptation of religious laws onto its consumption, especially by faiths that are perceived as stricter in their dietary guidelines, such as Judaism and Islam. The present study aimed to discuss possible solutions to the debate of cultured meat within Islam and provide a prospective foundation for the product's augmentation within western Muslim communities. The study consolidated and analyzed various peer-reviewed sources regarding religious statutes in Islam in relation to stances on meat, technological modernization, as well as the potential for unprecedented producer benefit, broader product options, and other religious implications in global markets. Sources were synthesized and compared alongside each other to construct a coherent conversation. The study found that some arguments opposing cultured meat warned against "playing God" by obtaining meat from means that may be seen as unnatural. Conversely, arguments that favored permission of cultured meat highlighted the options of serum, growth media, and cell harvest processes that are animal-product free, as well as perceived promotion of Islamic principles of animal welfare, environmental welfare, and self-health. This review proposed Islamic justification for the consumption of cultured meat by utilizing various conceptual categories, criteria for the acceptance of cultured meat into western Muslim diets, and the potential monetary gain achieved by producers who implement halal practices into their products and businesses at large.

Sam Rudnick

MD - Towson University

Discipline: Natural and Physical Sciences

Authors:
#1 Samuel Rudnick
#2 Jacqueline Doyle

Abstract Name: Exploring the Impact of Sex-Biased Dispersal on Genetic Diversity and Gene Flow in Moose (Alces americanus)

Moose (Alces americanus) are particularly at risk from environmental alterations and anthropogenic disturbance due to their size and resource requirements. Population monitoring and habitat management are vital for conservation efforts which promote the longevity of healthy individuals. Populations located in Northeastern Quebec, Western Quebec, and South of the Saint Lawrence River offer a favorable region to examine sex-biased dispersal among moose. Molecular approaches provide insight into how sex-biased dispersal influences genetics within populations of interest. We used a publicly available single nucleotide polymorphisms (SNPs) data set and the software program GenALEx to analyze the role of sex-biased dispersal on moose genetic variability, gene flow and connectivity. DNA was extracted from the hair and tissue of 317 moose and genotyped at 136 SNP loci. The pairwise population Fst values facilitated understanding of connectivity between the populations of interest. Genetic differentiation was lowest between

Northeastern and Western Quebec suggesting gene flow between the two populations. Evidence of male-biased dispersal included 1) higher genetic differentiation in females relative to males and 2) a tendency for males to be genetically assigned to populations other than the ones where they were sampled. These findings align with previous research suggesting the mammalian tendency toward male-biased dispersal. Further understanding of the movement dynamics of moose populations will improve conservation strategies. This will ultimately benefit the management of a fragile species in an environment that is rapidly changing.

Gracie Rudolfi

MI - Michigan State University

Discipline: Humanities

Authors:
#1 Gracie Rudolfi
#2 Lorraine Inman
Lorraine Inman

Abstract Name: The Impact of Foregrounding on Aesthetic Experience: An Analysis of Real-Time Responses to Sonnets

The Digital Humanities and Literary Cognition Lab (DHLC) at Michigan State University is conducting an interdisciplinary study of sonnets that examines the similarities and differences in the aesthetic pleasure that English majors and non-English majors experience while reading poetry. In the study, participants were tasked with highlighting moments they found aesthetically pleasing in green and aesthetically displeasing in red. The lab compiled and graphed this qualitative data to visualize the cumulative highlighting patterns of both participant groups (English and non-English majors) and then compared them. When analyzing the graphs, we found that the trends between the two groups were more similar than initially hypothesized. Our presentation will discuss the study with a focus on the moments where foregrounding devices were prevalent and how these affected the aesthetic responses of our participants. Foregrounding theory argues that certain literary devices, such as metaphor and imagery, are “foregrounded”—in a sense, the expression and effect of the text is prioritized over its literal meaning, thereby capturing reader attention. Our study aims to recognize why people are attracted to foregrounding devices, specifically in terms of a positive response. This poster examines multiple moments that prompted frequent aesthetic pleasure highlighting across both groups and attempts to explain why moments of foregrounding are closely tied to an aesthetic response. Devices such as metaphor, personification, alliteration, imagery, and ambiguity appeared the most frequently across popular words and phrases, suggesting that these tools’ ability to foreground language is an essential element to their capacity to produce pleasurable aesthetic effects.

Emma Rudolph

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Emma Rudolph
#2 Karen Resendes

Abstract Name: Reduction Of PCID2 In Breast Cancer Cells Decreases Mesenchymal Markers And Upregulates Epithelial Markers

Breast Cancer is the leading cause of cancer death among women due to tumor recurrence and metastasis five years after a lumpectomy. Epithelial to mesenchymal transition (EMT) is important for cancer cell migration and invasion, and ultimately metastasis. Activation of the Wnt/B-catenin signal transduction pathway activates downstream targets Snail 1&2, Zeb 1&2, and ZO-1 which are transcription factors that trigger EMT. High expression of the protein PCID2 in Colorectal Cancer (CRC) is associated with larger tumors, increased cell migration, and activation of the Wnt pathway, increasing EMT markers. Because metastasis is a key factor in breast cancer associated deaths, we decided to determine if PCID2 expression also contributes to epithelial to mesenchymal transition and breast cancer progression. Western blots were preformed to assess if siRNA knockdown of PCID2 impacted B-catenin expression, downstream EMT transcription factors like Snail 1&2, Zeb1&2, and ZO-1, and subsequent decreases in epithelial markers E-cadherin and claudin, or increases in mesenchymal markers N-cadherin and Vimentin. Decrease in PCID2 caused decreases in some EMT transcription factors, such as ZO-1, Slug, and B-catenin. Loss of PCID2 also decreased mesenchymal markers and increased epithelial markers, indicating a potential role for PCID2 to normally drive EMT. Future work will include migration assays to assess the effect of PCID2 in breast cancer cell migration and invasion. Understanding the role of PCID2 in breast cancer cell metastasis can potentially lead to development of targeted therapies, to inhibit these cellular processes in the hopes of decreasing breast cancer metastasis and patient death.

Gabriella Rueschhoff

KS - Fort Hays State University

Discipline: Natural and Physical Sciences

Authors:
#1 Gabriella Rueschhoff
#2 Tara Phelps-Durr
Tara Phelps-Durr

Abstract Name: Generating CRISPR Mutations in the ASYMMETRIC LEAVES1 Gene of Arabidopsis

The goal of this study is to create new mutations in the ASYMMETRIC LEAVES 1 (AS1) gene of Arabidopsis using CRISPR technology. AS1 is a myb domain transcription factor that represses the KNOX genes, a group of genes involved in maintaining an undifferentiated cell state. AS1 binds to the chromatin remodeling protein Histone Repressor A (HIRA). In animals, HIRA is involved in the permanent suppression of proliferation genes required for early development. The interaction between AS1 and HIRA provides clues to how AS1 maintains suppression at the KNOX genes; however, we must be careful applying what is known in animal systems to plants because there are key differences between the two during development. Most notably, plant development occurs throughout the lifecycle, and unlike animals, plant cells more readily un-differentiate and re-differentiate. We are working to create new AS1 CRISPR mutants to better understand the structure and function of the AS1 protein and how it physically interacts with HIRA in plants. We are currently screening plants for the presence of mutations in the AS1 gene. This work will allow us to better understand how genes are regulated during cellular differentiation during leaf development.

Stephanie Ruiz

CA - University of California - Riverside

Discipline: Natural and Physical Sciences

Authors:
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#3 Yuan Qin
#4 Kuanliang Shao

Abstract Name: Thermal Decomposition of Tetra-ethoxy-silane by VUV-PI-TOF Mass Spectrometry

Organosilanes have recently become a subject of interest for research due to their unique properties as organic molecules. Organosilanes are hydrophobic, water-repelling, making them useful for surface coatings; they also help stabilize fuels which result in reduced emission of pollutants. The purpose of our research is to study the flash pyrolysis of tetra-ethoxy-silane and its relevance to fuel combustion as well as chemical vapor deposition (CVD). In CVD, the primary focus is on the success that a gas precursor has with respect to how well it will coat a surface (no impurities). Pyrolysis of tetra-ethoxy-silane (TEOS) was achieved by using the vacuum ultraviolet photoionization mass spectrometer. This method helps ionize tetra-ethoxy-silane and allows for fragments to be detected at a detection chamber, which are then translated into a mass spectra. Our work has demonstrated that the pyrolysis of tetra-ethoxy-silane generates silicon dioxide of high-purity which is useful in the surface coating of silicon dioxide films. In a similar way, the fragments of TEOS have been shown to act as combustion catalysts in fuels, which release less harmful pollutants. Overall tetra-ethoxy-silane has been successful in its fuel and surface coating applications. However, the costs of this organosilane make it difficult to set as an eco-friendly fuel. Through mass spectrometry TEOS can be analyzed in order to identify important chemical properties that may be shared with other organosilanes, which are more cost-efficient. Furthermore, the pyrolysis of TEOS has helped in coating SiO2 thin films, which is indicative of other surfaces that may be compatible for coating such as ceramics.

Kira Ruiz-Houston

FL - University of South Florida

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Exploring Intracellular Mechanisms of Action of Coral- and Sponge-Derived Bioactive Compounds with a Survey of Sustainable Technological Advances for the Drug Discovery Pipeline.

Background: While marine metabolites from deep-sea corals and sponges represent a treasure-trove of therapeutic potential, including anti-tumor, anti-fungal and anti-viral benefits, roughly ~5% of such marine invertebrates have been thoroughly investigated for their production of bioactive metabolites and their mechanism of action. Additionally, there lacks sustainable methods to maintain deep-sea coral and sponge populations to support the drug discovery pipeline. Purpose: Our study goal was to systematically identify deep-sea corals and sponges off the Western Coast of Florida to identify their marine metabolites, potential interactions with mammalian cells, and technological advances that could sustainably support their bioactive compound production and contribution to the drug discovery pipeline. Research Methodology: Using the National Oceanic and Atmospheric Administration portal, we curated deep-sea coral and sponge entries within a ~100,000 km2 segment of the U.S. Exclusive Economic Zone off the Western Coast of Florida. PubMed was utilized to decipher the current understanding and gaps across a subset of these sessile organisms pertaining to their natural products and mechanisms altering cytoskeleton, protein trafficking, and signaling pathways. Since exploitation of such marine organisms could disrupt the marine ecosystem leading to supply issues of limited bioactive compounds, we surveyed methods and technological advances that would be necessary for sustaining the drug discovery pipeline. Conclusions: Approximately 2% of NOAA coral and sponge entries were found at depths <50m, 29% ≥50 to <200m, 31%, ≥200 to <1000m, and 38%, ≥1000 to 3000m. Purified metabolites were found to deregulate microtubules and actin filaments, induce ER stress, and activate PI3K/AKT/MAPK, JAK/STAT, and EGFR. Optimal techniques were identified for bioactive compound production, primarily through specific aquaculture and in-vitro cultivation systems. Collectively, our efforts support future research in identification of marine-based natural products and their mechanism of action to develop novel drugs and therapies, while preserving our natural ecological community.

Kejsi Ruka

PA - Drexel University

Discipline: Social Sciences

Authors:
#1 Kejsi Ruka

Abstract Name: Gender and corruption: mapping knowledge production in UN conference spaces

The link between gender equality and anti-corruption work has slowly been established over the last few decades in scholarly, practitioner and activist spaces. Corruption greatly undermines progress in gender equality as women tend to be less economically independent and more reliant on public services where their proximity to corruption is enhanced. Additionally, because corruption tends to thrive in male dominated patronage networks, women do not reap the same benefits as men. At the same time, when the relationship between the two is acknowledged by policymakers, women are often treated as "political cleaners" or a one-stop solution for achieving gender equality and getting rid of corruption. Other activists and practitioners, on the other hand, consider more intersectional solutions that mainstream gender justice into an anti-corruption framework. Scholar-practitioners are playing a key role in defining the field of gender and corruption, particularly through knowledge production (research) and activism at UN conferences. This study explores the work of scholar-practitioners in shaping knowledge production through transnational connections and interactions with global development regimes. This project maps the field of gender and corruption through consulting first-hand knowledge of experts in the field at two critical United Nations conferences: the UN Commission on the Status of Women (UN-CSW) and the UN Convention against Corruption (UN-CAC). By identifying patterns between how anti-corruption versus gender experts define the problem, this study identifies room for overlap and how solutions in the two fields can be linked.

Isabelle Rushdy

IA - Iowa State University

Discipline: Interdisciplinary Studies

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#1 Isabelle Rushdy
#2 Roxanne Ziman

Abstract Name: Modeling the Exit of Cranial Nerves Through the Skull in Canines

3D-printed models are increasingly used as supplemental materials in anatomy education, seeking to address financial and ecological concerns of using animal specimens while offering an interactive experience. 3D-printed models allow students to more easily observe spatial relationships between anatomic structures while avoiding the destructive nature of dissection. A new 3D-printed model of the canine brain and skull was designed to help veterinary medical students better visualize the spatial relationship between the cranial nerves originating from the brain and the foramina (holes) of the cranium through which they exit. The clear material allows students to view the cranial nerves passing through the skull, something that is visually obscured in a wet specimen. The brain with its cranial nerves can be removed from the skull, offering a dynamic and interactive experience. While the 3D model is not a replacement for wet dissection, it augments learning by presenting typical canine neuroanatomy that students can revisit and compare against unique specimens.This research project exemplifies an iterative design process for developing an accurate and detailed learning aid in anatomy education. The model was constructed in Maxon ZBrush using anatomy text references and hands-on dissection experience to ensure accuracy. Additionally, a plastinated brain specimen and skull were scanned using novel 3D scanning software, and served as the base for the final digital model. Initial prototypes were test-printed with inexpensive material and the final model was fabricated using clear resin for the canine skull and dyed flexible resin for the neural components. User testing was conducted with students and faculty in veterinary medicine, scientific visualization, and lay audiences to collect feedback on the design and anatomic accuracy. The final 3D-printed model will be used in veterinary neuroanatomy courses with the opportunity for a future experimental study to evaluate this model as an educational tool.

Justin Ryu

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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#2 Harshad Panikkaveettil Ashraf
#3 Jacques Wadiche
#4 Linda Overstreet-Wadiche

Abstract Name: Characterization of Npas1+ Interneurons in the Mouse Dentate Gyrus

The dentate gyrus is a region of the hippocampal formation that is critical in learning, memory, cognition, and spatial recognition. Within the dentate gyrus, GABAergic interneurons, which release the neurotransmitter gamma-Aminobutyric Acid (GABA), are highly heterogeneous with multiple subtypes that have not been well characterized. These interneuron subtypes provide synaptic inhibition that enforces neural activity of the principal granule cells and dynamically gate the flux of information from the cortex.Goals of the project are to study a novel class of interneurons (Npas1+) and to understand their morphological and electrophysiological properties and how they contribute to the activity of the principal cells of the dentate gyrus. There are numerous Npas1+ cells within this region, but they have yet to be differentiated into existing classes. By determining physiological, morphological, and molecular expression characteristics of these cells, this fundamental information can be used to explore the functional relationships of these interneurons and the inhibitory role they play in cognition, memory, and higher brain function. Mouse hippocampal slices will be used to characterize the morphological and physiological features of Npas1+ interneurons as well as their molecular marker expression to determine differentiation from classified groups of interneurons in the area.GABAergic interneurons exhibit abnormal function in a range of neurological diseases, but it is unknown how specific subtypes contribute to normal dentate gyrus function. Results from this project will provide a new understanding of the contribution of different GABAergic interneurons to normal information processing that will shed light on circuit dysfunction in diseased states.

Rachel Ryweck

FL - The University of Tampa

Discipline: Natural and Physical Sciences

Authors:
#1 Rachel Ryweck

Abstract Name: Identifying a Cryptic, Invasive Species of Toad Under the Genus Rhinella

My project aims to determine which cryptic species of cane toad of the genus Rhinella has become established as an invasive species in Florida. A cryptic species complex occurs when there is more than one species that appear identical but are actually two or more genetically-distinct species. For this project, I set out to 1) Determine which Rhinella species has invaded and become established in Florida and 2) Determine the likely geographical origin of the founding population(s). To accomplish this, I extracted DNA from the livers of over 144 cane toads from 12 different locations, developed and conducted polymerase chain reaction (PCR) protocols to amplify ~400 base pairs of the cytochrome b (cytb) locus, and completed Sanger Sequencing of PCR products. Subsequently, I used Geneious to trim and align reads, and create a gene tree using both recovered sequences and publicly accessible Rhinella cytb sequences published from previous studies. To date, I have successfully recovered 3 distinct cytb haplotypes from 14 individuals across 5 different Florida populations. All 3 recovered sequences cluster with previously published R. horribilis sequences from southern Mexico, indicating this is the Rhinella population in Florida likely arose from a single founding population of R. horribilis from south Mexico. By determining what invasive Rhinella species is present in Florida, we hope to gain insight into their invasion history, provide information to inform

best practices to avoid future invasion events, and determine possible impacts this species is having on Florida ecosystems.

Kimberly Saavedra Villegas

WI - Alverno College

Discipline: Natural and Physical Sciences

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#2 Alex Blom

Abstract Name: Determination of Total Hardness Levels in Milwaukee Waterways and Instrument Comparison

Water hardness affects the alkalinity of water, which can help reduce water toxicity. However, excessive hardness can harm plant and animal life. pH levels are also important in determining nutrient intake capacity for both plants and animals. Any changes in pH levels can have a significant impact on their ability to absorb nutrients. The alkalinity of water can help reduce the harmful effects of toxicity on plants and animals since they have specific preferences for their environment. This study aimed to compare the flame atomic absorption spectroscopy and titration methods to determine the most effective and straightforward method for measuring total water hardness based on factors such as workload, waste production, and ease of use. Water samples were collected from three different sites on the Kinnickinnic River in Milwaukee, WI, and analyzed using both methods. Although flame atomic absorption spectroscopy was more expensive, it provided similar results to the titration method. Flame atomic absorption spectroscopy was found to be simpler, faster, more accurate, and non-toxic, making it the better option.

Samia Islam Saba

IL - North Central College

Discipline: Social Sciences

Authors:
#1 Samia Islam Saba

Abstract Name: Family Visits to a Children’s Museum

Children's museums are purposefully designed to cultivate hands-on learning experiences, providing a welcoming space for the inquisitive minds of children. These visits not only foster shared opportunities for young children and their adult partners but also serve as a focal point for observing the intricate dynamics of family interactions within the museum setting. The current study aimed to explore family visits to a children's museum by observing the ways families navigate through a full visit, gaining insights into adult motivations to attend, and understanding their perceptions post-visit.To explore the nuances of family visits, data were gathered from 20 randomly selected families at a Midwestern children's museum. These participants engaged in a comprehensive full-visit observation. During the visit, caregivers were asked to complete a survey to assess motivations to visit the museum and beliefs about play. Participants were also invited to complete a post-visit interview approximately one week after the observation to provide their insights about the visit.Visits lasted an average of 107 minutes including time spent in each exhibit with collaborative decision of movement patterns in the museum. Top motivations focused on the child’s experience, quality family experiences and learning. Play was endorsed for healthy brain development, enhanced imagination, and

problem-solving. Post-trip interviews yielded themes of the children’s museum as a trusted space, opportunities for socialization, and opportunities to learn about the child.Findings highlight the appreciation families have for children's museums, recognizing them as trusted spaces that provide exceptional experiences. The emphasis on play aligns with the adult perception of the museum as a 'yes space,' empowering children to engage in self-directed play while caregivers observe. Ultimately, this study underscores the pivotal role of children's museums in promoting holistic child development and strengthening family bonds in a supportive and enriching setting.

Maia Sable

CA - California Lutheran University

Discipline: Social Sciences

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#1 Maia Sable
#2 Nicole Talarico

Abstract Name: Early Adulthood Perceptions: The Effects of Priming & Gender on Implicit Ageism in the Fitness Industry

Previous research in the fitness industry has shown that in order to increase one's life span, exercise is vital to maintain health and quality of life (e.g., Jin & Harvey, 2021). However, despite increases in longevity and productivity, older adults are likely to be stigmatized by younger generations in places such as fitness, social, and medical settings (e.g., Kimuna et al., 2005). Therefore, this study will examine how contextual priming impacts implicit ageism among traditional undergraduate psychology students and their feelings towards working with older adults in the fitness industry. This study will also examine how gender may impact the perceptions traditional undergraduate psychology students have towards elders within the fitness industry. A sample of 159 traditional undergraduates (ages 18 to 24 years) were recruited through the California Lutheran University SONA Systems. Participants were first randomly assigned to one of four contextual priming conditions: 1) positive-male, 2) positive-female, 3) negative-male, 4) negative-female and then completed an online survey via Qualtrics on implicit ageism, attitudes towards working with older adults in fitness, and demographic information. The study will use a between-subjects two-way ANOVA to compare the effects of contextual priming and gender on implicit ageism and attitudes towards working with older adults. The data is currently undergoing analysis.

Ebony Saccento

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
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#2 Joshua Lord

Abstract Name: Hermit Crab Foraging Under Different Conditions

Foraging is important for animals because it allows them to grow, reproduce, and have energy for other activities like movement and predator avoidance. We tested the foraging behavior of the hermit crab Pagurus longicarpus under acidic conditions to better understand their response to ocean acidification. The experiment consisted of a Y-maze (a maze of three arms that form a “Y” shape), with a food pellet and rock placed at

opposing ends of the maze to see how effective the crabs were at finding the food. The goal was to compare the time it took for P. longicarpus to find the food, using both their visual and chemosensory ability, under control and acidified (pH 7.5) conditions. We had a secondary goal of determining whether vision or chemosensory ability plays a larger role in hermit crab foraging. We found that neither acidic conditions nor darkness impeded the foraging ability of P. longicarpus, as they were very efficient at finding the food (correct decision ~80% of the time) and took a similar amount of time in both treatments. However, when we filled the entire Y-maze with water with the odor of food (to mask chemosensory cues), crabs were largely unsuccessful at finding the food even when they could see the food pellet. Therefore, we concluded that chemosensory abilities play a larger role than vision in foraging this hermit crab species. The foraging ability of the hermit crab, Pagurus longicarpus, shows that they can adapt under various conditions, such as acidity. Still, more research has to be done to determine the limit of these abilities and assess potential limits to the scale (distance) of their chemosensory abilities. Our results suggest that hermit crabs are relatively resilient to environmental changes and could remain important shallow-water scavengers even in changing ocean environments.

Zakaria Sadak

IL - University of Chicago

Discipline: Humanities

Authors:
#1 Zakaria Sadak

Abstract Name: Harrie A. Vanderstappen's Legacy: Exploring his Impact on Students, the Smart Museum, and the Discipline

Harrie A. Vanderstappen was a professor at the University of Chicago from 1959 to 1991. Vanderstappen’s tenure includes his chairmanship of the Department of Art from 1965 to 1970, a pivotal time during which the Smart Museum of Art was constructed. Given the broad scope of his three decades of work, my research maps Vanderstappen’s effect on the formation of the Smart Museum, teaching at the University of Chicago, and Chinese art history. To explore this, I examined his personal papers in the University of Chicago Library Special Collections, exhibition and object files, catalogs, and publications from Vanderstappen and his colleagues. I learned that though his primary role was as university faculty, Vanderstappen was nevertheless a central figure in the development of the Smart Museum, his department, and discipline. As an educator, he harnessed the Smart Museum of Art as a teaching institution, pairing the close viewing of art with his connoisseurial approach to teaching. Coupled with his expansive interests across Asian art, Vanderstappen's foundational contributions to the study of Chinese painting and sculpture guided the museum’s acquisition strategies and developed the Smart Museum and the University of Chicago’s strength in East Asian art. As faculty-curator, he worked with donors to raise funds and assemble the Smart Museum’s uniquely strong teaching collection of Chinese and Japanese paintings. This research begins the Smart Museum’s self-reflective work undertaken in its 50th anniversary year and traces Vanderstappen’s role in the development of contextual methodology in the Western study of Chinese art.

Alexa Sadowski

PA - Lafayette College

Discipline: Business and Entrepreneurship

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#1 Alexa Sadowski
#2 Adam Biener

Abstract Name: An Analysis of the Efficiency of Hospital Pricing

Starting on January 1st, 2021, the Hospital Price Transparency Rule mandated hospitals to provide a public database containing gross charges, discounted cash prices, and payer-specific negotiated prices for their items and services. Before this law, prices were not transparent, meaning patients could not shop for hospital services based on price. This lack of available prices likely meant hospitals did not compete on price, potentially resulting in inefficient pricing. Prior research has found that prices hospitals charge can vary dramatically across hospitals for particular services without being explained by differences in quality. The aggregated dataset Turquoise Health Price Transparency Scorecard from Turquoise Health provides access to the cost of healthcare in the United States using publicly available data disclosed by hospitals as a result of the Hospital Price Transparency Regulation. I use this data to determine the relationship between hospitals characteristics, competition, and price markup as related to their degree of non-compliance with the regulation. I find that hospital characteristics and market characteristics are associated with whether hospitals willingly comply with Hospital Price Transparency Regulation and the degree to which they comply. In a regression model adjusting for these characteristics I will determine the relationship between how concentrated a hospital's market is, their price markups as measured by the difference between cash prices and list charges, and how their compliance was scored by Turquoise Health. Price transparency may be a necessary but not sufficient mechanism to lower hospital prices and healthcare spending. The transparency will empower patients and give them more control over their healthcare spending, but these findings can result in policy that could lead to a sufficient increase in competitive behavior, which would drive down the burden of healthcare spending for consumers and the U.S.

Naila Saghir

CA - Dominican University of California

Discipline: Health and Human Services

Authors:
#1 Michaela George

Abstract Name: Health and Lifestyle Behavioral Changes To Prevent Myocardial Infarction (MI): Mixed Methods Approach To Understand Secondary MI Prevention

Cardiovascular diseases are the leading causes of death globally and about 200,000 individuals experience their second myocardial infarction yearly. There is a lack of understanding about how lifestyle and behavioral changes can prevent secondary myocardial infarction a year in the United States. The objective of this study is to use a mixed methods approach to understand how individuals who have made lifestyle behavioral changes to prevent their secondary myocardial infarction. Surveys and interviews consisted of questions about the participants' health behaviors and health history. Demographics, background information, and lifestyle behavioral changes were measured using Qualtrics. Valid and reliable tools such as the Healthy Lifestyle Screening Tool, were utilized. Semi-structured interviews will be conducted with willing participants after survey completion. Quantitative associations of self-reported behaviors and thematic analysis were performed. Based on preliminary results, we found statistically significant associations between the severity of the first heart attack and willingness to change lifestyle behaviors (p>0.05). Additionally, thematic analysis reveals three main themes for preventing secondary myocardial infarctions; eating healthier, consistent exercise routine, and maintaining body weight. When connecting the qualitative and quantitative data, the three main themes were more consistently expressed when the severity of the first heart attack was greater (p>0.05). These findings suggest that behavior change is more likely in individuals who survived a more severe heart attack. Themes of eating healthier, maintaining a consistent exercise routine, and keeping a healthy body weight are expected to be common amongst the interviews, but more prominent among those with more severe heart attacks. With this knowledge, individuals can be better educated on preventing myocardial infarctions.

aymane saissi

NY - Cooper Union for the Advancement of Science and Art

Discipline: Engineering and Architecture

Authors:
#1 Aymane Saissi

Abstract Name: Condition Monitoring of Induction Motor Using Vibration Signals and Machine learning Classification

This study addresses a crucial aspect of industrial operations by delving into the root causes of induction motor mechanical failures through vibration data analysis and classification using a machine learning algorithm. The primary goal is to enhance cost-effectiveness by exploring the feasibility of employing a single vibration sensor for detecting multiple failures in induction motors, offering a low-cost solution that is particularly advantageous for small enterprises, ultimately improving productivity.Traditional induction motor defect detection methods often involve multiple expensive sensors such as vibration, temperature, pressure, and humidity sensors. Previous studies primarily relied on the Riemann series for vibration analysis, based on the Gap metric in the Riemann, but the proposed method seeks to improve performance and accuracy in fault diagnosis. By investigating the frequency of vibration signals from a single sensor and utilizing machine learning for categorization, the approach provides a more accessible and interpretable solution. The incorporation of a confusion matrix with the machine learning algorithm enhances user-friendliness and accuracy in analyzing and interpreting vibration data, providing quick insights into the motor's state.The research methodology involves analyzing vibration signals from an induction motor in both normal and faulty states, including perfect condition, shaft imbalance, fault in the linear module's ball screw, and bearing defect. AutoML and Scikit-learn machine learning algorithms leverage a dataset of around 1000000 rows generated by the induction motor to establish a robust classification method for recognizing common motor failures using a single vibration sensor. The resulting model boasts an F-measure of 0.9978, a recall of 99.58%, and a precision of 99.795%, showcasing its effectiveness in classifying induction motor failures. This approach presents an innovative and cost-effective solution for industrial operations, demonstrating potential benefits for enhancing overall efficiency.

Florin Saitis

WI - University of Wisconsin-Milwaukee

Discipline: Natural and Physical Sciences

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#2 Blake Hill

Abstract Name: Reconstituting Full-Length Mitochondrial Fission Protein 1, Fis1, and Assessing Its Inhibitory Role in Pancreatic Cancer

Mitochondrial fission is the process by which mitochondria divide and is necessary for organelle segregation into daughter cells during cytokinesis. Excessive mitochondrial fission has been linked to increased tumor growth in many cancers, including pancreatic cancer. Pancreatic cancer is one of the deadliest cancers in the U.S., with a 5-year survival rate of 10%. The project goal is to advance a novel therapeutic route against pancreatic cancer by targeting mitochondrial fission proteins. Inhibition of mitochondrial fission, either

genetically or pharmacologically, blocks oncogenesis. Dynamin-related protein 1 (Drp1) performs mitochondrial fission and is recruited to sites of fission by mitochondrial fission protein 1 (Fis1). By inhibiting Fis1, which is three times more upregulated in pancreatic cancer than Drp1, mitochondrial fission is restricted. We have developed pep213, a novel peptide inhibitor, that inhibits Fis1 and prevents mitochondrial fission. However, pep213 was designed to block a version of Fis1 that lacks its transmembrane domain that anchors it to the outer mitochondrial membrane (Fis1ΔTM) and has not been tested in vitro against Full-length Fis1. We hypothesize that inhibitors designed against Fis1ΔTM will have an enhanced affinity for membrane-anchored Fis1. To this goal, Full-length Fis1 was successfully reconstituted in a detergent micelle. We then tested the hypothesis that Cy5-Drp1 would have an enhanced affinity for Full-length Fis1. Using microscale thermophoresis, binding affinities of Cy5-Drp1 to Full-length Fis1 suggest that Full-length Fis1 binds better with Cy5-Drp1 than Fis1ΔTM. Nuclear magnetic resonance (NMR) also revealed chemical shift perturbations of residues in the Full-length Fis1 regulatory arm region compared to Fis1ΔTM. Pep213 was also analyzed using NMR and circular dichroism. We then tested how inhibited Fis1 impacts pancreatic cancer cell proliferation by using cellular proliferation assays and discovered that pharmacologic inhibition of Fis1 by pep213, and not a control peptide, in mouse pancreatic cancer cells reduced cell proliferation by 75%.

Scarlett Saitta

SC - Anderson University

Discipline: Interdisciplinary Studies

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#1 Scarlett Saitta
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#4 Olukayode Karunwi

Abstract Name: The Use of Auditory Data and the Role of Machine Learning as a Diagnostic Tool for Early-Onset Alzheimer’s Disease

Alzheimer's Disease (AD) is a chronic neurodegenerative disorder characterized by irreversible cognitive decline. Symptoms of AD can develop years before clear clinical manifestation, leading many patients to start treatment later. Current diagnostic treatments typically can only be performed years after the disease's onset. A way to measure the cognitive decline affiliated with AD is by detecting specific patterns in speech, such as repetition of words, duration of words, clarity of speech, and articulation, since language impairment is a common symptom of AD.Machine learning (ML) techniques have emerged as promising non-invasive tools by using vocal pattern detection to provide a more accurate diagnosis of early-onset AD. ML algorithms offer the ability to analyze large and complex datasets capable of integrating multiple sources of information, including clinical, genetic, neuroimaging, and auditory data. However, some challenges include the need for extensive and diverse datasets, knowledge of how to interpret different ML models, and integrating multiple data sources into global databases to be shared with various investigative teams and clinicians.This project focuses on the auditory data from the DementiaBank repository (https://dementia.talkbank.org/access), which was used to train the ML algorithm during some preliminary analysis. Our focus was the preprocessing stage to ensure that the file formats could be transformed into a form the algorithm could use. The ML model used was able to identify patterns, extract meaningful features, and then apply them to predict future outcomes. Through the use of ML and future collaboration with medical professionals, we expect to have a trained program with at least 80% accuracy. With our current results, we plan to integrate other clinical data files, including imaging, into the pool of datasets to ensure a more robust system for a more accurate and precise diagnosis.

Alae Saket

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Alae Saket

Abstract Name: Artificial Intelligence and Healthcare: A Legal Perspective

Through its ability to rapidly interpret complex data sets, Artificial Intelligence and its advancements are dramatically reshaping the world as we know it. My project explores the technical, legal, and policy debates surrounding AI's role in the healthcare sector, which presents significant potential benefits, such as personalized patient treatment and improved hospital communication. AI's emergence in health care poses an ethical conundrum. On the one hand, it offers a powerful tool that can potentially save thousands of lives through expediting healthcare processes, revolutionizing the healthcare industry on an international level. On the other hand, AI still has its own issues to resolve. AI has raised questions such as patient consent/privacy, bias in algorithms, and whether full AI integration in healthcare is desirable or even possible. Examining AI's role in healthcare from a legal perspective opens up a 'Pandora's Box' of legal contradictions and ramifications, such as the potential to conflict with existing laws like HIPAA and the data privacy concerns of patients. The controversial debates regarding clinical decision supports and jurisdiction over electronic health record systems would be key themes in the conversation of AI in healthcare from the perspective of the law. My project will mine existing primary sources--such as legal commentaries, debates over state legislation and regulatory policies, and technical studies--while also using Interviews with prominent AI experts to further understand the nuances of new technology and historically established fields of healthcare. AI is bringing in a new era to healthcare that offers unprecedented potential for patient care and operational effectiveness, while simultaneously raising complex ethical dilemmas and legal issues that require navigating a new paradigm to ensure patient safety, overcome algorithm bias, and work with existing legalities.

Justyn Salas

IL - North Central College

Discipline: Natural and Physical Sciences

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Abstract Name: Developing a Novel Method for Counting and Identifying Water Molds in Field Samples

Water molds (Oomycota) are aquatic multi-host pathogens that infect many species of amphibians and aquatic invertebrates. Established methods for counting eukaryotic microbes, such as hemocytometry are time consuming and difficult to use with field samples. We developed a method for the quantification of reproductive propagules (zoospores) responsible for water mold transmission between hosts using Microwell Plates (MWP) and selective media. We compared measurements of five concentrations of water mold zoospores created from serial dilutions, using a hemocytometer and our MWP method. There was a close relationship between hemocytometer counts and MWP counts, giving us confidence that MWP provided accurate and precise counts of zoospore concentrations. When we tested water samples from local wetlands, the MWP method was effective and precise. To confirm that the growths on MWP are our target species of water mold, Saprolegnia ferax, molecular methods of identification using specific probes and primers in a quantitative polymerase chain reaction (qPCR) were designed and will be tested. This method will allow ecologists to identify and count a common pathogen of many aquatic organisms.

Fabiana Salas

KS - University of Kansas

Discipline: Humanities

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#1 Fabiana Salas

Abstract Name: NGO Reports vs. Reality: Indigenous people's real-life challenges

Indigenous people in Peru face socioeconomic and environmental challenges. Given the scholarly debate about NGOs imposing agendas in developing countries, this project aims to see if the NGO reports addressing indigenous challenges actually resemble the individual experience of Quechua speakers – the predominant language among indigenous Peruvians. This study draws on previous research addressing discrimination based on ethnicity in Latin America, and the transnational movement of environmental protection of indigenous land. Furthermore, this research will contribute to the debate about NGOs' imposition of environmental agendas in developing countries. This project hypothesizes discrepancies between NGO reports emphasizing environmental challenges and indigenous individuals' real experiences who prioritize more socioeconomic inequalities over environmental protection. The study will use thematic coding to find the six main issues according to NGO reports. These six main topics will serve as the basis for formulating open-ended questions to conduct 45-minute interviews with ten Quechua speakers. This research aims to assess if NGOs impose an agenda over vulnerable populations. Primary data will help to close the gap between NGO reports and real life challenges to allow researchers to explore policies on how to address the specific issues individuals report instead of following external agendas.

Juana Salas

TX - University of North Texas at Dallas

Discipline: Natural and Physical Sciences

Authors:
#1 Valerie Torres
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Valerie Torres

Abstract Name: Persistent Exposure to Subinhibitory Levels of Alkyltrimethylammonium Bromide Compounds Reduce Bacterial Sensitivity and Promote Antibiotic Cross-Tolerance

Alkyltrimethylammonium bromide (CTAB) compounds are a common subgroup of quaternary ammonium compounds with broad-spectrum antimicrobial activity that are used as the active ingredient in many cosmetics and personal care products. Given the abundant use of these products, CTAB compounds are frequently in contact with microorganisms on the skin and opportunistic pathogens on hard surfaces. To investigate the impact of persistent subinhibitory CTAB compound exposure on bacterial species of human and public health importance, we repeatedly exposed Corynebacterium xerosis, Staphylococcus epidermidis, Staphylococcus aureus, Klebsiella pneumoniae, Escherichia coli, and Pseudomonas aeruginosa to subinhibitory concentrations of purified C16TAB, C12TAB and C10TAB. While bacterial sensitivities to CTAB compounds were directly related to alkyl chain length, CTAB tolerance and antibiotic cross-resistance were preferentially observed for C10TAB and C12TAB-acclimated bacteria and mediated by efflux pump activity. Opportunistic pathogens were significantly less sensitive to CTAB-inhibition and more likely to

increase CTAB-tolerance in response to persistent CTAB exposure, as compared to the commensal species. These results suggest that persistent exposure to subinhibitory levels of CTAB compounds can enhance antimicrobial tolerance and antibiotic cross-resistance, which may render these antimicrobials ineffective at the directed use concentrations. Reassessing the formulation of CTAB-containing products, particularly those that are not rinsed off after application, is recommended.

Narayt Salcido

AZ - Embry-Riddle Aeronautical University

Discipline: Social Sciences

Authors:
#1 Narayt Salcido
#2 Diana Orem
#3 Kelly Crockett

Abstract Name: Data Discrepancies in the Missing and Murdered Indigenous Peoples Crisis- How Do We Get the Real Numbers?

According to reports by multiple government agencies, there is a disproportionately high number of unsolved missing persons and unsolved murder cases among Native Americans. One barrier to addressing this problem is that there are discrepancies in the number of missing persons reported among various agencies. Not only do different agencies report different numbers, there also appears to be an issue of underreporting to the critical databases that consolidate this information. For example, the FBI only has 43 listed open cases involving Native Americans, while the Bureau of Indian Affairs (BIA) has 40 open cases. From these two federal databases, only two names overlap. While the BIA has acknowledged that this is a “crisis,” there is a public perception that this problem is being ignored. As a result, individuals have taken it upon themselves to track missing persons, typically on websites. A resident of the Blackfeet reservation, Drew Landry, created the "Montana Missing Indigenous Persons Reporting Portal," in part because "what it [the website] does is, they can ignore it, but we can make them [police] look bad if they don't do anything." As of September 2023, however, only two people were listed, compared to the 25 people reported by NamUS for the state. Clearly, action is needed to ascertain how many indigenous people are missing if these cases are to be solved. While individual efforts like Landry’s appear well-intentioned, they raise the question of whether this will help or make the problem worse. The aim of our study is to 1) identify all individually run websites, and 2) attempt to match their data to the closest approximation of official data across all relevant government databases. Additionally, website content will be analyzed to determine goals and intentions of each effort and characterize these as positive, neutral, or negative toward governmental efforts.

Mariel Salguero

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Mariel Salguero

Abstract Name: Perceived Implications of Generative Artificial Intelligence on Human-Interaction and Skill Development in Higher Education

This research paper presents the findings of a qualitative and quantitative mixed methods study, which aimed

to investigate the specific generative AI tools used among students at California State University, Long Beach (CSULB). The study incorporated both quantitative and qualitative responses, encompassing approximately the responses of 150 participants. The present study focused on assessing the frequency of utilization of these AI tools and their perceived influence on social and academic skill development and proficiencies. During the data collection, coding, and interpretation phases of the study, significant relationships emerged between students' perspectives on these generative AI tools and their impact on academic and social skill development, as well as their interactions with human educators. The students' discussions revolved around several key themes, including the role of generative AI tools in their preferences regarding modalities of education, academic and social skill acquisition, and fostering relationship-building with peers and faculty. Future studies can explore the significance of acquiring relevant AI-related skills for prospective job market success. These findings highlight the evolving landscape of education and the multifaceted implications of generative AI tools on student development and their educational experiences. The findings and outcomes of this survey will be presented and discussed.Keywords: Generative AI, artificial intelligence, digital learning, human interaction, higher education, college student, skill development

Daniela Salinas

NY - Long Island University

Discipline: Interdisciplinary Studies

Authors:
#1 Daniela Salinas Hernández

Abstract Name: Memorializing Genocide in Bosnia and Herzegovina: Collective Memory and Reconciliation

Since the Holocaust, human atrocities like genocide and ethnic cleansing, have taken center stage in memorialization efforts across the world in order to unite affected communities. After the genocide between 1992 and 1995, a fragmented Bosnia and Herzegovina took on the task of remembering those they lost to the war and memorializing the events themselves as lessons for the future. In this three-month transdisciplinary qualitative case study, the researcher utilized ethnographic field notes, semi-structured and structured interviews with museum curators, and participant observation to explore different memorialization efforts across Sarajevo, Bosnia and Herzegovina's capital. The study found that the majority of memorialization efforts appear to be directed at the Bosnian Muslim community as well as tourists. Furthermore, the research suggests that, while memorializing the Bosnian genocide aims to mitigate genocide denial, in doing so, it may alienate Bosnian Serbs by representing them as the enemy or perpetrator in collective memory. Based on these findings, the author suggests rethinking and restructuring memorialization strategies in museums dedicated to the Bosnian genocide to include the Bosnian Serb population. It is suggested that through a collective memorialization strategy that includes Bosnian Serbs and Croats, who also suffered during the war, differences across constituent ethnic groups might be reconciled without compromising the central narrative. This research might thus benefit the different ethnic communities in Bosnia and Herzegovina, as well as the scholarly discussion on post-conflict transformative justice.

Reina Salman

CA - Pasadena City College

Discipline: Engineering and Architecture

Authors:
#1 Jillian Blatti
#2 Vanessa Gonzalez
#3 Reina Salman

#4 Eliana Safar
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Abstract Name: Localization of a DNA enzyme-catalyzed redox reaction to fluorescent DNA condensates: the art of molecular programming using deoxyribonucleic acids

Biochemical microreactors have the capacity to organize chemical pathways and separate their respective molecular products. Host cellular condensates show great promise in customizability and programmability in this respect. The goal of this research is to create condensate systems with DNA-based enzymes localized to specific layers in order to catalyze biochemical reactions. Fluorescent DNA nanostars were engineered, each featuring a 4-arm structure with varied arm lengths of 15, 20, or 25 base pairs and sticky ends at the terminus. Some DNA nanostars were designed with the sequence for a DNAzyme extended from Arm 4. DNA nanostars were annealed by heating to 95°C for 10 min and then slowly cooled at a rate of 1°C per minute (microscale) or in a 95°C water bath placed in a Styrofoam box overnight (macroscale). Formation of fluorescent DNA condensates with up to 50% DNAzyme attached to Arm 4 was confirmed through fluorescence microscopy, and a colorimetric peroxidation reaction was carried out on the functionalized DNA condensates. DNAzyme-catalyzed peroxidation was achieved on microscale and macroscale DNA condensates / 50% DNAzymes. Peroxidation was localized to a single layer of a 2-layer bulk condensate system, indicated by a color change in the layer containing DNAzyme, and optimization of this process is an ongoing area of research. Toehold-mediated strand displacement was used to turn off the DNAzyme-catalyzed reaction and thus achieve a programmability. Adding anti-strands prior to annealing disrupted the integrity of the DNA condensate, but it did not displace or unfold the DNAzyme and thus hinder its activity. Overall, significant progress toward localizing a biochemical redox reaction to a single layer of a 2-layer DNA condensate system was made, and strategies to turn off this reaction were tested, laying the groundwork for future experiments to achieve programmable DNA condensate systems.

Ophilia Salubi

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ophilia Salubi
#2 Anne Osano

Abstract Name: Influence of Various Drying Techniques on the Anti-nutrient Properties of Powdered Beetroot (Beta vulgaris) in Kenya.

Beetroot (Beta vulgaris) is a nutrient-dense root vegetable with numerous beneficial properties to the body. However, it may also contain anti-nutrients that can inhibit nutrient absorption. It is mostly consumed fresh because of its high perishability. Beetroot season typically spans from late March to April through to July after which the root vegetable becomes scarce. To resolve the seasonality problem beetroot can be converted into longer-lasting products in dried powdered form. This study investigated the effect of different drying procedures (sun, solar, and oven) on the anti-nutritional factors (oxalates, phytate, and nitrate) of powdered beetroot. Oxalates were extracted using HCl and their levels were subsequently determined through titration with potassium permanganate. Phytate and nitrate were determined using the UV spectrophotometric technique. All samples were analyzed in three replicates. Results obtained showed no significant difference in the nitrate content across the different drying methods (sun, oven, and solar). The different drying methods did not produce nitrate levels higher than 3.7 mg/kg, the maximum limit recommended by WHO for nitrate to act as a nutrient in the human body. Fresh beetroot had the lowest nitrate levels. There were no significant variations in the levels of oxalate with the highest level obtained in the fresh sample (0.296 mg/100g). Overall, drying increased the phytate content of beetroot with the highest level (0.086 mg/100g) attained with

solar drying. The results obtained in this study indicate that drying beetroot does not amplify the anti-nutrient factors in the vegetable powder, hence it is safe as a preservation method.

Komsun Samngamkeao

VA - Virginia Military Institute

Discipline: Mathematics and Computer Science

Authors:
#1 Denis Aliyev

Abstract Name: A Comparative Study of Data Visualization Tools

In data visualization, there exists a challenge to imagine any data's representations in more than three dimensions. However, real-world data often consists of several features, most likely higher than three. The purpose of this research is to explore higher dimensional datasets in the content of science and commerce, along with the utilization of visualization techniques used by practitioners. In particular, we use dendrograms produced by hierarchical clustering methods for the tree diagram. Additionally, we introduce a supplementary technique known as the Traveling Salesman Problem (TSP) to create temperature-based visual heatmaps of reordered dissimilarity matrices to produce visualizations of high dimensional data and analyze their ability to communicate the structure of the data in a clear and easy-understanding manner. The principal component analysis (PCA) and t-SNE are other optional methods to reduce the higher dimensional data to lower dimensional, facilitated using the "R" programming tool. These dimensional-reducing tools are reliable for datasets with several attributes. However, it is significant to recognize that they still can perform visualizations of each dataset while losing some information, but we experiment to minimize the missing detail of the data. The primary source of study takes away from the dissertation document focusing on seriation methodology. The dataset used in this study ranges from two to over sixty dimensions including both numerical and categorical types of data points with the label column. After the analysis, the expected result should provide a clear example of when and how each technique can appropriately apply to different dimensional datasets. The ability to convert computing numbers of the dataset into meaningful insight is what we anticipate in the performance evaluation.

Hayden Sampson

NY - Long Island University

Discipline: Interdisciplinary Studies

Authors:
#1 Hayden Sampson

Abstract Name: Perceptions & Policy: Views on U.S. Capital Punishment in Southeastern Europe

In the global conversation surrounding the death penalty, the perceptions of U.S. capital punishment echo far beyond its borders. As the world scrutinizes the human rights implications of this practice, a unique lens focuses on Southeastern Europe's views and the potential lessons it holds for U.S. policymakers. This transdisciplinary qualitative study challenges the common narrative of a "broken" criminal justice system and reframes it as an intentional form of structural violence, disproportionately impacting marginalized groups. Delving into the multifaceted perceptions of the U.S. death penalty among Southeastern European policymakers and legal officers, the study aims to provide tangible recommendations for U.S. policymakers engaging with capital punishment's human rights implications. Undertaken during a three-month internship

with the Regional Anti-Corruption Initiative from September to November 2023, this study combined participatory observation, interviews, and surveys to explore the pivotal themes of education, transparency, and cross-country knowledge exchange. This research yields significant findings illuminating the factors shaping these perceptions, underscoring the critical role of transparency, corruption, and the rule of law in the justice system. The study's findings not only complement the ongoing debate on capital punishment but also offer pragmatic and timely recommendations for U.S. policymakers. It advocates for a more equitable and just society by acknowledging the urgent need to address the complex issues surrounding capital punishment.

Cecelia Sanborn

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
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#3 Loralei Larson

Abstract Name: The Association between Working Memory and Psychopathy among Young Adults

The purpose of this study was to examine the relationship between psychopathy and working memory (WM) in non-institutionalized young adults. Previous research suggested that general psychopathology could meaningfully predict WM capacity (Hoppenbrouwers et. al., 2013). If these findings replicate over time, and additional third variables are factored out as non-significant predictors, it may suggest that inferior WM capacity may raise the risk for developing psychopathology. We hypothesized there would be a negative relationship between psychopathy and WM capacity and that sex would moderate this relationship.Sixty undergraduate students completed our study which was comprised of the following: a demographics questionnaire, the Triarchic Psychopathy Measure, and two common WM tests (i.e.,"Forward Digit Span" [FDS], "Backward Digit Span" [BDS]).We found that males had significantly lower WM scores as compared to females on both WM tests (FDS [p = .04), BDS [p = .05]). However, there was not a significant difference in psychopathy scores between males and females (p > .05). In testing our first hypothesis, we found a trend towards significance for the relationship between psychopathy and FDS scores (r[59] = -.391, p = .072), but no relationship between psychopathy and BDS scores (p >.05). Next, we tested whether sex moderated the relationship between psychopathy and WM (i.e., our second hypothesis). We identified a significant moderating effect of sex on the relationship between psychopathy and WM, measured by FDS scores (t[57] = -2.21, p =.03, CI.95bootstrapped [-0.49, 0.02]). That is, the associations were significant for males but not females.Our findings identified that higher levels of psychopathy in males are associated with lower WM capacity, replicating previous findings for institutionalized samples. This suggests that WM capacity is inversely correlated with psychopathy even among a population that scores lower than institutionalized samples on psychopathy measures.

Carlos Sanchez

PA - Lafayette College

Discipline: Interdisciplinary Studies

Authors:
#1 Carlos Sanchez

Abstract Name: The Effects of Chinese Foreign Direct Investment in Sub-Saharan Africa

Sub-Saharan Africa has become a focal point in the international community, as billions of dollars of foreign direct investment (FDI) flow into the region each year. China is one of the largest and most controversial investors in this part of the world, but how is Chinese FDI in Sub-Saharan Africa different from FDI from the rest of the world? To tackle this question, I conduct both an empirical analysis as well as country case studies. First I ask, does Chinese FDI have a different impact on GDP growth in Sub-Saharan African countries compared to FDI from the rest of the world? To answer this question, I use cross country regressions. Using Chinese FDI data into 48 Sub-Saharan African countries from 2003-2019 as well as controls, I analyze if Chinese FDI and FDI from the rest of the world has any significantly different impacts on GDP growth. This study uses panel regression analysis with fixed time and country effects. Results describe that a 1 percent increase in Chinese FDI into the region is associated with a 0.024 percent increase in GDP growth, 1.5 times the amount of GDP growth as FDI from the rest of the world. I then conduct case studies looking into Ethiopia, which receives some of the highest inflows of Chinese FDI into the region, and Senegal, which receives an average amount of inflows of Chinese FDI. Analysis of the policies these countries have with China as well as how the FDI flows into different sectors may shed light on this difference of effects in Sub-Saharan Africa. This study offers literature on FDI efficiency that may contribute towards policy decisions surrounding how FDI can be made more efficient in how it flows into Sub-Saharan Africa.

Apolos Sanchez

CA - Cuesta College

Discipline: Engineering and Architecture

Authors:
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Hari Rajah

Abstract Name: Additive Manufacturing for Lightweight Tube Design: Maximizing Length and Load Efficiency

This research initiative focuses on the application of additive manufacturing techniques to design lightweight tubes with an emphasis on maximizing both length and load efficiency. The project challenges participants to employ innovative approaches in material selection, structural design, and manufacturing processes to achieve tubes that are not only lightweight but also capable of efficiently bearing substantial loads over extended lengths. The competition encourages exploration of cutting-edge additive manufacturing technologies, including 3D printing, to realize intricate designs that balance structural integrity with reduced weight. Contestants are tasked with pushing the boundaries of traditional tube design, exploring new materials, and leveraging advanced manufacturing methods to optimize length and load-bearing capacities. Key evaluation criteria include the overall weight-to-length ratio, load-bearing efficiency, feasibility for production, and potential real-world applications. Participants will have access to state-of-the-art additive manufacturing technologies, fostering an environment of innovation, collaboration, and knowledge exchange. The significance of this research lies in its potential to revolutionize lightweight tube design for various applications, from aerospace to automotive industries. By maximizing both length and load efficiency, the project aims to contribute to advancements in additive manufacturing and provide sustainable solutions for industries requiring lightweight, high-performance tubes. Anticipated outcomes include groundbreaking tube designs that showcase the capabilities of additive manufacturing in optimizing length and load-bearing capabilities. Overall, this research represents a crucial step towards the development of lightweight structures with enhanced functionality and efficiency.

Lucero Sanchez

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Lucero Sanchez

Abstract Name: Queering Mobility: An Intersectional Analysis of the Experiences of (Im)mobility of LGBTQIA+ International Students in Los Angeles

Literature on LGBTQIA+ international students pursuing higher education in the U.S. has highlighted that, although studying abroad presents an opportunity for their sexual and gender identity development, they are still subjected to discrimination on their college campuses. In this research, Crenshaw's framework of intersectionality has been crucial in analyzing how their overlapping identities shape their experiences of discrimination. However, there is a research gap in understanding their experiences outside their campuses. This study explores the experiences of mobility of LGBTQIA+ international students in Los Angeles. Specifically, how their identities shape their physical movement through the urban area, especially the queer spaces within it. By using flyers and snowball sampling, this study conducted interviews and cartographic exercises with 3 UCLA international students who self-identify as LGBTQIA+. The study showed that students' international status, country of origin, class, gender, race, and sexuality intersect to impact their forms and experiences of mobility in Los Angeles. First, it demonstrated that their predominant forms of mobility, public transport and walking, limit their physical exploration of Los Angeles. In addition, negative experiences of discrimination and harassment led to their limited mobility, and even immobility. Second, this study also demonstrated that although Los Angeles was initially perceived as an opportunity for sexual and gender identity development, experiences of discrimination in "formal" queer spaces, such as gayborhoods and university organizations, have led to their limited participation in them. Instead, international students engage in the informal "queering of space" for the safe expression of their multiple identities. In this way, this study explored how the intersectional identities of queer international students impact their experiences in their host urban areas, to be used as a source for the creation of university programs and services that support these students' diverse needs.

Erin Sanchez

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Erin Sanchez

Abstract Name: After-Death Communication: Alleviating Death Anxiety and Facilitating Mourning

This paper investigates the role of after-death communication (ADC) in the mourning process, integrating diverse cultural and psychological perspectives. It explores spontaneous contacts with deceased individuals, which vary in form from physical to ethereal, and how these contribute to coping with loss. This study examines key concepts such as death anxiety and the formation of continued bonds with the deceased while underscoring cultural variations in these experiences. Utilizing a thorough review of literature, including cultural and psychological studies, this research paper highlights contrasting cultural views on ADC. It notes that some cultures, like the Kagwahiv and Cambodian, discourage continued bonds and maintain strong taboos against ADC. Findings reveal that ADC significantly reduces death anxiety and often enhances belief in an afterlife, offering comfort beyond religious or spiritual contexts. ADC is identified as a conduit linking religion, spirituality, and culture, aiding in forming continued bonds and lessening death anxiety. The conclusion underscores ADC's universal relevance in processing death, transcending cultural and religious

barriers. This study advocates for personal interpretations of death and the use of continued bonds to avoid complex grief. It suggests that ADC, as a form of continued bond, not only diminishes death anxiety but also supports a healthy mourning process, preventing complex grief. This paper calls for an open-minded approach toward death and mourning, recognizing ADC as a natural and beneficial aspect of the human experience with death.

Natalie Sanchez

WI - Alverno College

Discipline: Natural and Physical Sciences

Authors:
#1 Natalie Sanchez
#2 Alex Blom

Abstract Name: Assessing the Efficacy of Different Methods in Chloride and Copper Testing

Road salts used in Milwaukee during the winter to melt ice are considered a threat to local waterways. Therefore, Alverno College has been monitoring the concentration of chloride ions in three different parks along the Kinnickinnic river and sharing this information with Milwaukee River Keepers to monitor Milwaukee water quality. Additionally, copper was monitored as it can affect local fish life at concentrations higher than 0.20 mg/l. Formerly, chloride was studied using silver nitrate titrations which create significant amounts of hazardous waste. As such, an ion selective electrode was used and the results using both methods were compared. In order to test for copper concentrations, the method of atomic absorption spectroscopy was used. The findings show that ISE could potentially be the new method to test for chloride ions in future research. Copper concentrations were found to be higher than the recommended amount which is something to consider to start monitoring further.

Nathan Sanchez

IN - DePauw University

Discipline: Mathematics and Computer Science

Authors:
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Abstract Name: Design and Implementation of Kawaii (Cute) Companion Robots by a Cross-cultural Team

As robots are increasingly used to help people across the globe, it is important to design these devices to curate positive experiences for a broad range of people. For example, among student populations, who are susceptible to high levels of stress and anxiety, mental health has become a significant concern in countries including the United States and Japan. This presents the opportunity to design robots with the intent of fostering companionship, which may help with mental health. We present a collaborative effort between Japanese and American university students, funded with a National Science Foundation Grant, to design and

implement Kawaii (Japanese cuteness) companion robots through in-person collaboration. The long-term objective is to investigate whether the perceived cuteness of these robots contributes to increased user satisfaction across cultures. Over seven weeks, we researched the Japanese concept of Kawaii and its application in design. During this time we also designed Kawaii and non-Kawaii virtual companion robots and evaluated the initial designs, including analyzing the design team's response to the designs using electroencephalograms (EEGs) and heart-rate variability sensors. Utilizing these results, we revised the initial designs and then implemented them using Blender, a 3D Printer, and an Arduino-controlled Zumo robot. The robots were designed to have "Kawaii" and "non-Kawaii" attributes through visual, auditory, and mobile design elements. Therefore, some robots were more "Kawaii" than other robots due to variations in the design. Through designing, implementing, and evaluating user-response to "Kawaii" companion robots, we gained a deeper understanding of Japanese culture and cross-cultural collaboration. We will present our cross-cultural design process, the robots we designed, and data that shows how college students responded to the various designs through follow-up surveys.

Dafnhee Sanchez Perez

AZ - Northern Arizona University

Discipline: Health and Human Services

Authors:
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Kyra Slim

Abstract Name: Foot-Care Initiative

Project PurposeThe purpose of this project was to increase awareness among the unsheltered community on foot health since this is an issue that is prevalent within the community. Our goal was to provide essential information regarding foot care and foot hygiene products to our unhoused neighbors in Flagstaff. BackgroundUnsheltered individuals are forced to commute mainly by foot, walking between 10 to 15 miles daily and sometimes even more. People experiencing homelessness are up to 65% more likely to develop foot-related injuries including infections and cold-related injuries like frostbite. This is due mainly to constant exposure to the elements, specifically cold and wet weather, and a lack of access to hygienic resources such as dry, warm clothes and foot care products.MethodsWe collaborated with the Community Assistance teams of Flagstaff (CATs) to work on their mobile hygiene bus to provide foot hygiene products to unsheltered people with limited access to improve foot conditions. We developed, assembled, and distributed informational material, such as wound care and exercise cards, and hygiene care kits containing foot care materials. We measured baseline awareness of foot hygiene among the target population with pre-surveys. Post-surveys were given to bus workers to assess whether foot hygiene awareness increased among the target population.ConclusionPre-survey data detailed that only 12.5% of unsheltered individuals surveyed had received foot hygiene kits in the past and only 18% of those surveyed had received any foot care information. Following our intervention, foot hygiene awareness among program recipients increased by 100% demonstrating program effectiveness.

Anngelly Nathalia Sánchez Ramón

COL - Universidad de Pamplona

Discipline: Education

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Elibeth Yeraldin Oviedo Contreras

Abstract Name: Exploring the Influence of Simultaneously Learning Two Foreign Languages on Preservice Teachers' Identities: A Narrative Study

This narrative research aims to describe the relationship between concurrent learning English and French as foreign languages and its impact on the identities of two fifth-year preservice teachers at a foreign language undergraduate program at a Colombian public university. Rooted in the constructivist paradigm, this study attempt to understand and describe the intricate layers of identity construction within this unique educational context. It seeks elucidate how the participants interpret their realities while navigating the dual path of obtaining linguistic proficiency and learning pedagogical abilities. To delve into the participants' narratives, storytelling is used to clarify their experiences and interpretations of the influence of learning to foreign languages and the pedagogical aspects associated with learning how to teach under professional identities. The purpose of this study is to explore the perception of identity throughout the preservice teachers' educational journey. Data was collected through classroom observations, reflective journals, a language portrait silhouette instrument, and semi structured interviews. The presentation showcases preliminary findings through a thematic chronological narrative, encompassing personal, social, and educational settings. It unveils experiences related to learning and teaching foreign languages, shedding light on their identity re/shaping process. Among the findings this presentation highlights the transformation of participants from introvert to extrovert and leader behaviors, the influence of foreign language teaching training on self-perceptions, and the revelation that while personal perception and core identity remain unchanged, new emerging facets compliment and strengthen the core identity. Acknowledging potential limitations arising from the reduce sample size and the inherit subjectivity and individual stories, the study underscores the necessity of investigating identity development in the context of foreign language preservice teachers.

Dominic Sandell

FL - Embry - Riddle Aeronautical University

Discipline: Health and Human Services

Authors:
#1 Dominic Sandell

Abstract Name: Relationship identification between triggers and changes in the brain and the overall human electrophysiology during migraines

Migraines are neurological conditions that affect a major portion of the world, and occur more frequently in women while a decent portion do occur in men. This research aims to reinforce that migraines have environmental triggers, establish that migraines cause changes in the brain's electronics and the body's overall electrophysiology, and define the relationship between the changes and the triggers. The hypothesis is that there is a relationship between environmental triggers and specific electrophysiological changes in the brain and the overall human electrophysiology. The population will be the young adults of Embry-Riddle Aeronautical University, and the sample size will be determined using the aforementioned gender split between female and male as well as the Sample Size for Known Population equation. Several general health, neurological, and psychological factors will be taken into consideration when making the selection of the samples, including but not limited to, the level of fitness, daily habits, sex assigned at birth, current identity of sex, age, past treatments, other diagnosis, and more. Throughout the study, the participants will fill out several surveys about their daily habits, any migraine episodes, and any possible triggers. Additionally, the participants will undergo several tests with an Electroencephalogram (EEG), Electrocardiogram (ECG),

Galvanic Skin Response GSR, and pulsometer to accurately record their electrophysiology, then they may undergo the same test during a migraine so that differences in their electrophysiology can be noted. These changes will then be correlated to their triggers, and the research team will determine if there are patterns between the corresponding changes and triggers across several different participants.

Elianna Sandman

MI - Hope College

Discipline: Natural and Physical Sciences

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Abstract Name: Chemical Defenses in the Seeds of Pioneer Plants

The seeds of pioneer plants are known for their prolonged survivability in the soil seed bank until there is a transition from low light to high light intensity that triggers their germination. The persistence of these seeds suggests that they possess forms of chemical defense against microbial pathogens. Isolating and identifying compounds with antimicrobial activity informs drug discovery efforts. It also helps to understand the role of pioneer plants in the ecosystems in which they are found. Phytolacca rivinoides, a pioneer plant common in the Costa Rican rainforest, is related to the American pioneer plant, Phytolacca americana. Extracts from the seeds of both species show antifungal activity. This research seeks to identify the compounds responsible for chemical defense against fungi in the seeds of these two pioneer plants. With greater access to seeds from Phytolacca americana, our research efforts focus on this species. Methanolic extraction is used to isolate compounds of interest from the seeds. Preparative HPLC is used to separate the components. 1H-NMR, 13C-NMR, and LC/MS are used to determine the structure of the unknown components. To date, the regioisomers Americanin A and Isoamericanin have been separated and identified from the seed mixture using these methods. The anti-fungal properties of these and additional isolated compounds will be analyzed using bioassays. The results from this study will then be extended to identify the antifungal components of P. americana's Costa Rican counterpart, Phytolacca rivinoides, to analyze the commonalities in chemical defense between the two pioneer plants, and to understand the role of pioneer plants in the rainforest ecosystem.

Cesar Sandoval

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
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#4 Jayden Ramirez De Arellano

Abstract Name: Income, Education, and Fear: Investigating Socioeconomic Status and Percieved Threat of AI

As artificial intelligence (AI) technologies continue to rapidly evolve and display capabilities across several different industries, potential fears and negative perceptions of job displacement among some non-specialized positions and concerns of use in daily life arise (Dodel, 2019). These sentiments, which have long paralleled technological advancement in the automation of service and labor industries, returns to the forefront for many individuals who may foresee themselves interacting with AI technologies they may not be familiar with in the near future (McClure, 2017). Research of these kinds of human-AI interactions and the concerns held by individuals could possibly influence a host of areas pertaining to the development and implementation of AI for future consumers, especially for individuals reluctant towards use of the technology due to fear (Nimrod, 2021). Further in regards to economic effectiveness, research findings may be applied to current and future employee perceptions of job quality and security (Kortman et al., 2021). Understanding these interactions may also prove useful for addressing the possible stresses and health effects associated with significant changes to economic and cultural factors (Pankaj, 2018; Shoss, 2022). This study investigates the relationship between the socioeconomic status of an individual and their perception of the capabilities of AI as a possible threat to society, specifically whether low socioeconomic status predicts AI as more threatening. The data for this study will be sampled from the general US population through a panel service and ANOVA tests of group differences will be employed to determine whether different socioeconomic groups perceive AI differently. The findings of this study will be used in determining the effect to which these fears are held, who they are held by, and whether future research into this niche area may be worthwhile.

Niranjana sankar

CA - University of California - Berkeley

Discipline: Mathematics and Computer Science

Authors:
#1 Niranjana sankar

Abstract Name: A Multi-Modal Machine Learning System to Determine Fatality Information and Infrastructure Damage after Natural Disasters

Earthquakes and natural disasters have become frequent and severe due to climate change, demanding efficient and rapid emergency response. Traditionally, governments use systems such as PAGER to estimate an earthquake's destruction. However, it requires manual retrieval of official reports which suffer from time delays and bias. Recently, social media such as Twitter have become hotspots for reporting and communication during disasters, producing large volumes of information. This study designs a multi-modal machine learning system to automatically extract real-time multi-lingual data from social media to numerically quantify fatalities and infrastructure damage after a disaster. For text classification, the method uses a 2-model approach with fine-tuned XLM-RoBERTa models and leverages the few-shot learning abilities of GPT-J to extract the number of deaths, injuries, and locations. For image classification, the method uses a 2-model approach and transfer learning with InceptionV3 to categorize images by type of infrastructure and damage severity. The models are trained on images and text collected from CrisisMMD, CrisisNLP, and web scraping. Images were categorized into bridges, buildings, and roads via data-labeling platforms. The XLM-RoBERTa models achieved an accuracy of 96% and 94% and InceptionV3 achieved accuracies of 93% and 89%. The system was evaluated and deployed on social media and news data from earthquakes in Haiti (2021) and the Philippines (2022). Using timestamps of social media data, the system created graphs of the death tolls and infrastructure damage over time, yielding promising results and reliable information for deploying the method in real time to ensure a rapid and efficient emergency response. `

Denise Santa Rosa

CA - California State University - Channel Islands

Discipline: Social Sciences

Authors:
#1 Denise Santa Rosa

Abstract Name: Examining the Brand Identity of the Oxnard Performing Arts Center: Supporting Non-Profit Organizations in a Competitive Market

Brand identity can help differentiate non-profit organizations in a competitive market where non-profit organizations have been growing exponentially, creating scarce levels of engagement, volunteers, and charitable giving. The present study aimed to evaluate the Oxnard Performing Arts Center's (OPAC) brand identity through community members' awareness of this non-profit organization and ratings of the activities it hosts. Through an extensive review of the psychometric properties of existing brand identity measures, there was a total of 8 different measures utilized in the survey with domains emphasizing themes such as usefulness, brand commitment, and likeability. There was 111 participants. An independent samples t-test was conducted to assess potential differences among racial/ethnic groups and types of OPAC events. Compared with other racial/ethnic groups, Hispanic, Latinx, and/or Chicanx participants reported significantly higher likeability ratings whereas Black/African American participants reported significantly lower brand association ratings. Additionally, participants who strongly associated OPAC with visual and performing arts had significantly higher usefulness ratings, higher affect ratings, and higher sincerity ratings than those who associated OPAC with other events. An ANOVA test was also employed to examine whether the likeability scores differ based on how people perceive OPAC's status (i.e., non-profit, for-profit, run by the city of Oxnard, two or more options selected), which resulted in a significant macro-level effect. Post-hoc tests showed that those who believed OPAC is non-profit had significantly higher likeability scores than those who believed that it's a for-profit organization. Also, those who made two or more selections had significantly higher likeability scores than those who believed OPAC is a for-profit organization. It is recommended that OPAC host more events that cater to the Black/African American community (e.g., Juneteenth celebrations), increase/promote OPAC's visual and performing arts events, and highlight OPAC's non-profit status in their logos and informational booths.

Pat Santalices Torres

PRI - University of Puerto Rico

Discipline: Interdisciplinary Studies

Authors:
#1 Pat Santalices Torres

Abstract Name: The Colonial Dilemma: Hispanismos in post-Americanization Puerto Rican Literature, Culture, and Politics from 1930 to 1960

The Americanization period of Puerto Rico, which intended to indoctrinate the Island towards mainstream American culture, created a politically charged identity complex amongst major cultural leaders. Transitioning from a Spaniard colonial regime from 1492 to 1898 to an American colonial domination from 1898 to the present day, Puerto Ricans have continuously struggled to define a national identity outside colonial boundaries. After the Americanization period ended, many literary figures began to attach to the past Spaniard regime as a way to differentiate themselves from an American colonial discourse. Such inverted dynamic provided a framework for literary studies to understand the peculiar development of themes in Puerto Rican literature after the arrival of the United States, focusing on topics like La Gran Familia Puertoriqueña. Although past scholarship has exhaustively addressed the influence of this inversion in cultural production, little to none have addressed how such inversion laid the groundwork for 'whitening' ideologies within post-Americanization Puerto Rican cultural nation-building. Through a literary analysis of

compositions by Emilio Belaval, José de Diego, and Luis Llorens Torres, alongside a brief sociohistorical analysis, I pinpoint discriminatory politics amongst decolonial national discourses in Puerto Rico rooted on the premise that Puerto Ricans are strictly European-descent subjects. These literary figures supported a racially homogenizing, patriarchal Puerto Rican identity as a decolonial attempt. I specifically identify hispanismos, which I categorize as an unbending devotion through figurative language to Spaniard identities that disregards African, Native, and diasporic Puerto Rican communities. The results obtained guide the forthcoming scholarship to examine the influence of such exclusions in the nationalist portrayal of Puerto Rican identity.

Nevyn Santillan

CA - Biola University

Discipline: Health and Human Services

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Abstract Name: Assessing Long-Term Social Consequences in Adult Zebrafish Embryonically Exposed to Ethanol

Zebrafish (Danio rerio) have been frequently used in neurobehavioral research, demonstrating how social behavior and brain development may be affected by prenatal alcohol exposure. Fetal alcohol syndrome (FAS) is the extreme form of fetal alcohol spectrum disorder (FASD) as a result of alcohol consumption during pregnancy, resulting in known birth defects and developmental disabilities. Zebrafish remain an ideal model organism for understanding alcohol-induced neurobehavioral disorders manifested in FAS because of their low cost, small size, and prominent external development. They share a highly conserved nervous system and 70% of orthologous genes with humans, making developmental and behavioral studies comparable. Complex social behaviors such as shoaling allow for observation of social function due to ethanol (EtOH) exposure. Male (n=20) and female (n=20) Tg(ETvmat2:GFP) zebrafish were exposed to 1% EtOH at 4 hours post-fertilization (4hpf) and tested for shoaling preference. EtOH or Ctrl treatments were followed by a 3-chamber open swim preference tank, recorded and analyzed live using digital video cameras and the Ethovision tracking software, which produced heat maps for analysis of swimming patterns. Results showed that both untreated control zebrafish and EtOH-treated zebrafish preferred to swim near the shoal side of the tank. Zebrafish treated with EtOH generally shoaled vertically, while the control generally shoaled horizontally. Future studies will be conducted to increase the sample size of both control and EtOH-treated fish and observe if the incorporation of a previously established or newly introduced shoal influences results.

Edwin Santos

DC - American University

Discipline: Social Sciences

Authors:
#1 Edwin Santos
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Jerremy Acaba

Abstract Name: Latino Growth in Woodbridge, Virginia: The Possible Implications for U.S. Politics

A case study, “Immigrants, Politics, and Local Response in Suburban Washington,” explains how Prince William County’s (PWC) population rapidly increased between 2000 and 2006 (Brooke, Audrey & Jill 2009). Beyond the population of PWC tripling in just a few years, it has been known as one of the nation’s top counties for Latino growth (Brooke, Audrey & Jill 2009). Within Prince William County is Woodbridge, a suburban area of nearly 45,000 residents (Brooke, Audrey & Jill 2009). When looking at the Census data of Woodbridge from 2000 to 2020, with the demographic changes alone, it can be inferred there has been and will continue to be a change in Latinos' influence in the area. This project analyzes socio-demographic and economic changes in the Latino community in Woodbridge, Virginia. The research summarizes the literature on Latinos in U.S. politics and society and looks at the changes in Woodbridge to seek possible implications from such changes. Applying many research findings to the socio-demographic and economic characteristics of Latinos in Woodbridge, we identify ways such changes affect their’ political power and influence, mobilization and targeting by elites, and political participation in the area. This research is crucial, considering the growth of the Latino community in the United States. More than ever, Latino engagement can play an essential role in shaping society. In 2019, there were 60.6 million Hispanics in the U.S. Last year, the Census Bureau estimated that Hispanics make up 19% of the U.S. population. The findings from this research will motivate activists and groups to seek ways in which more engagement can be encouraged, ensuring our policies and leaders are representative of society. By looking into the possible effects of Latino growth in one specific neighborhood, we can see what to expect on an at-large level as similar changes emerge nationally.

Cailey Sapienza

MA - Babson College

Discipline: Interdisciplinary Studies

Authors:
#1 Cailey Sapienza

Abstract Name: Lemons, Mining, and the Sicillian Economy: Arguments for the Origins of the Mafia

This paper investigates the origins of the Sicilian mafia during Italian unification (1848 - 1871). By exploring how trade during this time boosted the economy after the fall of feudalism (1817), I will use historical scholarship and primary sources to study the mafia as a business. More specifically, I will focus on how the citrus trade in individual Sicilian ports led to the mafia’s creation through the societal need for private protection and money management. I will also analyze how Sicilian sulfur exportation provided the necessary capital for the mafia to form a lasting legacy. My paper aims to show that the mafia was created as an economic enterprise subsidized through the citrus and sulfur trades. The reasons for the mafia’s continued success will be revealed through a historical and business analysis of the mafia’s establishment.

Sonya Sar

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Sonya Sar
#2 Sharon Mathew

Abstract Name: An Investigation of DBD Plasma-Water Interaction Applicable to Wound Healing

In this study, the plasma-water interaction phenomenon was investigated. Non-equilibrium DBD plasma can be used for wound healing and sterilization to help millions of patients. However, the interaction of plasma with the wound is complicated and requires more understanding. When it interacts with water, plasma radicals react with water molecules. Plasma jets contain reactive oxygen and nitrogen species (RONS) as they entrain atmospheric air ejected out of the plasma torch. This study investigated what happens to water as RONS interact with it. A DBD plasma torch was operated at 10-12kV/30-40kHz on argon at 10SLPM to produce a plasma jet of about 20-30mm long. Input power was measured using two 1000:1 voltage probes and was found to be between 10mW and 20mW, depending on the operating conditions. The first set of experiments investigated the impact of plasma on DI water. The plasma exit was kept 30 mm above the surface of water, which was in a beaker placed on a lab jack. For 30 minutes of plasma exposure, there was a 54% decrease in pH value towards the acidic side. In addition, we are planning to analyze the various radicals that may appear as a result of plasma-water interaction. These include OH, O3, H2O2, NO3-, and NO2-. The analysis of radicals required a calibration curve that can be used to depict the concentration of each RONS at different wavelengths in the UV-VIS spectrum. A standard set of data must be determined for each radical by measuring absorbance at varying concentrations. In this work, we will present our calibration curve. Absorption spectroscopy was conducted to identify the absorbance of the radicals at each concentration. Preliminary results are obtained and are being reconfirmed. Full results will be presented at the conference.

Jatin Sarabu

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Jatin Sarabu
#2 Ruthvik Singireddy
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Ruthvik Singireddy

Abstract Name: Machine Learning Approaches for Predictive Modeling of RNA Structures and Chemical Reactivity Profiles

The RNA polymer is an essential molecule for gene expression performing various biological functions. Folding of RNA on itself creates the secondary structure of RNA. The structural motifs of the secondary structure of RNA are important for gene transcription, translation, and splicing. Consequently, understanding the secondary structures will not only allow us to understand the role of RNA in diseases but also it will aid in the identification of potential therapeutic targets. Although predicting RNA structures remains challenging due to limited data and computational constraints, Machine learning, such as neural network models with its ability to be trained on large datasets, has emerged as a powerful tool in molecular biology with the ability to accurately predict RNA secondary structure. These models are more predictive than traditional bioinformatics methods, allowing for more accurate and detailed predictions of RNA folding. In the current

study, the data was taken from Kaggle that incorporated multiple variables from 1,118,5113 RNA sequences. The Jupyter notebook was employed to develop a machine learning model that used a Convolutional Neural Network (CNN) for this study. Traditionally, CNNs are a deep learning model primarily used for image processing tasks. It consists of convolutional layers that apply filters to input, pooling layers that reduce dimensionality, and fully connected layers that perform classification or regression tasks. In summary, the model uses the Adam optimizer with a learning rate of 1e-3, and the Mean Squared Error loss function. In the current work, the Convolutional Neural Network showcases notable efficacy, achieving a mean absolute error of 0.28. Its thoughtfully crafted architecture, encompassing 9 layers, incorporates key components such as dropout layers to mitigate overfitting. With a focus on image processing tasks, the model emerges as a potent tool for scientists across diverse domains, exemplifying robust performance and meticulous optimization.

Aishwaryalakshmi Saravanan

CA - Aspiring Scholars Directed Research Program

Discipline: Natural and Physical Sciences

Authors:
#1 Aishwaryalakshmi Saravanan
#2 Gargi Sharma
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Gargi Sharma
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Abstract Name: Analogs of Irbesartan as GDP-Bound K-RAS Inhibitors for Targeted Cancer Therapy

KRAS (Kirsten Rat Sarcoma Virus) is a proto-oncogene involved in cell proliferation and division. It is mutated in approximately one-fourth of all cancerous tumors. We aimed to block GDP-bound KRAS' function, which is the inactivated version of the protein, which may help prevent malignant transformation in precancerous states. We tested the binding affinity of various small molecules using UCSF Chimera and Autodock Vina. We hypothesized that the addition of electron acceptors to the molecules would increase hydrogen bonds, thereby increasing thermodynamic favorability. We formed this hypothesis after docking several small molecules to GDP-bound KRAS and noticing that molecules with favorable free-energy binding affinities usually formed more hydrogen bonds with amino acid residues. Most of the small molecules that we tested were Benzimidazole derivatives; certain derivatives, such as methiazole and fenbendazole, have been found to inhibit KRAS-mutant cells. Given the mortality benefit seen with some benzimidazole derivatives, such as the Angiotensin II receptor blockers, we also investigated if one such drug, Irbesartan, and its analogs had a strong affinity for KRAS. Herein, we report a novel modification to Irbesartan that resulted in an increase in silico binding affinity for KRAS.

Emily Sargeant

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 E Paige Sargeant
#2 Jack Schmidt

Abstract Name: Potential for Native Species in Grand Canyon's Novel Riparian Forests

Water releases used to optimize hydropower production from Glen Canyon Dam have increased baseflow in Grand Canyon which allowed invasive tamarisk tree (Tamarix spp.) to establish on its historically barren sandbars, introducing a completely new ecosystem to one of the most well known stretches of the Colorado River. This new forest provided many benefits to wildlife, especially for endangered migratory birds. In 2001, tamarisk beetles (Diorhabda carinulata) were introduced to the United States in an attempt to quell the widespread tamarisk invasion and unexpectedly expanded into Grand Canyon by 2009. Since then, the canyon's tamarisk canopies have experienced almost a 30% reduction that is likely to continue, negating the new benefits to wildlife. While the situation introduces a large risk that this novel ecosystem will collapse, it also provides an opportunity to reshape Grand Canyon's new riparian forest as a novel, but native-centered, ecosystem. The Fremont Cottonwood (Populus fremontii), a keystone native riparian tree, is unique in the magnitude and variety of benefits that it provides to humans, wildlife, and river form. The tree's reproduction depends heavily on its seeds being transported downstream by large spring floods. These floods only occur during high flow experiments (HFE's) that are synced with large sand influxes from the Paria River, a tributary, to rebuild sandbars used by rafters for campsites. Here, we use USGS water elevation data and a literature review of regional cottonwood characteristics to explore how strategic adjustments to HFE designs can potentially promote cottonwood germination in Grand Canyon, continuing the benefits to local wildlife and migratory species while transitioning to a riparian forest that is resistant to damages from the tamarisk beetle.

Amy Sariles

CA - California State University - Northridge

Discipline: Natural and Physical Sciences

Authors:
#1 Amy Sariles
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#3 Melissa Takahashi
Nikita Opel

Abstract Name: Using a Genetic Circuit to Understand the Antibiotic Resistance Mechanism of small RNA MicF

Antibiotic resistance has been an increasing issue in treating bacterial infections. Small RNAs (sRNAs) can quickly regulate various biosynthetic pathways within bacteria based on changes in their environment. Our research focus lies with the sRNA MicF, and its contribution to configuring antibiotic resistance in Escherichia coli. In the presence of antibiotics, E. coli produces MicF as a stress response. MicF then decreases the expression of the outer membrane protein OmpF, preventing the passage of antibiotics into the cell. The objective of this project is to understand how sRNAs, like MicF, influence antibiotic resistance in E. coli by accurately detecting concentration changes when exposed to different environmental conditions. To accomplish this, we constructed a synthetic gene circuit that detects MicF. The proposed circuit is composed of three parts: MicF sensing, amplification, and detection. The circuit components are encoded on plasmids, which are then inserted and expressed in E. coli. Direct complementary binding of MicF to the sensing component of the circuit causes downstream events that lead to the expression of the reporter gene, green fluorescent protein (GFP). GFP is produced in the presence of MicF whereas in the absence of MicF, the opposite is true. Circuit function is assessed based on fluorescence and optical density readings of the cells. After testing different combinations of the MicF sensing and amplification portion, we identified two that expressed GFP in the presence of MicF with high dynamic range. We performed a quantitative analysis of the detection of MicF by testing two circuits with different concentrations of MicF to determine their sensitivity. Our next step involves incorporating the amplification component of the circuit to further increase the circuit sensitivity. With increased sensitivity in detecting MicF, the circuit will allow us to investigate various environmental triggers of MicF and their influence on the antibiotic resistance mechanism.

Katie Sartori

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Katie Sartori
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Abstract Name: When Racial Attitudes Take Flight: Passenger Perceptions of Airline Employees

This study investigates racial and status-based attitudes among airline passengers towards Black and White male pilots and flight attendants. Drawing on a sample of participants (N = 162), the study employs an Evaluative Priming task and uses a video for participants to rate competence and warmth. Results indicate that participants harbor more negative implicit attitudes towards Black flight attendants compared to their White counterparts, with Black pilots also facing a significant bias. Surprisingly, the study reveals a nuanced impact, as warmth perceptions are affected by race condition, but not status condition. The findings underscore the persistent racial biases within the airline industry, emphasizing the need for targeted interventions to address these biases and promote inclusivity. This research contributes to understanding implicit attitudes in a specific occupational context, shedding light on potential areas for intervention and fostering a more equitable workplace environment.

Emma Saurini

CO - Regis University

Discipline: Natural and Physical Sciences

Authors:
#1 Julianne Pelletier
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Abstract Name: Sex differences in the ability of exercise to attenuate methamphetamine-induced monoaminergic neurotoxicity

Methamphetamine (METH) use is a major public health concern. Upwards of 14.7 million people in the U.S. report having tried METH. The use of METH is highly problematic due to the acute effects of the drug, including psychosis and aggressive behavior, as well as the long-term consequences including neurotoxicity, cognitive deficits, and addiction. One well-known rodent model of METH use utilizes binge administration, resulting in long-lasting damage to monoaminergic nerve terminals. Notably, individuals who use METH are more likely to develop Parkinson's disease, suggesting dopamine loss as a consequence of METH use. Exercise is well known for its beneficial physiological effects and cognition-enhancing properties and has been investigated in the context of neurodegenerative disease. While METH-induced neurotoxicity has been modeled in many species, these studies have largely excluded female subjects. Here we examined sex differences in the ability of exercise to attenuate METH-induced neurotoxicity. Male and female Sprague Dawley rats were dosed with comparable neurotoxic regimens of (+)-METH-HCl or saline. Beginning 1, 7, or 30 days after injections, animals were then subdivided into one of two exercise conditions, voluntary exercise or sedentary control. In males, at all three delay time points, 3 weeks of voluntary running after a METH binge protected against METH-induced dopaminergic neurotoxicity. Surprisingly, females showed no such beneficial effect of exercise demonstrating critical sex differences in the ability for exercise to attenuate METH-induced neurotoxicity, as evidenced by variability in degree of damage to dopaminergic nerve terminals. These results highlight the necessity of including sex as a biological variable in methamphetamine neurotoxicity studies going forward.

Luke Sauser

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Angela Knight
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#4 Dr. Beena Ajmera

Abstract Name: Effect of Void Ratio on Slopes Subjected to Post-Earthquake Rainfall

It is known that slopes that have undergone an earthquake may fail if subsequently subjected to rainfall.

Previous studies have found correlations between the rate of the infiltration of the water and both the intensity of the rainfall and the density of the slope materials. In this study, the effect of varying void ratio in soil subjected to an earthquake and then rainfall was studied to quantify the relationship between void ratio and seepage velocity. Four numerical models with void ratios between 0.89-1.2 were built in GeoStudio 2023 and subjected rainfall after an earthquake. All of these models were subjected to the same earthquake loading conditions. The seepage velocity was found to depend on the location at which it was measured and the void ratio of the slope material. Specifically, as the void ratio increased, the seepage velocity was seen to increase. The seepage velocity was typically higher within the inclined portion of the slope than at the head (top) of the slope mass. Finally, the seepage velocity decreased as the depth from the ground surface to the point of measurement increased.

Luke Sauser

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
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#2 Angela White
#3 Rupsa Roy

Abstract Name: The Effect of Post-Earthquake Rainfall on Slope Stability and Deformation

It is known that intense, and prolonged rainfall increases the chances of a landslide; and although there have been studies done on landslides caused by post-earthquake rainfall, few studies have specifically analyzed how the amount of rainfall directly affects a slope. By analyzing the numerical correlation between post-earthquake rainfall on slope stability and deformation, the ability to predict landslide risk from rainfall will increase. This study looks at how varying rainfall intensities affect slope stability and deformation by analyzing seepage velocity, soil swell, and the slope's factor of safety. The slope geometry and soil properties for the finite element model were based on calibrated numerical models. The model was subject to horizontal sinusoidal motion with a frequency of 3 Hz and a peak ground acceleration of 0.1g. The models were subjected to rainfall intensities ranging from 0.50 – 8.00 cm per hour. As rainfall intensity increased the seepage velocity throughout the entire slope increased. However, the seepage velocity was not uniform. For all rainfall intensities, the seepage velocity decreased as the water went deeper into the slope. This result indicates the densification of the soil as depth increases. Similarly, as rainfall increases soil displacement at the head of slope increases. The combination of increased soil swell at the head of the slope and the low density of soil near the surface indicates that an increase in rainfall intensity directly decreases the slope's stability.

Emma Sautman

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Emma Sautman
#2 HaoSheng Sun

Abstract Name: The Role of Nuclear Hormone Receptor daf-12 in C. elegan Post-Embryonic Neuronal Development

While significant advances have been made regarding the process of neuronal development during embryonic stages, there is a gap in knowledge pertaining to the mechanisms that control post-embryonic neural development and maturation. Preliminary evidence suggests that vitamin D and its cognate vitamin D receptor (VDR) play important roles in these areas. VDR serves as an interesting candidate to examine as it responds to environmental stimuli by binding to nutritionally derived ligands, while its regulation is also under tight control by intrinsic genetic regulatory pathways. This project aimed to identify the mechanism by which VDR controls post-embryonic neuronal development and maturation. To examine this relationship, the temporal expression pattern of daf-12, a homolog of the VDR in C. elegans, was examined to single neuron resolution in the C. elegans post-embryonic nervous system using a GFP-tagged expression reporter, generated using CRISPR-Cas9. This showed that daf-12 was most highly expressed pan neuronally in the second and third larval stage, with the highest expression being seen in ciliated sensory neurons throughout life. Once these critical stages were established, the locomotory behavior of worms carrying the wild-type daf-12 gene were compared to that of daf-12 mutant worms. With movement being closely tied to neuronal development, the observed juvenile behavior in daf-12 mutant worms support daf-12 being involved in the regulation of neuronal maturation. More broadly, the preliminary data gathered in this project aims to advance our understanding of neuronal development and how dysregulation of gene-environment interactions can contribute to neurodevelopmental disorders such as intellectual disabilities or autism spectrum disorder.

Delia Savin

GA - Emory University

Discipline: Interdisciplinary Studies

Authors:
#1 Delia Savin

Abstract Name: The Construction and Functions of Value Arguments in Scientific Literature of the SARS and COVID-19 Pandemics

The scientific community is a unique rhetorical ecosystem which has been a longtime subject of rhetorical analysis. Scientists act as speakers by communicating their findings, as audience by judging the validity of new research published in journals, and as teachers by training students to write in ways considered acceptable by the larger field (Overington, 1977). Several scholars have investigated the ways scientists establish the value of their work through writing and argue for its inclusion in the body of knowledge accepted by the community. In particular, Fahnestock and Secor (1988) studied the uses of the stases, a technique in which rhetors focus their argument on a particular topic or question. Carter (2016; 2021) continued this work, defining three classes and seven functions of value arguments in the introductions of scientific papers and comparing the rhetorical moves favored by authors in a sample of publications in various fields and journals.This research investigates the effects of public crises on scientists' rhetorical strategies in the introductions of published papers. Value arguments in fifteen published papers each from scientific literature published during the SARS and COVID-19 pandemics were classified and compared to those analyzed by Carter (2021). Though both corpuses rely mainly on implicit value arguments, which connect the subject to a topic which is understood to be important, the pandemic literature uses more value arguments which situate the research topic within the larger crisis and rely on the audience's own understanding of the situation. In total, this investigation demonstrates continuity over a period of decades in scientists' rhetorical responses to crises and suggests that the nature of the rhetorical situation profoundly impacts scientific value arguments. These insights have the potential to further understanding of the ways scientific knowledge is constructed and improve the rhetorical education of novice and seasoned scientific writers alike.

Avanti Sawardekar

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
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#2 Salvatore Cherra

Abstract Name: Regulation of neuromuscular development in C. elegans by an epidermal growth factor-like transmembrane protein.

Epidermal growth factor promotes the development of many tissues, including neurons and glial cells. In mammals, epidermal growth factor receptor signaling coordinates the development and function of neuron synapses. Previous research suggests that epidermal growth factor-like proteins promote synapse development. Using the Caenorhabditis elegans (C. elegans) neuromuscular junction, we have identified a transmembrane epidermal growth factor domain-containing protein that reduces synapse formation. Using fluorescent synaptic markers, we observed that mutant animals produce more synapses and have an increase in neuromuscular activity. Although expressed in multiple tissues, this epidermal growth factor-like protein is only required in the epidermis of C. elegans to reduce synaptic connectivity of motor neurons. To reveal the underlying molecular mechanisms, we investigated potential functional domains beyond the epidermal growth factor domains. We identified a critical carboxy terminus peptide that is essential for protein function. Based on predicted protein interaction motifs, we performed an RNA interference-based screen and identified two genes that contain complementary interaction domains. Knockdown of one of these genes recapitulated the phenotype caused by mutations in the epidermal growth factor-like protein. Knockdown of the second gene restored development to normal in the epidermal growth factor-like mutants. These results suggest our RNAi screen has uncovered a new positive and negative of this epidermal growth factor-like signaling pathway. We propose that this epidermal growth factor-like signaling pathway mediates an interaction between the epidermis and motor neurons to prevent excessive synapse formation at the neuromuscular junction.

Katelyn Saxen

CA - University of California - Santa Barbara

Discipline: Natural and Physical Sciences

Authors:
#1 Kate Saxen
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Abstract Name: Fiber Amplifiers for Directed Energy Applications

Using the power of photons, one can drive and maneuver objects in space with light. The first phase of achieving this goal lies in developing small scale photon propulsion systems on Earth. Directed energy systems are any systems that direct energy to a target, and in this project it is accomplished using a Direct Photon Driver (DPD). A DPD specifically refers to the delivery of photon energy to a target. The light source comes from a laser beam which can be used to change the momentum of a photon upon reflection from a target to “push” said target. For the project’s initial development, the target will be a Low Earth Orbit (LEO) wafer satellite. The directed energy system will use a phased array, which is an array of emitters whose radiation pattern can be tailored by adjusting the phases of each emitter. These emitters contain a pre-amplifier, which raises the signal level at the input of an optical receiver, and power amplifier, which converts a low power signal to a high power signal. By increasing the power of multiple laser beams and manipulating

them to meet at the wafer satellite, the energy of photons is amplified as multiple light waves constructively interfere with one another. Furthermore, the satellite outputs its own light beacon which communicates with the emitter’s light in the Earth’s atmosphere. This combined light is sent back to the phased array and decoded where it can then be used to adjust the emitters position and steer the satellite.

Eden Saxton

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Eden Saxton
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Abstract Name: Testing the Capability of the Keith Terry Palen Observatory Telescope to View Exoplanets

We conducted a comprehensive observational study using the 18-inch telescope at Weber State University's Keith Terry Palen Observatory to observe a variety of exoplanetary transits. Our primary objective was to assess the instrument's capabilities in detecting subtle changes in brightness, particularly during exoplanet transits. This methodology, although initially applied to exoplanets, can potentially extend to other celestial objects, such as variable stars and asteroids.Our observations encompassed both confirmed exoplanets archived by NASA and suspected exoplanets or exoplanet candidates identified through the TESS survey. This broad spectrum of targets allowed us to evaluate the telescope's sensitivity and precision in detecting various low-percent brightness changes.

Alex Scandore

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Alex Scandore
#2 Gregory Holk

Abstract Name: Alteration and Hydrothermal Fluid Provenance in the Lima Segment of the Peruvian Coastal Batholith

Plutons emplaced in the shallow crust (<5 km depth) are likely subject to subsolidus alteration due to hydrothermal fluid flow from sources as varied as meteoric water, metamorphic water, magmatic water, and seawater. We present a description of alteration patterns and mineral δ18O values that document the origin of the hydrothermal fluids that affected tonalites, monzogranites, and diorites belonging to the Lima segment of the Peruvian Coastal Batholith (PCB). The PCB is a ~2000-kilometer-long magmatic arc related to the subduction of the Nazca plate underneath the South American plate during the Cretaceous and early Tertiary. These Lima segment plutons intruded Permian-to-Cretaceous oceanic crust and andesites that formed after attenuation of the preexisting continental crust (e.g., Bahlburg et al., 2006). Host rocks were metamorphosed to epidote and chlorite-greenschist facies. Thin section observations revealed moderate to extensive alteration of biotite to chlorite as epitaxial overgrowths and plagioclase to sericite. Myrmekitic textures in plagioclase

along with calcite, sericite, and epidote alteration along cleavage planes and within cores of crystals are additional evidence of alteration by external fluids. These mineral assemblages suggest hydrothermal alteration at shallow crustal depth (~350°C). Equilibrium δ18O values for coexisting quartz (+7.5 to +9.7‰), plagioclase (+5.9 to +7.5‰), K-feldspar (+5.5 to +7.2‰), and hornblende (+4.7 to +6.6‰) indicate a magmatic source for some fluids. However, δ18O values for biotite (+2.9 to 5.4‰) are out of isotopic equilibrium and are evidence for the involvement of low latitude meteoric-hydrothermal waters.

Madelyn Scarmack

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Madelyn Scarmack
#2 Madison Conley
Madison Conley

Abstract Name: The effect of B-alanine on the rate of axolotl limb regeneration and digit formation and the expression of tgf-B1.

Axolotls can regenerate tissues after damage or loss. Tissue regeneration proceeds through three stages: wound healing, dedifferentiation, and redevelopment. B-alanine enhances carnosine production, leading to a variety of physiological roles, such as buffering pH in muscle cells, aiding in reducing muscle fatigue and allowing muscle to rebuild at a faster rate. This study aims to examine the effect of B-alanine on limb regeneration and digit formation while analyzing its effect on the expression of tgf-b1. Tgf-b1 is expressed during the first two stages, aiding in cell proliferation and dedifferentiation. Cox3, a housekeeping gene is constitutively expressed, served as the control. To determine expression levels, limb tissue was sampled at Time 0 (“T0”, non-regenerating tissue) and 72 hours after initial amputation (“T72”, regenerating tissue). After T0 amputation, B-alanine was injected subcutaneously into the abdomen, RNA was immediately extracted from T0 samples and converted into cDNA, and expression of tgf-b1 was analyzed using RT-qPCR and gel electrophoresis. A second injection was administered 12 days after initial amputation, which served as T0 for recording the rates of limb and digit regeneration. Image-J was used to assess growth, and digit formation was evaluated by initial appearance of distinct webbing between digits. We hypothesized that the addition of B-alanine would increase tgf-b1 expression levels and enhance limb regeneration and digit formation. Our study showed that B-alanine did not significantly increase the expression levels of tgf-b1 at T72. Furthermore, while injections with low concentrations of B-alanine had a positive correlation with the formation of digits and limb regeneration rates, statistical analysis indicates limb regeneration rates were not significantly different from the control. On the other hand, injections with high concentrations of B-alanine decreased in regeneration rates during wound healing, suggesting that too much b-alanine may be inhibiting axolotl wound healing.

Jaxon Scharrer

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Margarita Carvajal
#2 Rebecca Gong
#3 Narda Moreno
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Abstract Name: The Relation between Perceptions of Diversity and Cohesion in Teams: Results from an In-Lab Descriptive Study

Perceived diversity refers to the extent that team members view themselves as similar or different, based on a variety of demographic characteristics. When group members see their teammates as being part of their in-group or out-group, this can impact how cohesive the team ends up being. Individuals may feel most comfortable with people who they perceive as similar to themselves, which has implications for the emergent relationships that form with group members. Accordingly, the purpose of the current study was to analyze how perceived diversity similarity influences cohesion within teams. We chose to examine the relation between cohesion and three forms of perceived demographic similarity: race/ethnicity, sexual orientation, and political preference. We hypothesized that perceptions of demographic similarity, across the board, would be positively correlated with cohesion. To test our hypothesis, we conducted a study using 103 research participants who were brought into the laboratory to complete creativity and decision making tasks in teams ranging in size from three people to six people. At the end of sessions, participants completed survey-based measures of perceived team diversity and cohesion. To analyze our data, we ran a correlation analysis using SPSS. The results of our analysis indicated that our hypothesis was not supported. We suspect this was potentially due to the relative strength of other factors, such as personality, in determining team cohesion, as well as the relatively liberal/open-minded nature of our sample. We did, however, find a strong correlation between different forms of perceived diversity that, while not connected to our hypothesis, merits further investigation and discussion. Namely, there was a significant relationship between perceived racial/ethnic diversity and perceived political diversity that we theorize occurred due to the common perception that these two variables are correlated in American culture. Implications, limitations, and future directions will be discussed.

Daniel Scheff

NC - Elon University

Discipline: Humanities

Authors:
#1 Daniel Scheff

Abstract Name: Mirror, Mirror: Models for Contemporary South Indian Womanhood through a Ninth-century Hindu Saint

Andal was a Hindu poet and saint who lived and wrote in the 9th century. Among the twelve South Indian poet-saints called alvars who composed Tamil-language devotional poetry to Vishnu between the 8th and 11th centuries, Andal is both the only woman and the most prominent in contemporary ritual practice. Her two poetic compositions are centrally important to the South Indian Vishnu-centered, or Srivaishnava devotional tradition. They are also noted for their vast differences in voice: the oft-recited Tiruppavai articulates a vow centrally concerned with women's auspiciousness, while the less-engaged Nacciyar Tirumoli offers an intimate image of Andal with strong themes of rage, desire, and sexuality. The tensions generated by these disparate voices have invited numerous scholarly and popular assessments of Andal's character, but less academic attention has been given to devotees' daily engagements with the poet-saint and the implications those interactions have for their lives beyond ritual contexts. During seven weeks of ethnographic research in South India, I traced how elite Srivaishnavas engage and imagine Andal, and explored ritual, familial, and expressive contexts in which she is prominent. Building upon 15 formal interviews, dozens of informal dialogues, and many hours of participant observation in Hindu temples, I

argue that the expressive dichotomies represented by Andal's two poetic works encourage distinct interpretations of her identity which are variously deployed to sustain or negotiate the boundaries of traditional womanhood. Additionally, I suggest that upper-caste Srivaishnavas, through idealized understandings of Andal, construct two broad-based models of womanhood structured by opposing emphases on transgression and devotion, unrestrained sexuality and wifehood, and literary content and signification, as well as the degree to which gender shapes who Andal was and what she wrote. I give special attention to classical Indian dance or bharatanatyam, a popular medium through which women embody these models as Andal.

Lauren Schefter

FL - Rollins College

Discipline: Natural and Physical Sciences

Authors:
#1 Lauren Schefter
#2 Whitney Coyle
#3 Ashley Cannaday

Abstract Name: Studying the acoustic end behavior of the flue organ pipe

The musical acoustics research group at Rollins College has spent the last few years investigating the acoustical behavior of organ pipes. Early 2023 Moore et al. used an optical system (TESPI) to image sound waves in a flue organ pipe and found an unexpected internal node as well as an exponential decay of sound pressure outside of the tube. This was surprising as sinusoidal decay was expected in order to complete the standing wave based on all literature on the subject. The goal of this research was to further investigate the findings of the previous work using acoustical measurements as opposed to an optical system. This work focused on the 3D modeling and design of custom built organ pipes. Then, using a MircoFlown sound intensity probe, measurements of acoustic pressure were taken inside and outside the end of a 3D printed organ pipe. Comparisons between the optical results and acoustical results will be presented.

Ashley Schepis

MA - Bridgewater State University

Discipline: Education

Authors:
#1 Ashley Schepis

Abstract Name: How National Ideals Affect the Teaching of World War One History in North American High Schools: A Comparative Study of Canada and the United States

This study aimed to add to the growing body of research analyzing how the political cultures of different regions are manifested in educational curriculum, particularly the history of World War I. I utilized secondary textbooks from four states in the United States, Massachusetts, California, Texas and Florida, and two provinces in Canada: Ontario and Alberta. The purpose of this project was to analyze how traditionally liberal states and provinces, such as California, Massachusetts, and Ontario, teach history compared to traditionally conservative states and provinces such as Texas, Florida, and Alberta. The political climate regarding education in certain states and provinces has been changing even within the past few months and it is always beneficial to know what students are being taught and being able to compare that information to

past studies. This research is important because the United States and Canada can work together to fight the weaponization of education.

Evan Schepp

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Evan Schepp

Abstract Name: Radar Signature Precursors to Tornadic Development in Squall Line Thunderstorms in Southern Wisconsin

In recent events such as the March 31st event of 2023, southern Wisconsin has experienced abundances of squall line thunderstorms and tornadoes. Wisconsin and surrounding areas are more prone to seeing QLCS thunderstorms, as compared to supercell thunderstorms. QLCSs present a variety of associated hazards during the time they occur, like the ability to produce strong straight line winds. While this can be threatening, different challenges associated with predicting tornadic development from QLCS thunderstorms. QLCS thunderstorms are less likely to produce a tornado and tornadic development is more difficult to detect on radar. In addition, QLCS thunderstorms present significant challenges to warning lead times and warning operations. This project examines a total of 22 days, 10 days in the Milwaukee County Warning Area that had at least 2 or more tornado reports on these days, and 12 days that a tornado was not reported but received at least 25 hail and wind reports combined. Radar data is accumulated from NEXRAD Archive Access site and then further analyzed through GRLevelX software. Level 2 products were used to examine reflectivity, velocity, and correlation coefficient products. The radar signatures associated with these storms are analyzed and the evolution of these storms through Milwaukee County Warning Area is examined further. Forward motion with these storms and their lifecycle will be spatially significant in mesovortex and QLCS development. Radar precursor signatures to tornadic mesovorticies may contain convergence zones, especially along the leading edges of these storms. Notably, the identification of updraft/downdraft convergence zones and velocity over time may help overall to improve warning lead times and warning operations.

Annaka scherf

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Annaka Scherf
#2 Ryan Hjelle

Abstract Name: Working Memory Capacity as Differentiated by Linguistic Category

PROBLEM/PURPOSE: A previous study assessed the impact of multilingualism on working memory capacity (van den Noort et al., 2006). The study found that working memory capacity may be larger in a person's native language than their second language. However, the languages were from the same linguistic group. The authors suggested conducting the same study with multilingual participants from different linguistic groups (DLG, e.g., English versus Arabic). Our research tested the following hypotheses: 1.) Can we replicate the original study with participants who speak English and French (i.e., same linguistic group

[SLG]); 2.) Working memory capacity differences will be greater for multilingual participants who speak languages from DLG's. PROCEDURE: We conducted our study in two locations: Rabat, Morocco (n = 30) and Duluth, MN (n = 30). In Rabat, our participants spoke Arabic and English (i.e., DLG). In Duluth, our participants spoke French and English (SLG). Working memory was assessed with the standard forward (FDS) and backward (BDS) digit span tests.RESULTS: For those who are multilingual within the SLG (i.e., French and English), we found a significant difference in working memory capacity (t[29] = 8.32, p < .001, r2 = .704). In Morocco, we found significant working memory differences between Arabic and English (DLG's), as well (t[29] = 2.94, p = .006 r2 = .229). Our second hypothesis assessed whether there was a larger absolute difference in working memory capacity when comparing languages in the SLG (i.e. van den Noort study) to languages in DLG's (in Morocco). The original study found a larger effect size for differences in the SLG (r2 = .416), as compared to our Moroccan DLG participants (r2 = .229). CONCLUSIONS/IMPLICATIONS: Our findings suggest, that regardless of where the languages are learned, working memory capacity differences are greater between SLG languages as compared to DLG languages.

Barbara Schiebert

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Barbara Schiebert

Abstract Name: Wood Type Printing and Its History

Wooden movable type or wooden type printing is one of the oldest and most used variations of printing that continues to fall in and out of fashion over the years. This printing variation was known in certain areas in different periods. But after some time, when printing was in high demand, people turned to the wooden type over its counterpart in, the metal type. The reason for that is the wooden type, unlike many others, is easy to carve ornamentation in and the most inexpensive to replace when needed. Another reason the wooden type was preferred is that the wood made it cheaper to have large-scale fonts without costing as much as the metal variety would have. So in all, the wooden type was an easy-to-use and more inexpensive method that came and went with the times.

Barbara Schiebert

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Barbara Schiebert

Abstract Name: Designing HerStory

Throughout the history of the design canon, many women's achievements that came to pass were not seen or discussed. This essay will talk about the stereotypes these women faced, how they overcame them, and any other challenges they faced. The design world now strives to allow equality no matter the gender or race of a person, which was the opposite of how it was then. This essay dives into showing the challenges faced by women in their times to achieve equality, including gender bias and stereotypes. Throughout history, women like Ellen Raskin fought against what society thought of them to find a place in the design field. The discussion extends toward lesser-known women in design like Evelyn Ramsay Carey, Bertha M. Boye, and

Josephine St. Pierre Ruffin, who were instrumental in their help with the women's suffrage movement. Ruffin founded the Women's Times newspaper and challenged the status quo while giving black women a voice. On the other side, Carey and Boye use their mediums to showcase their opinion on women's suffrage. Despite these challenges, women fought a long and hard to get to where they are now in the design field. Even today, there is still history about all of the women in design being discovered or even just an already-known designer being credited for a previously unknown work. With all of the effort put towards identifying these designers, anything uncovered is another significant step toward the design canon being reevaluated. If it was not for those women who fought long and hard, who knows what the design field would look like today?

Jordan Schindler

CA - California State University - Northridge

Discipline: Social Sciences

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#2 Lily Apar
#3 Sun-Mee Kang
Lily Apar
Ray Arista

Abstract Name: Examining the Negativity Bias in College Students with Depressive Symptoms: An ERP Study

The present study aims to understand the differences in emotional information processing between individuals with low depressive symptoms (LD) and high depressive symptoms (HD) using electroencephalography (EEG). Previous research has demonstrated that individuals with depression have blunted responses towards positive and negative stimuli, which is called the Emotion-Context Insensitivity Hypothesis (ECI). Comparatively, in healthy individuals, negatively valenced stimuli have more impact on one's psychological state than positive or neutral stimuli. This sensitivity to negative information is referred to as the negativity bias. By measuring event-related brain potentials, previous research has displayed that the negativity bias emerged during early information processing among healthy individuals. In this study, we hypothesize that people with high depressive symptoms would be less likely to exhibit the negativity bias compared to their counterparts. To test this hypothesis, 33 college students, who were not taking any medication, were asked to passively view 135 happy, sad, neutral, angry, and fearful facial expressions taken from the NimStim Face Stimulus Set in a random order while their brain waves were recorded. The depressive symptoms of the participants were assessed using a modified version of the nine-item Patient Health Questionnaire (PHQ-9). The participants were divided into two groups (N=15; LD and N=18; HD) based on their PHQ-9 scores. The results of the current study supported part of the ECI hypothesis. It was found that the HD group displayed blunted affective responses towards the sad condition in the right hemisphere of the brain but not for the happy condition. The implications and significance of the current study were discussed.

Samantha Schlegel

FL - The University of Tampa

Discipline: Natural and Physical Sciences

Authors:
#1 Samantha Schlegel
#2 Yanila Salas-Ortiz

#3 Katherine Schlachter
#4 Stephanie Archer

Abstract Name: Heavy metals in Eastern Oysters (Crassostrea virginica) and their impact on condition

Estuaries are among the most impacted coastal systems and provide habitat for oysters. Louisiana is a hotspot for human activities such as shipping, fishing, tourism, and oil and gas industry, all of which pollute the marine environment. Organisms like the Eastern oyster, Crassostrea virginica, can serve as biomonitors for local pollution because they are filter feeders and bioaccumulate pollutants such as heavy metals. The aim of this study is to analyze which heavy metals are found in C. virginica around Terrebonne Bay, LA and how those metals vary with proximity to human activities such as shoreline development, shipping, and oil and gas production. Additionally, we investigated if there is a correlation between heavy metal concentration and overall oyster health, measured as a condition index. The number of manmade shoreline structures (any type) and oil and gas structures are each correlated with lead concentrations in oyster tissue. Only arsenic and barium concentrations in oyster tissues were negatively correlated with oyster condition. Oysters collected from Bayou Petit Caillou, LA had both the highest total heavy metal concentrations and the highest condition index, while the oysters collected from the Houma Navigation Channel had the lowest condition index. These findings suggest other factors beyond heavy metal load affect oyster condition. The Houma Navigation Channel was the only site where the oysters were collected from the marsh platform, where conditions are hotter and drier. Understanding more clearly how these and other factors impact oyster condition are crucial to understand to better protect oyster reefs and fisheries as coastal pollution worsens.

Sophia Schlink

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Sophia Schlink
#2 Betsy Martinez-Vaz
#3 Lawrence Wackett

Abstract Name: Regulation of Biguanide Metabolism in Pseudomonas mendocina

Metformin is a top-prescribed synthetic pharmaceutical used as a blood glucose-lowering drug for type II diabetes, but is only partially metabolized by the human body, and not completely removed in some WasteWater Treatment Plants. Consequently, metformin, and its transformation products, guanylurea and guanidine, are major anthropogenic pollutants, and have been identified in national and international waterways. The presence of guanidine carboxylase, guanylurea hydrolase, and the enzymes involved in the metformin degradation pathway facilitate the complete degradation of metformin to carbon dioxide and ammonia in the bacteria Pseudomonas mendocina strain MET. The purpose of this study is to investigate the environmental and physiological conditions that regulate the production of these enzymes in order to further our understanding of the degradation of guanidine and biguanide compounds. P. mendocina was grown in a medium containing biguanidine compounds as the sole nitrogen source. mRNA was extracted from these cell cultures and used to perform RT-qPCR, in which mRNA was converted into dsDNA, amplified, and quantified using the fluorescent dye, SYBR green. Results indicated that guanidine carboxylase genes were upregulated in the presence of guanidine, guanylurea, or urea and downregulated when exposed to alternative nitrogen sources. Upstream regions of sequences encoding guanidine carboxylases in P. mendocina were analyzed using bioinformatic programs to predict possible regulatory elements. Two riboswitches that bind free guanidine and promote gene expression were identified upstream of guanidine carboxylase genes in P. mendocina MET and P. mendocina GU. This novel understanding of the genetic regulation of guanidine carboxylase advances our understanding of metformin and guanidine degradation, as well as aid in the development of biotechnological remedies to remove these compounds from the environment.

Jordan Schmaltz

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Jordan Schmaltz
#2 Jamie Neumann
#3 Hailey Koehler
#4 Jenna Trzebiatowski
#5 Jennifer Dahl

Abstract Name: Mechanical Properties of Organic-Inorganic Composite Films: Compressive Resistance of Flexible vs. Rigid Organic Components

A series of organic-inorganic composite films composed of close-packed, alkanethiol-capped gold nanoparticles and dithiol crosslinking molecules were assembled upon the air-water interface within a Langmuir trough. The mechanical properties of films were assessed by the Langmuir isotherm, yielding measurements of minimum collapse pressures and structural responses to collapse. The results of this study address the specific role of nanoscale materials components, further enabling the rational design of nanoarchitectures with specific chemical, physical, and mechanical properties.

Nevaeh Schmechel

WI - University of Wisconsin-Green Bay

Discipline: Business and Entrepreneurship

Authors:
#1 Emily Brosig
#2 Erika Kundinger
#3 Conor Ruffing
#4 Nevaeh Schmechel
Erika Kundinger

Abstract Name: The Effects of COVID-19 On College Student Stress and Resources

This research is the last in a three-part series that studies how students were impacted by Covid-19. Grounded in Hobfoll's Conservation of Resources Theory (1989), this third study measures whether the relationships between stress and resource loss still hold true while exploring additional research questions about the differing impact between gender, and student level as the world shifts back to a "new" normal in 2023. In comparing the key hypotheses across the three years, support was found for a strengthening relationship across time between resource loss and stress. Likewise, the negative relationship between stress and the outcomes of physical health, psychological health, and well-being were found to be supported across time with one exception of insignificance in 2022 for the relationship between stress and physical health. Overall, there were no significant differences in average reported stress across the student yearly samples; however, there were decreases in the overall average net resource loss from 2021 to 2022, but no significant difference from 2022 to 2023. Women consistently reported significantly greater stress levels and net resources losses than men, demonstrating a differential negative impact of the pandemic for women. However, the stress gap between both genders decreased from 2021 through 2023. Additionally, upperclassmen reported significantly

higher stress levels and increased net resource losses during the heart of the pandemic in 2021 and 2022, compared to underclassmen. However, those differences disappeared in the 2023 sample, suggesting a return to a parity of experience. The three-year study provides insight to universities and employers on how to better support college students. This knowledge can be used to generate support through mentoring, time management programs, and networking events to make up for the losses students encountered. The research can serve as a foundational piece for both future research and historical purposes.

Payton Schmidt

IL - Elmhurst University

Discipline: Interdisciplinary Studies

Authors:
#1 Payton Schmidt

Abstract Name: Title IX: Has Women's Athletics Really Progressed?

There has been a dramatic movement of girls and women into sport since the inception of Title IX in 1972, but has women's athletics really progressed since then? Title IX prohibits discrimination based on sex or gender in any educational program or activity receiving any type of federal financial aid. There have been many successes since 1972 from equal opportunities in intercollegiate athletics to protecting survivors who report sexual harassment and misconduct. The percentage of female collegiate athletes rose from 15% in 1972 to 44% during the 2020-2021 school year. But women's sports receive only 5% of media coverage, girls drop out of sports at twice the rate of boys by the age of 14, and the number of women coaching collegiate women's sports decreased from 90% in 1972 to only 41% in 2020. The high school participation rate is 11 times greater than what it was when Title IX was passed, but even with this increase girls participation rates today are still not as high as what boys' participation rates were back in 1971-1972. This research mainly focuses on athletics and the inequalities regarding participation rates, lack of female coaches, lack of females in leadership positions, and the minimal media coverage that women's athletics receives. I reviewed and analyzed various credible sources such as academic papers, journals, and websites over the course of six months to form conclusions. These show that there are underlying systemic gender equity issues in society and specifically in women's athletics that demonstrate that society has not progressed much since 1972. Data has shown that when women's sports are made available on media, they are extremely popular. Title IX does not fix gender inequality or sexual harassment and much progress is still needed until equality is prevalent in society.

Keagan Schmidt

WI - Milwaukee School of Engineering

Discipline: Engineering and Architecture

Authors:
#1 Keagan Schmidt
#2 Wujie Zhang

Abstract Name: Green Synthesis of Gold-Palladium Nanoparticles Using Upland Cress: Synthesis and Characterization

Previously, the green synthesis of gold and silver nanoparticles using upland cress (Barbarea verna) has been achieved. This study explored the potential in synthesizing gold-palladium alloy nanoparticles. Upon

successful synthesis and characterization using UV-vis spectroscopy, the analysis confirmed that the initial solution exhibited a peak at 438 nm for samples containing pure palladium, which is characteristic of the presence of Pd2+ ions; however, this peak diminished as synthesis progressed, indicating the formation of Pd-containing nanoparticles. For samples containing gold only, an absorbance peak between 500-600 nm can be seen increasing in prominence as time progressed, indicating production and growth of nanoparticles. Regarding the samples with both palladium and gold, the characteristic features of each pure palladium and gold absorbance values can be observed as a combination with skewing proportionate to the ratio of palladium and gold. The successful synthesis of gold, silver, palladium, and now gold-palladium alloy nanoparticles using upland cress demonstrates the versatility and potential of this green synthesis. By leveraging the unique properties of upland cress, researchers can continue to develop environmentally friendly and cost-effective approaches for metallic nanoparticle synthesis.

Claudia Schmidt

IL - Elmhurst University

Discipline: Humanities

Authors:
#1 Claudia Schmidt

Abstract Name: Refuting Censorship: Using World Literature to Develop Empathy, Perspective, and Critical Thinking

This research paper is meant to answer the question “why is world literature important?” It was expected that this study would confirm that censorship of world literature deprives people of important knowledge and skills. The research addresses the importance of world literature (specifically fictional literature) for its functions in developing people’s perspective, skills in independent thinking, cultural values, and empathy.Often, those who argue in favor of censorship are afraid of literature’s power to disseminate values to readers. When values are in opposition to the values that an individual holds, they view the texts as blasphemous or a danger to their way of living. Literature does in fact transmit values to readers, challenges the status quo, and exhibits model behavior. However, the analysis of literary texts using the diversity of other texts has been shown to increase critical and independent thinking skills. In the classroom, methods of reading against the grain, the common ground method, and the California English language arts framework are some of the ways students are taught to recognize the messages and values of a text without taking them on as their own. It is essential to utilize world literature in the classroom to get students to a level of critical thinking appropriate in a university classroom, and it is important in developing an understanding of the world in which they live in.This research builds on existing conversations of literature’s importance, taking from research papers, studies, and articles. Ultimately, what was discovered is that world literature should not be censored, as it is essential to the development of empathy, world knowledge, and critical thinking. It is applicable to arguments made for the use of world literature in education, to create educated arguments against censorship, and to be built on for future study.

Katrina Schoenrock

AL - Auburn University

Discipline: Interdisciplinary Studies

Authors:
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#2 Ian Steinke
#3 Rajeesh Amin

Abstract Name: Design and Development of Inhibitor of Gut Microbiome Metabolite Associated with Development of Alzheimer's Disease

Recent investigation for understanding the mechanism by which altered gut-brain axis impacts the central nervous system has received significant attention. The alterations in the gut microbiome termed dysbiosis has been observed to be associated with neurological conditions. In cognitively impaired elderly patients and transgenic rodent models of Alzheimer’s disease (AD), gut dysbiosis has significantly positive correlations with AD pathology including cerebral amyloid beta depositions. The gut microbiota catabolism of dietary nutrients (primarily L-carnitine, choline, and phosphatidylcholine) induces an increase in Trimethylamine (TMAO), which is oxidized by hepatic Flavine monooxidase 3 (FMO3), to trimethyl-N amin oxide (TMAO). Interestingly, higher concentrations of TMAO have been reported in diabetic and Alzheimer’s disease patients. Recent findings have reported that TMAO promotes brain aging and cognitive impairment. Moreover, we have observed higher levels of hepatic FMO3 and TMAO in the brains of Alzheimer’s disease mice (3xTgAD), and type 2 diabetic (db/db) mice. However, there are currently no inhibitors for FMO3 available. Therefore, in the current study, we investigated the design and development of novel FMO3 inhibitors in silico using the Schrodinger computational modeling software. In our investigation, we discovered that the asparagine 78 residue is highly conserved and an important residue for FMO3 activity. We then developed a library of compounds with ranking potential for inhibiting FMO3. Many of these compounds were synthesized and tested using FMO3 hepatic microsomes. The development of this assay was critical for the advancement of our compounds. Our assay focuses on measuring the conversion of TMA to TMAO by HPLC. Conclusion: We predict that our inhibitor will reduce TMAO levels in our animal models. Second, our FMO3 inhibitor will reduce blood glucose levels and gut dysbiosis.

Isaac Schreacke

IL - Illinois College

Discipline: Humanities

Authors:
#1 Isaac Schreacke

Abstract Name: Analysis of German First World War Propaganda through Film

The effectiveness of German propaganda during the First World War has been largely debated since the conclusion of the war. Over the course of the war Germany, like many other nations, was attempting to understand the most effective way to sway public support for and the endurance of the war. German propaganda policy was lacking in the early stages of the war, but over the course of the war, they learned how to create effective propaganda policies that allowed them to continue fighting the war, even past the point of societal exhaustion. When tracking the evolution of the German film industry, the same trends are evident with the use of the motion-picture becoming increasingly common as the war progressed. The delay in the use of film as a propaganda medium was caused by the infancy of technology, but the increasing use and gradual centralization of film infrastructure allowed film to play a key role in late war propaganda. However, the far-reaching effects of film as a propaganda medium were limited with how late the centralization and bolstering of the film industry came. The impact of the investment into the film industry by the German government, created a foundation that allowed the German film industry to flourish well into the Weimar years. It is impossible to measure the impact that propaganda has on a society, as there is no tangible measurement for the effects persuasion has over the masses. In my research I focus on the unparalleled insight that the films provide us into the aims and methods of the propaganda campaigns of the Imperial Government, rather than the effects the films as a propaganda medium on society.

Sheldon Schroeder

WI - University of Wisconsin-Oshkosh

Discipline: Natural and Physical Sciences

Authors:
#1 Sheldon Schroeder
#2 Jessica Lucas

Abstract Name: Identifying the role seed mucilage plays in seed germination under drought stress

Drought significantly impacts farmers by causing water scarcity, leading to reduced crop yields and poor pasture conditions. Insignificant water availability disrupts agricultural activities, threatening the livelihood of farmers and affecting the overall food supply chain. Through this experiment we hope to gain an upper hand in the war against drought. Goal: This experiment is designed to expand knowledge of seed mucilage's impact on germination success under drought stress. The information obtained could lead to improving the agricultural industry, thus creating a more sustainable future. Seed mucilage can be defined as a gel-like, often sticky, substance that surrounds the seed when exposed to water. This understudied plant function is known to encourage seed dispersal, protect germination ability after passing through animals' digestive tracks, create symbiotic relationships through helpful bacteria who make mucilage its home, and protect the seed under drought conditions. Hypothesis: Seed mucilage increases germination success under drought stress. Plants selected to participate in the study must meet the following criteria: 1.) Displays potential for sustainability impact. 2.) Little/no existing mucilage research. This ensures a unique, goal-oriented research project encouraging the creation of a more sustainable world. The experiment involves: 1.) Dividing seeds into three groups: control (ideal conditions), heat stress, and drought simulation. 2.) Demucilaging half the seeds. 3.) Allowing time to pass so the seeds can germinate 4.) Compare germination success in demucilaged and unmodified seeds. For each variation of condition, the exact amount of water, temperature, sunlight exposer, humidity, etc. will be predetermined by the researchers to ensure the best results. The results of this experiment will determine how much of an impact seed mucilage has on germination success. The results will lead to a greater understanding of the understudied but important process known as mucilage synthesis, hopefully bringing us one step closer to a substantiable world.

Chase Schubert

WA - Whitman College

Discipline: Natural and Physical Sciences

Authors:
#1 Chase Schubert
#2 Gabriele Varani

Abstract Name: Infectious Disease RNA Structure Analysis Via Nuclear Magnetic Resonance

As observed in the recent Covid-19 global pandemic, infectious diseases can catastrophically affect our species. While vaccine research is unequivocally a crucial aspect of combating the effects of infectious diseases, the development of antivirals and antibiotics is highly important as well. Therapeutics that specifically work to mitigate already infected individuals are valuable for populations that lack either widespread vaccine accessibility or vaccine acceptance. Mapping the structure of pathogen RNA is vital so that drugs can be developed that specifically target its physical makeup. To achieve this goal, Nuclear Magnetic Resonance (NMR) spectroscopy can be utilized to interpret the physical structure of RNA. The RNA that I studied was a small fragment of Dengue virus. Primarily present in South America and the Middle East, Dengue viral infection can manifest with fever, nausea, body aches, and rash. While a primary

infection is often mild, contracting a second strain of Dengue can uniquely lead to more serious complications including hemorrhagic disease and hemorrhagic shock. The purpose of my experiment was to verify the accuracy of the computer-generated structure by comparing it to the RNA sample's imino proton region. Despite the findings of the one-dimensional analysis, the combined results of the experiments revealed that the original computer-generated RNA structure was inconsistent with spectroscopy results. One possible explanation is that the fragment of Dengue RNA could have multiple conformations associated with its structure. Further research involving the mapping of its three-dimensional structure is needed to come to a more specific conclusion.

Alexa Schuette

NC - High Point University

Discipline: Social Sciences

Authors:
#1 Alexa Schuette

Abstract Name: The Effects of Gender and Parents' Perceptions on Children's Science Identity

This study evaluated children's science identity and effects of parents' beliefs about their own and their child's science identity. Previous research suggests parents have an impact on the way children see themselves. Additionally, gender can influence how children describe their abilities, especially within the STEM field. To expand on this, the current study examines whether parent's belief of their child's science ability would impact the way the child rated their own science identity and whether child's gender impacted this relationship. The study sample included 422 parent-child dyads who completed an online questionnaire. Children were between 8 and 13 years of age. Based on regression analysis, there was a significant positive relationship between the parent's belief of child's identity and the child's own science identity. There was also a small, yet significant, difference in how parents rated their child's science identity depending on the child's gender. Specifically, parents tended to give lower child science identity scores if their child was female. However, a subgroup analysis showed that this difference was only significant for fathers, whereas mothers' child ratings tended to be more related to their own science identity. In addition to this, girls generally rated their own science ability lower than boys did. Therefore, this study supports the prior findings regarding children's identity and parental influence, while expanding to include new relationships involving gender. There tends to be a large gender gap in the STEM-related occupations and this study offers insights into possible explanations for it. This research also shows the importance of parents in addressing the STEM gender gap, since children are shown to value what their parents believe about their capabilities. Interventions should focus specifically on boosting fathers' awareness of their personal biases and subconscious tendencies that may hinder their daughter's scientific identity and career plans.

Kate Schulle

TX - Trinity University

Discipline: Humanities

Authors:
#1 Kate Schulle
#2 Victoria Aarons

Abstract Name: Visualizing Holocaust Testimony

With the end of direct survivor testimony, the transmission of Holocaust memory becomes complicated by its mediation through the voices and narratives of subsequent generations. The need to confront how the Holocaust has shaped the contemporary global landscape seems more urgent than ever. While the Holocaust may seem like history, there has been a shocking rise in antisemitic violence since the end of World War II. Thus, this project has important implications for the study of contemporary expressions of intolerance and prejudice. Recent Holocaust testimony has expanded to include the hybrid genre of Holocaust graphic novels and memoirs. A newly published collection of graphic stories, But I Live, is an innovative approach to Holocaust representation – facilitating a polyphonic dialogue among scholars, survivors, and graphic artists. But I Live, edited by Canadian Holocaust scholar Charlotte Schallié, consists of three chapters narrated by four adult child survivors and illustrated by three comics artists. The book concludes with scholarly historical accounts of the role of Nazism in rupturing the lives of these narrating survivors. Our project reflects on the ways in which Holocaust testimony is negotiated through these multi-generational, overlapping voices and perspectives. But I Live moves from individualized experiences of survivors to a historical account of the collective mass destruction of lives and communities. Specifically, we examine the impact of the survivor-witness relationship on representing Holocaust testimony in the third chapter of the volume, titled "But I Live," and its unique approach to the transmission of traumatic memory. We examine further the ways in which comics artists, in reinscribing survivors' narratives, create a visual testimony to memory by recreating the material landscape of trauma. Together, these voices raise important questions about forms of testimony and witnessing as well as the future of Holocaust representation in K-12 educational curricula.

Haley Schultz

WI - University of Wisconsin-River Falls

Discipline: Health and Human Services

Authors:
#1 Haley Schultz

Abstract Name: The Anti-Metastasis Mechanism of Cucurbitacin B on Non-Small Cell Lung Cancer Cells

Abnormal, uncontrolled growth and cell division form tumors where cancerous cells can break away and move into the bloodstream spreading to other parts of the body in a process called metastasis. Metastatic cancer cells can dissociate from neighboring cells and become individual migratory cells by altering the cell adhesion repertoire. Earlier studies identified cucurbitacin B as an anti-metastasis agent where the actin filaments in cancer cells appeared severed and aggregated upon cucurbitacin B treatment. This study utilized human non-small cell lung cancer (NSCLC) to understand the effect of cucurbitacin on cell adhesion by western blotting. First, consistent with the earlier result, NSCLC cells treated with cucurbitacin B showed a significant decrease in beta-actin protein, a component of the actin filament. Surprisingly, we saw no change in tubulin protein, a component of the microtubule cytoskeletal system, indicating that cucurbitacin B targets the actin system specifically. Cucurbitacin B also caused a significant decrease of N-cadherin, a known pro-metastasis protein, and an increase of E-cadherin, a known anti-metastasis protein but, had reflected no changes of OB-cadherin, an adhesion molecule that was expressed at high level in the bone-metastasized prostate cancer cells, in cucurbitacin B-treated NSCLC. Finally, we observed that MAPK signaling activity had increased three times but the STAT3 pathway activity decreased slightly. Our results begin to reveal the molecular mechanisms of the anti-metastasis activity of cucurbitacin B and suggest the close association of the MAPK and STAT3 signaling pathways with NSCLC metastasis.

Timothy Schulz

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Timothy Schulz
#2 Julie Sabo
Julie Sabo

Abstract Name: Strategies Used in Minnesota for the Unwinding of Medicaid Post-Public Health Emergency: July 2023

The public health emergency (PHE), declared in January 2020, allowed for continuous enrollment in Medicaid–a provider of healthcare coverage for roughly 72.5 million low-income and disabled Americans, which includes 1.5 million Minnesotan residents. The conclusion of the PHE removed this provision and enrollees are required to reapply for and resume yearly re-enrollment in Medicaid. The suspension of continuous enrollment in Medicaid is commonly known as the "unwinding." Due to the complexities of Medicaid and the unwinding, hundreds of thousands of Minnesotan residents may be without insurance post the unwinding. The purpose of this project was to understand the strategies used in implementing the unwinding of Medicaid in Minnesota. A standardized eight question interview tool was used to gather information regarding policy and strategy implementation for the unwinding period from eight public or private facilities and healthcare personnel in Minnesota. Public data from news publications, current literature, and non-profit, non-partisan health policy organizations was analyzed. The findings indicated that Minnesota's unwinding is led by the Department of Human Services and is implemented at the county level. State agencies are partnering with stakeholders such as insurance companies, social organizations, and healthcare facilities, to ensure that enrollees maintain health insurance. The common theme drawn from interviews was that strategies and communication are implemented inconsistently resulting in a fragmented approach to the unwinding in Minnesota. While it is premature to determine the effectiveness of strategies implemented in Minnesota's unwinding, the findings and data suggest that Minnesota's unwinding may have deleterious effects on individuals, healthcare organizations, and public agencies and that there are opportunities for more communication between state and county-level implementers. The next steps are to share the findings with interviewees and public and private social agencies. The authors will continue to monitor the unwinding in Minnesota.

Jacob Schumacher

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Jacob Schumacher

Abstract Name: XBMAL1 and XPERIOD1 effects on Metabolism during Xenopus laevis animal cap differentiation

Circadian genes comprise a transcriptional translational feedback loop that regulates gene expression and metabolism over 24 hours in adult cells. For example, circadian genes control the concentration of NAD+ in a cell. BMAL1 and CLOCK transcribe Nampt which increases the concentration of NAD+, while PERIOD1 inhibits transcription of Nampt by BMAL1 and CLOCK and decreases the concentration of NAD+. Xenopus laevis embryos have no circadian rhythm, but the genes that control circadian rhythm are still expressed during embryonic development. In embryonic stem cells, these genes have been shown to affect a metabolic shift from glycolysis to oxidative phosphorylation during differentiation. Our overall goal is to determine the role circadian genes play in mesoderm specification and differentiation. Currently, we are testing whether a metabolic shift is detectable during early induction and specification of mesoderm in Xenopus laevis. To do this, we dissect pluripotent cells from the animal pole of Xenopus blastulae (animal caps) and treat with 10ng/ml activin to induce mesoderm. Then we measure glycolysis (ECAR) and oxidative phosphorylation

(OCR) over 12 to 24 hours using the Agilent Seahorse Xfe96 Analyzer. Unexpectedly, we observed a decrease in both ECAR and OCR after nine hours of activin induction. We hypothesize that circadian gene expression during this time affects the pool of NAD+ in the embryo, which can influence both epigenetic gene expression and metabolism. Our next experiment is to test whether CRISPR knockout (KO) of xPeriod1 and xBmal1 influence changes OCR and ECAR during mesoderm induction and specification.

Liam Schwartz

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Liam Schwartz
#2 Ryan LeCount

Abstract Name: Changing the Communication for a Changing Climate: Effects of Climate Change Communication on Identity, Emotions, and Mobilization

A specific communication style and subsequent emotional response may best mobilize people interested in climate change mitigation efforts compared to people who are less invested in the issue. This study attempted to determine the most constructive emotions to evoke in climate change communication for diverse groups of people in a way that encourages pro-environmental behavior. Roughly 1100 participants surveyed were randomly assigned to one of three groups: a “fear” condition, a “hope” condition, and a control condition. All participants were asked a series of questions about their demographics, identities, values, and environmental attitudes. Following these sections, they watched a brief video to induce the corresponding treatment emotion. Finally, they indicated their likelihood of doing a range of self-reported behaviors related to minimizing climate change. Participants who had higher levels of climate change belief, concern, and motivation were expected to respond with increased pro-environmental behavior under the fear condition. Conversely, those with lower levels were expected to be more likely to respond with pro-environmental behavior under the hope condition. However, with our treatments and sample, only the hope condition seemed to mobilize participants near the middle of the identity distribution. Another important discovery was that the more impactful participants found the treatment video they watched, the higher the likelihood that they responded with pro-environmental behavior, regardless of the treatment condition. Additional analyses are being explored to further examine the interactions between identity, emotions, and mobilization. These results suggest that scientists, politicians, and other messengers must differentiate between various levels of climate change belief, concern, and motivation within peoples’ identities when communicating the need for action. They also point at the need to be conscious of which emotions, and the intensity of those emotions, arise in their audiences to make adjustments to what communication practices promote pro-environmental behaviors.

Kylee Schwartz

CA - Chapman University

Discipline: Humanities

Authors:
#1 Kylee Schwartz

Abstract Name: Birth of the Magic Baby: An Exploration of Motherhood and Anti-Abortion Sentiments in Young Adult Fiction

A new literary trend is being born in the young adult fiction genre: the female protagonist and her Magic Baby. In this trope, young, white, economically stable female protagonists in relationships have an unplanned pregnancy that jeopardizes both the mother's and child's life. After the mother prioritizes the child's life, she is rewarded with a beautiful, supernaturally gifted baby. The birth, idealized qualities of the Magic Baby, and the baby's relationship with their mother reveal harmful anti-abortion sentiments; an obligation to keep the baby despite dangers to the mother's life due to the child's future potential, a glorification of life-endangering birth, and the idealization of self-sacrifice in motherhood that devalues the woman. Under the lens of anti-abortion and abortion arguments, the interpretation of novels containing The Magic Baby, Breaking Dawn, A Court of Silver Flames, and The Scarlet Letter, in conjuncture with peer-reviewed research papers based on teen pregnancy portrayals, stereotypes in young adult fiction, and how stories influence people, will be guiding the analysis. Overall, these extremely popular novels set a disturbing precedent by portraying unrealistic, dangerous, and anti-abortion expectations and valued qualities of motherhood, influencing young women's perceptions of motherhood. The "Magic Baby" model of the perfect mother comes at the expense of real women.

Alessandra Scolastici

CA - California State University - Long Beach

Discipline: Social Sciences

Authors:
#1 Alessandra Scolastici

Abstract Name: Unearthing Inequity: an Exploration of Women Farmworkers Struggles In the Shadow of Racial Capitalism and Environmental Racism.

California agribusiness generates billions in profits annually, making the state the nation's top producer.However, the commodification of agriculture imposes a significant burden on the people who play an integral part in this success. Female farmworkers, in particular, are a vital but often marginalized group within this labor force.In this paper, I investigate how the intersection of race, gender, and labor influences the experiences of female farmworkers in California, focusing in particular on their working conditions and the impact of environmental hazards on their well-being. Using racial capitalism as a theoretical framework, I examine the ways in which women farmworkers encounter gender-specific challenges within the agricultural industry. By providing a more nuanced view of the challenges women face while working in the fields, this paper contributes to broadening the conversation around gender equality, labor rights, and environmental racism.

Emily Scott

IL - University of Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Emily Scott

Abstract Name: Using DNA Nanodevices to Characterize Ion Levels in the Golgi Apparatus

In the pursuit of understanding and treating human diseases, there is a growing need to shift focus from cellular-level problems to a more detailed exploration of individual cellular compartments, known as

organelles, and their impact on human health. One crucial organelle is the Golgi apparatus, often referred to as the “post office” of the cell. Its primary role involves editing, tagging, and exporting proteins to prepare them for use in regular cellular functions. Malfunctions in the Golgi are implicated in various neurodegenerative diseases like Alzheimer’s, Parkinson’s, and Huntington’s, as well as conditions outside the brain such as osteoporosis, cardiac arrythmia, and colon cancer. The ionic environment within the Golgi plays a vital role in maintaining its biogenesis, yet our understanding of the key ion channels responsible for the production of proteins within the Golgi remains poor, with most candidate genes unknown. In the Krishnan lab, DNA-based fluorescent indicators have been developed to quantify potassium and pH levels in the Golgi. However, the ionic content of sodium and calcium remains undiscovered. Our study aims to characterize these sodium and calcium levels within the Golgi, providing a foundation for understanding the ion channels crucial to its function. To achieve this, we utilize our lab’s innovative DNA nanotechnology, employing ion sensors conjugated to double-stranded DNA (dsDNA) molecules. The dsDNA serves as a modular scaffolding that incorporates localization sequences to specifically target the Trans-Golgi Network (TGN), fluorescent sensors tailored for each ion of interest, and a normalizer dye for ratiometric imaging. These DNA nanodevices offer customizable sub-cellular resolution, enabling the investigation of organellar ion levels in a manner not previously explored due to a lack of proper technology. Our research promises to unravel essential insights into Golgi ion channels, which has enormous implications in the fields of cell biology and drug development.

Thomas Scott

WI - University of Wisconsin-Eau Claire

Discipline: Mathematics and Computer Science

Authors:
#1 Thomas Scott
#2 Naeem Seliya

Abstract Name: Stuttering Prediction with Machine Learning

Addressing stuttering is an important problem. It affects the quality of the affected person’s life. If machine learning algorithms can be designed to detect stuttering in audio files containing speech, there is great potential for helping people with stuttering communicate better. Automatic Stuttering Identification Systems are computer-assistive aids that help speech pathologists identify stuttering, often using machine learning models trained on audio samples of stuttering speech data. Recently, there have been some labeled (stuttering types) speech datasets made available to the public. The Sep-28k and FluencyBank datasets collectively account for 32,000 three-second audio clips containing labels on whether stuttering is present or not. This paper models the data using a variety of machine learning models: Decision Trees, Random Forest, Gradient Boosting, XGBoost, and CatBoost. We conducted different empirical case studies, including predicting an individual stuttering type; predicting different types of stuttering with one model; and predicting the presence or absence of any stuttering speech at all. The modeling features consisted of mean and root-mean-squared (rms) values of arrays from the Librosa Python package that analyzes audio data. We developed a novel feature, max_gap, which was the largest gap in the intensity vs time data, meant to find long pauses within the audio data files. The best accuracies were obtained with the XGBoost and CatBoost models, when trying to predict prolongation and sound repetition. Model accuracies computed on the test data are about 80%, which is competitive to some more advanced models. Both the prolongation and the sound repetition favored the tonnetz_rms feature in the models. The novel max_gap feature introduced in this paper was the most important feature for predicting the block stuttering type, which is intuitive because block stuttering involves a long pause in the stutter’s speech. Future work includes modeling with additional data sets and deep learning.

Quinlan Scott

IN - Valparaiso University

Discipline: Humanities

Authors:
#1 Quinlan Scott

Abstract Name: Perfected Love in the Present Day: T.S. Eliot's Adaptation of Revelations of Divine Love in Little Gidding

In the final poem of Four Quartets, Little Gidding, T.S. Eliot seeks to invite his readers into a pursuit of meaning analogous to his own. Eliot's poem demonstrates that his search was undertaken partially through the writings of medieval Christian mystic Julian of Norwich. In T. S. Eliot: An Imperfect Life, Lyndall Gordon notes Eliot's belief in poetic form as a conveyor of meaning (390), shown by countless revisions of the poem, and suggests that Julian contributed the "transcendent calm"(391) present in Little Gidding. Naturally, Eliot values poetic structure and the tone of Julian's text, but these points in isolation do not fully capture the mystic's influence on Little Gidding. In Revelations of Divine Love, Julian of Norwich presents the spiritual journey as one beginning with a divine Call from God. This call elicits trust and love, which expand as one prays and eventually experiences divine revelations. The journey concludes with perfected Love found in God. Writing prior to secular modernity, Julian anticipates that her audience already desires this perfect Love and writes to intensify that desire. Centuries later, T.S. Eliot, living in war-torn, post-Enlightenment England, writes to a society which values rationality and sees no perfect Love in the midst of violence and fragmentation. Eliot recognizes that without an intellectual entry into a spiritual journey, his readers will never be moved to greater desire, prayer, or perfect Love. Therefore, Julian's text contributes more than tone; Eliot merges her description of the approach to God with a profound intellectual analysis of modern alienation. His poetry thus unites thought and feeling to provoke spiritual desire within a modern secular audience.

Chloe Seabolt

AL - University of Alabama at Birmingham

Discipline: Social Sciences

Authors:
#1 Chloe Seabolt
#2 Casie Morgan
#3 David Schwebel

Abstract Name: Inhibitory Control and Race as Predictors of Unsafe Shooting in Children: Implications for Firearm Safety Interventions

Guns are the leading cause of death for children ages 1-19. Limited research exists on how children learn to use firearms safely. Within a larger study, children 10-12 years old were randomly assigned to receive either firearm safety training or nutrition education. The broader intervention involves 5 visits: baseline, two trainings, post-training, and follow-up. At baseline, participants complete inhibitory control tasks (prize bin, draw-a-circle, money choice) in addition to a hunting simulation. During the hunting simulation, participants view 8 different shooting scenarios, 4 of which are considered unsafe. It was hypothesized that children with low inhibitory control would display more unsafe shots at baseline than children with high inhibitory control. A total of 97 participants were included in present analyses (Mage=11.30, %Male=63.90, %White=68.0). Preliminary correlations showed that only prize bin was significantly associated with unsafe shots taken during the hunting simulation (r=-0.22, p=.03). An independent samples t-test determined that unsafe shooting differed based on race, such that black children took significantly more unsafe shots than white

children, t(92)=-2.31, p=.02. A linear regression included each inhibitory control variable as a predictor, race as a covariate, and unsafe shooting as an outcome. The model was statistically significant, F(4, 87)=2.66, p=.04, and both the prize-choosing task (p=.04) and race (p=.02) significantly predicted unsafe shots.

Zoe Seaford

MT - Montana State University - Bozeman

Discipline: Natural and Physical Sciences

Authors:
#1 Zoe Seaford
#2 Edward Schmidt

Abstract Name: Generation of Thiols via Pyridoxal Phosphate- Dependent Pathways Maintain Redox Homeostasis in Absence of Disulfide Reduction

Research conducted in the Schmidt Lab focuses on the reduction of cellular oxidants through thiol oxidation, particularly under conditions of significant oxidative stress. Investigations focus on the role of sulfur-containing methionine and cysteine amino acid metabolism in maintaining cellular redox balance. To quantify whole sulfur flux through metabolic pathways, we employ in vivo isotopic tracing in mouse models, enabling direct comparison between normal liver and mutant livers lacking the antioxidant enzymes Thioredoxin Reductase-1 and Glutathione reductase (TR/GR null). These models, exemplified by TRGR-null livers, are relevant for studying oxidative stress conditions that enzymes, cystathionine β-synthase (CBS) and cystathionine γ-lyase (CSE), can both form and cleave carbon-sulfur (C-S) bonds of amino acids including cystathionine, serine, cysteine, homocysteine, and others. Here we assessed the functionality of these enzymes present in a pathway that generates cysteine from cysteine via an initial C-S bond cleavage in Wildtype (WT) and TRGR-null mice. Our hypothesis suggests that complete knockout of these pathways in vivo should be non-viable, highlighting their relevance. Utilizing isotopically labeled amino acids, we traced sulfur, carbon, and nitrogen atoms from cystine or serine. These labeled amino acids were infused via jugular catheters in WT and TRGR-null mice, with half of the mice from each genotype receiving the inhibitor aminooxyacetate (AOAA) to block PLP-dependent enzymes CBS and CSE. Mass spectrometry was used to quantify heavy cystathionine, cysteine, and glutathione containing products. Tissue analysis revealed a significant reduction in production of antioxidant systems in animals treated with AOAA. This reveals the crucial role of CBS and CSE in maintaining cellular redox homeostasis under stress conditions wherein disulfide reductases become deficient.

Nottely Seagraves

TN - Middle Tennessee State University

Discipline: Business and Entrepreneurship

Authors:
#1 Nottely Seagraves

Abstract Name: Bridging the Divide: A Comprehensive Analysis of the Implementation of Opportunity Investment Funds to Combat Inequality in Development.

The lack of development in lower-income areas is a pressing concern in Middle Tennessee. Despite overall economic growth in the region, significant economic disparities persist, with some communities failing to equally partake in this progress. This deficiency in lower-income areas exacerbates socioeconomic

disparities, restricting residents' access to quality education, healthcare, and job opportunities. Consequently, this perpetuates a cycle of poverty and hampers the region's potential for comprehensive economic growth and community advancement.In this research endeavor, my primary objective is to discern promising investment opportunities within funds that have demonstrated success in fostering development. By scrutinizing both nationwide successes and failures, I aim to pinpoint the key variables exerting the most significant influence on the outcomes of such initiatives. This exploration is designed to unravel the intricacies of economic conditions, local policies, community engagement, and effective fund management. The ultimate goal is to distill these findings into actionable insights, gauging their adaptability and applicability to the distinctive landscape of the Middle Tennessee area. Through a comprehensive analysis, I aspire to offer targeted recommendations for potential investment avenues, underpinned by a nuanced understanding of the region's specific challenges and opportunities. This research seeks not only to identify universal success factors but also to tailor these insights to the unique context of Middle Tennessee, ultimately contributing to informed and strategic investment decisions in the pursuit of sustainable development.

Josh Sedarski

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Josh Sedarski
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#3 Lifeng Dong

Abstract Name: Exploring Economic Methods to Synthesize Wood Biochar for Energy Storage Devices

While the world has made significant investments to increase the production of renewable energies, the materials used to store those energies still rely on fossil fuel-derived activated carbons, coming from materials such as coal and petroleum residues. As these materials are non-renewable, it is imperative that new and sustainable materials are found. Biochar, thermochemically transformed biomass in the absence of oxygen, presents a promising alternative with high surface area and tunable surface chemistry desirable for electrochemical energy storage. We investigated economic methods for producing bur oak biochar to replace the standard activated carbons as electrode materials for supercapacitors. Three synthesis methods were evaluated based on their operating temperatures, mass yield, setup cost, ease of use, and performance in supercapacitor electrodes: a top-lit updraft gasifier, the distillation of wood, and a biochar kiln. The resultant biochars were utilized in fabricating electrodes for coin-type supercapacitors and tested for their specific capacitance, cycling stability, and electrical conductivity. The gasifier demonstrated the best electrode material, with a specific capacitance of 70.14 F/g, cycling stability of 97.37% after 250 cycles, and an internal resistance drop of 55.80 Ω (all tested at a 0.5 mA charging current). This is close to commercially available carbons (83.55 F/g, 98.99%, 93.00 Ω), and outperforms the kiln (40.79 F/g, 123.03%, 239.8 Ω) and distillation methods (20.57 F/g, 97.72%, 112.2 Ω). The gasifier also possessed high operating temperatures (>550℃), low setup costs (~$50), a mass yield of 18.84%, and user-friendly operation. Future endeavors will focus on optimizing the gasifier biochar composition, exploring diverse wood species, and identifying more sustainable chemical activation agents.

Elizabeth Seidita

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Seidita
#2 Camille Browning
#3 Madison Germain
#4 Jada Lynn Ginn
#5 Kasey Karen

Abstract Name: Potential Role of Adenovirus E4 11k Protein Toward the Inhibition of Interferon-beta Expression During an Infection

Adenoviruses are double-stranded DNA viruses that cause common upper respiratory infections. Early viral proteins will generate an ideal environment to promote viral replication. An early viral protein, E4 11k, has multiple functions, including the redistribution of PML nuclear bodies and cytoplasmic p bodies, leading to a potential alteration of their functions. The cell will attempt to respond to viral infection through nucleic acid sensors, such as RIG-I, that will induce type I interferon transcription, which can lead to an inhibition of viral replication. Retinoic-acid inducible gene I (RIG-I) is a viral RNA sensor that activates a signaling cascade to stimulate a type I interferon response. DEAD-box helicase 6 (Ddx6) was recently shown to bind to RIG-I to enhance its functions. E4 11k has been shown to colocalize with and bind to Ddx6, causing Ddx6 to go into aggresomes. Influenza and EV71, single-stranded RNA viruses, have also been shown to interact with Ddx6, leading to the modulation of RIG-I. Therefore, we hypothesize that E4 11k is binding to Ddx6 to modulate RIG-I, leading to a decrease of expression of interferon-beta. Human cells were infected with an Ad 5 wild-type virus and an E4 11k deleted virus for 12, 24, 30, 36, and 48 hours, and RT-qPCR was performed to evaluate expression of RIG-I and interferon-beta. When the expression of RIG-I and interferon-beta was normalized to GAPDH, an internal control, we found that a biphasic expression of both RIG-I and interferon-beta was present during the wild-type infection with peaks at 24 and 36 hours post infection (hpi) and decreases at 30 and 40 hpi. When E4 11k was not present, a similar expression pattern occurred; however, there was a sustained increase of interferon-beta expression present after 36 hpi, suggesting that E4 11k is necessary toward the reduction of interferon-beta expression.

Natalie Seiffert

MN - Hamline University

Discipline: Social Sciences

Authors:
#1 Natalie Seiffert

Abstract Name: Application of Eye-Tracking for Fingerprint Examination

In latent fingerprint analysis, examiners compare the patterns and minutiae points between a known and unknown fingerprint to conclude the relationship between the two prints. To accurately present their results in a court of law, there must be established error rates for this process. However, the methods by which an examiner views features within a pattern are not currently understood, meaning the effectiveness or error rates of their reasoning process cannot be assessed. The purpose of this project was to contribute to the understanding of how fingerprint comparisons are completed and, in doing so, explain the validity and reliability of feature-comparison methods in fingerprint examination. To accomplish these goals, Gazepoint, a computer-based eye-tracking system, was mounted below the computer monitor and used to analyze the gaze pattern of examiners. Study participants viewed a set of ten latent fingerprints of variable difficulty and development technique before conducting a standard forensic examination. Once the examination was completed, the examiner was prompted to conclude identification (match) or exclusion (nonmatch). Heat maps created from the data were overlaid to assess similarities in comparison between examiners while fixation maps were used to identify the specific features examiners used as focal points. The expected

outcome of this project is to explain the validity and reliability of feature-comparison methods in fingerprint examination. Preliminary results showed that participants took about 16 minutes to complete the test set, or about 92 seconds per comparison. Comparison times were affected by the development technique used. For example, Fingerprints developed via WetWop took longer to compare than those developed with black powder. In addition, the false positive rate was assessed at 0.5%. However, this project only assessed novice examiners and therefore continued research is necessary to assess expert examiners and compare pattern examination techniques between the two.

Isidora Sekaric

MI - Wayne State University

Discipline: Natural and Physical Sciences

Authors:
#1 Isidora Sekaric
#2 Marcos Imer
#3 Federico Rabuffetti

Abstract Name: Upconversion and Downconversion Luminescence in Ln:Yb:Y3NbO7, Ln = Er, Tm

The photoluminescence of co-doped Y3NbO7 was investigated. Er3+ and Tm3+ were used as the activators and Yb3+ was used as a sensitizer. Six different phosphors featuring different doping levels of Er3+ and Tm3+ were prepared. Er3+ and Tm3+ had doping levels of 0.2, 2, and 20 mol %. The doping level of Yb3+ was kept constant at 20 mol %. In this project, we sought to understand how varying the concentration of Er3+ and Tm3+ doping impacts photoluminescence of the phosphors at room temperature. Polycrystalline samples were synthesized via solid-state reactions. The phase purity of the as-prepared samples was probed employing powder X-ray diffraction (PXRD). Using spectrofluorometry, downconversion and upconversion luminescence was examined. We first monitored the emission of the phosphors under UV excitation (i.e., downconversion). Er3+/Yb3+ co-doped phosphors are green emitters, whereas Tm3+/Yb3+ co-doped phosphors exhibit a blue color. The potential of using these phosphors as NIR-to-visible upconverters was also investigated. Samples were excited with a 980 nm laser and emission monitored in the 400–850 nm range. Contrary to what was observed in downconversion, the Er3+/Yb3+ co-doped phosphors are yellow-orange emitters and the Tm3+/Yb3+ co-doped phosphors were NIR emitters. The Tm3+/Yb3+ co-doped phosphors showed weak emissions in the NIR. Altogether, we have shown that light emission properties of these phosphors can be modulated by changing the excitation source. Additionally, we discovered that Tm:Yb:Y3NbO7 is a NIR emitter under 980 nm excitation. We expect to exploit this feature to develop a phosphor suitable for bioimaging.

Malak Selim

EGY - The American University in Cairo

Discipline: Social Sciences

Authors:
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#2 Awatef Gouda
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Abstract Name: Depression, Shame, Social Media, and Diet Culture Impacting Harmful Eating Behaviors

Harmful eating behaviors, characterized by eating patterns with potential physical, emotional, or social harm, have become a prevalent issue across demographics. The increase in harmful eating behaviors is fueled in part by societal factors, cultural shifts, and the prevalence of social media that often perpetuates unrealistic body standards. The rise in harmful eating behaviors holds a significant risk factor for the development of eating disorders raising concerns about the potential long-term consequences for individual's well-being. In light on this, this study aimed to assess the impact of the factors of social media, diet culture, shame, and depression on harmful eating behaviors, particularly within the context of Egypt. The study included 149 participants with 37 males and 112 females from various age groups. The data was collected from a questionnaire of 58 questions in 5 sections each section assessing one of the factors. The correlation analysis indicated that there is a significant impact between shame, depression, social media, diet culture and harmful eating behaviors. Two linear regression tests we're conducted. The first multiple linear regression (F(4, 138) = 28.133, p < 0.001, R2 = 44.9%) indicated that shame (Beta = 0.674, p = < 0.001) and depression (Beta = - 0.218, p = 0.005) were significant predictors in the of harmful eating behavior. The second linear regression F(2,145)=56.267, p <0.001, R2=43.7%) result showed that depressed people experience less harmful eating behaviors if shame is not in play (Beta= -0.194, p=0.008) . The results highlighted the importance of shame and depression above the other variables and highlights a complex relationship between the factors studied.

Maggie Selman

NC - High Point University

Discipline: Education

Authors:
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#2 Sarah Vaala

Abstract Name: Nurturing Future Scientists: Child Science Identity as a Moderator in Science Media Engagement and STEM Career Aspirations

According to the U.S. Bureau of Labor Statistics, STEM jobs are expected to grow 10% over the next decade. Research has demonstrated that growth mindset and gendered science identities predict a desire to work in STEM across various age groups. Research examining children's science identity as a moderating factor in their likelihood of engaging with science media is lacking. This study analyzes data from a national survey of 424 parent-child dyads fielded by Dynata in May 2023. Using OLS regression, we analyzed the moderating effect of child science identity on 8- to -13-year-old children's engagement with science media and their reported desire to work in science. Results show a child's perceived science value is the most consistent predictor of science engagement and STEM career interest. Girls have lower science media engagement, but gender does not predict STEM career interest. Notably, there is a significant moderating effect of child's science identity in both models. Child's science identity moderates relationships such that parent's perceived science value and child age are stronger predictors of science media engagement when children have a strong science identity, and gender is a stronger predictor when science identity is weak. However, parent growth mindset and child's perceived science value are stronger predictors of children's STEM career among children with weak science identity. These results indicate that strategies for fostering children's science engagement and interest in STEM careers may vary based on children's level of science identity. Promoting a belief that science is valuable and boosting parents' growth mindset is especially important among children with weak science identity. Particular attention should be paid to girls with weak science identity who are unlikely to use science media. Further research should track long-term effects of science identity, science media engagement, and STEM career interest on actual STEM career outcomes.

Anastasia Semenova

VA - Virginia Tech

Discipline: Social Sciences

Authors:
#1 Anastasia Semenova
#2 Scott Geller
#3 Jack Wardale

Abstract Name: A Student-to-Teacher “Thank You”: Effects of Expressing Gratitude on Subjective Well - Being

The Actively Caring for People (AC4P) Movement—www.ac4p.org—integrates humanism and behavioral science (i.e., humanistic behaviorism) to promote the occurrence of interpersonal acts of kindness or prosocial behavior. This ongoing research assessed the impact of expressing interpersonal gratitude on various mood states of students after they delivered a customized thank-you card (TYC) to the instructor of their university class. As a benefactor of personal gratitude, a research student delivered a TYC to his/her instructor after class. The benefactor, as well as a second randomly-selected student in the class (i.e., in a Control group), completed a mood survey before and after the lecture. The survey employed a Likert scale to assess 19 mood states (e.g., vulnerability, confidence, interest, and happiness) with regard to one’s current emotional feelings, evaluating each mood state from 1 (Untrue) to 10 (True). The TYC included a section for the benefactors to express personal words of appreciation to their professor/instructor. Qualitative analysis revealed uniformly positive emotions from all instructors and from each of the 64 participants who delivered a TYC. The quantitative analysis demonstrated a significant 36% increase in the students' overall positive mood states, after delivering a TYC to their professor/instructor, compared to the control group that showed no significant change in the mood states assessed. The results of this study support the notion that expressing interpersonal gratitude can enhance a person’s subjective well-being (SWB) across multiple mood states. This study also highlights the disturbing lack of interpersonal expressions of gratitude on our University campus, and the need to design and implement interventions to increase occurrences of interpersonal gratitude expressions as an evidence-based strategy for enhancing SWB. Thus, this research accentuates the significance of gratitude for the enhancement of interpersonal relationships and SWB, as well as the application of humanistic behaviorism to cultivate an AC4P culture.

Nomin Senadheera

MN - Minnesota State University - Mankato

Discipline: Interdisciplinary Studies

Authors:
#1 Nomin Senadheera

Abstract Name: Causes of Depression for International Students Studying in the United States.

The purpose of this research project is to identify and investigate the causes and lifestyle factors affecting depression among undergraduate international students attending a regional comprehensive university in the Midwest. Given the unique circumstances and stressors faced by the students studying outside their home countries, international students experience high levels of depression. Depression can impact these students’ overall health and affect their futures. Current research shows the prevalence of depressive thoughts for international students and the universities need to take more action. This project is designed to examine the relationship between a series of demographic variables such as age, domestic and international support

systems, financial security, length away from home countries, and areas of studies and depression. Primary research consists of the completion of 50+ surveys to international undergraduate students ages 18 to 25 at a comprehensive regional undergraduate university–in the upper-Midwest. The answers will be evaluated using analytical and statistical methods. This project is designed to examine the relationship between depression and demographic variables such as age, domestic and international support systems, financial security, length away from home countries, and areas of academic study. At the conclusion, I plan to report my findings to the university leadership and provide recommendations to encourage the university to help international students be more social, keep in touch with their families regularly, meet new friends, and provide information about where to find help if they feel depressed or lonely, and help them overcome this situation and educate everyone else about their situation.

Avin Seneviratne

VA - George Mason University

Discipline: Natural and Physical Sciences

Authors:
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#2 Peter Walters
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Abstract Name: Simulating charge and exciton dynamics on quantum computers.

Open quantum system dynamics has gained increasing research interest due to its direct applications to quantum dynamics in the condensed phase, transport properties, quantum biology, and quantum error correction. Recent advances have uncovered many intriguing phenomena, such as environment-assisted exciton transfer, coherence trapping, enhanced quantum entanglement, information backflow, emergence of noncanonical equilibrium states, topological state preparation by reservoir engineering, etc. At the center of theoretical chemistry are the developments of methodologies and computational tools for simulating charge transfer in solutions and heterojunctions, as well as exciton transfer in macromolecules and molecular aggregates. As many of these processes are quantum mechanical and non-Markovian in nature, classical computer simulations can be prohibitively expensive.Since the insightful suggestion by Feynman and the pioneering demonstration by Lloyd, numerous works have emerged in seeking efficient quantum algorithms for quantum simulations. However, the quantum computer simulations of open quantum systems are in the nascent stage of development. In this work, we present a novel quantum algorithm based on Kraus operators that capture the exact non-Markovian quantum effect at finite temperature. The implantation of the Kraus operators on the quantum machine uses a combination of singular value decomposition (SVD) and the optimal Walsh operators that result in shallow circuits. We demonstrate the feasibility of the algorithm by simulating the spin-boson dynamics and the exciton transfer in Fenna-Matthews-Olson (FMO) complex in photosynthesis. The Noisy Intermediate Scale Quantum (NISQ) machine results show very good agreement with the exact ones. The algorithm development along this line could leverage the advantage of quantum computers to simulate quantum systems that are beyond the reach of classical computers.

Pavan Senthil

FL - University of Central Florida

Discipline: Engineering and Architecture

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Abstract Name: Design and Mechanical Assessment of Novel Bird Claw Biomimicry Inspired Upper Limb Prosthesis Models

Biomimicry for mechanical design refers to incorporating the form and function of existing processes from nature into design elements. Adapting biomechanical principles from natural structures specialized for grasping into current research with 3D printed bionic hand designs may improve robotic dexterity in picking up a wider variety of objects, and limiting degrees of freedom and actuators can streamline mechanical design. Bird claws are an ideal inspiration for robotics because of their limited joints, reduced number of actuators, and smaller palm size. Species of birds' claw variations lend biomechanical advantages for grasping motions related to perching, climbing, and hunting and may provide improvements beyond a human-inspired structure for specific grasping applications. Different bird species' unique toe configurations offer different prehensile movements, which are biomechanically specialized for their environments and lifestyles. Recent literature has developed flying drone landing mechanisms inspired by bird claws, which this work builds upon.This research designed, manufactured, and mechanically evaluated two robotic devices with different toe arrangements: anisodactyl (3 in front x 1 in back), commonly found in birds of prey such as falcons and hawks, and zygodactyl (2 in front x 2 in back), commonly found in climbing birds such as woodpeckers and parrots. The evaluation methods for these models included a qualitative variable-object grasp assessment, which highlighted design features that suggest an improved grasp - a small and central palm, curved distal digit components, and a symmetrical digit arrangement. To support the incorporation of these design features into upper-limb prostheses, a quantitative grip force test was conducted to demonstrate the design approach met the minimum mechanical load capabilities outlined in ISO and ASTM standards for prosthetic devices. These designs and comparisons offer insights into how the biomechanical advantages of these models can be harnessed to optimize the grasping functionality of upper-limb prostheses.

Anish Senthilkumar

TX - Southern Methodist University

Discipline: Interdisciplinary Studies

Authors:
#1 Anish Senthilkumar

Abstract Name: "Beyond the Classroom: The Broader Socioeconomic Impacts of Secularism in France's Education System on Europe's Changing Demographics"

This research presents a comprehensive analysis of Laïcité, the French version of secularism, in the education system, contextualized within France's dynamically changing demographics. This mixed-methods study includes 25 in-depth interviews conducted in France with educators, policymakers, and students and an extensive online survey capturing a diverse range of the French population's perspective. The research specifically examines the impact of Laïcité on the assimilation of immigrants and diverse populations, set against the backdrop of evolving European identities and immigration patterns.A significant focus is on how recent notable laws, such as the Hijab Ban, and the rise of far-right, anti-immigrant sentiments in France, are influencing educational policies and practices. The research contrasts the differing American and French perspectives on education and social services, highlighting the unique challenges posed by the French context. The study delves into the complexities arising from the illegality of collecting demographic statistics in France, as well as the public's hesitation to adapt laws originating from the French Revolution. The research highlights how these factors impact the understanding and implementation of educational policies.By exploring these facets, the study offers a detailed view of secularism's socioeconomic

implications in French education, extending to broader European socio-political dynamics. It critically examines the interaction of Laïcité with public policy, international relations, education, and economics, providing insights into how these secular policies are perceived and enacted amidst a diverse and shifting population. Furthermore, the research evaluates the implications of these secular policies on the formation of a European identity, considering the continent's demographic transitions and the integration of diverse cultures within a secular framework. It aims to contribute to discussions on the alignment or discord between secular educational policies and a multicultural society, offering valuable perspectives for policy-makers, educators, and scholars in various disciplines.

Mikaili Senwah

GA - Spelman College

Discipline: Natural and Physical Sciences

Authors:
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#3 Andrew Wilson

Abstract Name: Investigating Gain of Function Toxicity in Alpha-1 Antitrypsin Deficient Alveolar Type II Epithelial Cells Using Induced Pluripotent Stem Cells

Alpha-1 antitrypsin deficiency “AATD” is one of the most severe hereditary causes of lung and liver disease, most commonly caused by the homozygous “Z” allele mutation in the SERPINA1 gene. SERPINA1 encodes for Alpha-1 Antitrypsin Protein (AAT), an important protein for the inhibition of the enzyme neutrophil elastase in the lungs. However, patients with AATD have decreased amounts of AAT circulating to the lungs as a result of misfolded “Z” AAT protein becoming trapped and accumulating in the liver. This loss of AAT function within the lungs leads to increased neutrophil elastase activity in the alveoli, causing tissue damage and predisposing patients to emphysema. In the liver, there is gain of function toxicity from the accumulation of polymerized AAT. We hypothesize that the accumulation of ZAAT protein in alveolar type II epithelial cells (AT2s) leads to ER stress and activation of the NF-κB pathway, further contributing to emphysema pathogenesis.We model AATD using homozygous mutant “ZZ” patient-derived induced pluripotent stem cells (iPSCs) and isogenic gene-corrected “MM” counterparts that have undergone directed differentiation to AT2-like cells (iAT2s). In order to quantify the expression of genes associated with cell stress, we carried out qPCR. To quantify the activation of the NF-κB pathway, we performed western blotting for phosphorylated IκBα and immunofluorescent staining for nuclear p65. Due to technical complications, the Western blot was inconclusive for phosphorylated IκBα. However, we found a significant increase in DNAJB4 and DDIT3 gene expression in ZZ iAT2s compared to isogenic controls. We also observed increased nuclear p65 staining in ZZ iAT2s compared to isogenic controls.Our results revealed increased expression of both cellular stress and NF-κB activation in our ZZ iAT2s compared to isogenic controls.These results suggest that endogenous production of ZAAT protein may injure AT2s through a toxic gain of function mechanism.

Sophia Serna

CA - Mount Saint Mary's University

Discipline: Natural and Physical Sciences

Authors:
#1 Luiza Nogaj

Abstract Name: The Effect of Cat's Claw Bark on Aggregation of hIAPP in Type 2 Diabetes

Type two diabetes (T2D) is a disease that occurs when the cells do not respond to the insulin created in the pancreas. Human islet amyloid polypeptide (hIAPP) is co-stored with insulin but is overexpressed and misfolded in T2D. Once misfolded, hIAPP forms amyloid deposits which lead to pancreatic β-cell death or dysfunction. Cat's Claw is a thick, woody vine that grows in the Amazon rainforest and the tropical areas of Central and South America. It has been used as a dietary supplement and treatment for Alzheimer's disease and cancer. The objective of this work aims to prevent hIAPP aggregation in pancreatic b-cells using extracted cats claw bark. Cats claw bark was extracted with ethyl acetate and filtered. MTT assay and cell morphology were examined to check for cell viability after the addition of hIAPP alone, cat's claw bark extract alone, and hIAPP and extract combined. Increasing amounts of hIAPP decreased cell viability, confirming the toxicity of hIAPP on RIN-m cells. Increasing amounts of cat's claw extract decreased cell viability as well but to a much lesser extent. hIAPP and cat's claw bark mix had no significant effect on cell viability, and the extract was not able to save the cells from the toxic effects of hIAPP. Different solvents can be used to extract cats claw bark in the future. Different concentrations of cats claw can also be tested with hIAPP to determine its ability to save the cells from hIAPP.

Julieta Serobyan

CA - University of California - Los Angeles

Discipline: Social Sciences

Authors:
#1 Julieta Serobyan

Abstract Name: Investigating the Effects of Trauma on the Resilience of Artsakh Students under the 2022 Blockade

In 2022, Azerbaijan orchestrated a blockade of the only road connecting the 120,000 ethnic Armenians in Nagorno-Karabakh, also known as Artsakh, with the outside world. While previous studies show the long-term and transgenerational effects of war on mental health, immediate effects on mental health were relatively understudied until recently. The 44-day 2020 Artsakh War (September 27-November 10, 2020) resulted in an estimated 5,000 Armenian casualties, displacement of half the Artsakh population, and ongoing captivity of Armenian prisoners of war. The purpose of the project is to see the correlation between resilience and levels of trauma experienced by students in blockaded Artsakh. To investigate this relationship, 16 college students participated in the anonymous completion of two online surveys based on the Brief Resilience Scale (BRS) and Impact of Events Scale-Revised (IES-R) validated questionnaires assessing trauma and resilience. The validated questionnaires could take anywhere between 3 minutes to 15 minutes. Preliminary results indicated that the trauma caused by the blockade was high enough to suppress the immune system functioning of 13 participants ($\bar{x} = 47.875$). Furthermore, trauma had a significant negative relationship with resilience, where the mean resilience of the participants equaled 2.83, which according to DSM-IV criteria is considered very low ($p = 0.0216$). Overall, the negative correlation observed between trauma and resilience suggests that individuals with higher levels of resilience may be better equipped to cope with the adverse effects of the blockade and experience lower levels of trauma. These results align with previous research that highlights the protective role of resilience in mitigating the impact of traumatic events on mental health and the well-being of the indigenous Armenian population of Artsakh.

Julieta Serobyan

CA - University of California - Los Angeles

Discipline: Social Sciences

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Abstract Name: Examining Trait Anxiety Effects on Instrumental Avoidance Learning

Trait anxiety has been shown to be associated with differential responses regarding fear conditioning and avoidance learning. Additionally, individuals with fear anxiety have been shown to exhibit lower cognitive flexibility and react more sensitively and negatively to stressors than individuals with lower anxiety levels. As a result, due to higher levels of stress, trait anxiety may be associated with worse performance in terms of instrumental avoidance learning. Other studies have shown that anxiety is associated with increased sensitivity toward aversive stimuli, which may further affect performance in avoidance learning. This study aims to evaluate the effects of trait anxiety on instrumental avoidance learning. To analyze these connections, a total of 96 individuals were enlisted to fill out a set of questionnaires that were looking at how stressful experiences compared to individual personality traits affect instrumental learning. The questionnaires also measured their levels of discrimination exposure. Participants completed an aversive instrumental learning task, which involved pressing certain key responses in response to visual stimuli to avoid the presentation of an aversive sound stimulus. The results showed that there was a significant positive effect of trait anxiety on instrumental learning ($r = 0.234$, $p = 0.022$). Specifically, individuals with high trait anxiety had increased accuracy in task completion during the experiment. In addition, we found no significant correlation between other stress factors (early life discriminatory experiences) and task accuracy (ps > 0.617). The findings suggest that personality factors, including trait anxiety, can influence the learning behavior of individuals and hence serve as predictors of cognitive outcomes.

Emilio Serrano

CA - California State University - San Marcos

Discipline: Social Sciences

Authors:
#1 Emilio Serrano

Abstract Name: Howard the Duck vs. the Modernity of Man: A Critical Analysis on the attitudes, and Metaphors in Howard the Duck

Steve Gerber created and published Howard the Duck from 1975 to 1979. The comic used satire to offer a social commentary of the times through the lens of an alien. Based on the comic series and placing it in context, I ask What does Howard the Duck communicate about the comic industry? And, what strategies did the creator of Howard the Duck use to affect the comic industry? To address that question, I analyze Howard the Duck issues #1, #16, and #21. The first issue is the characters first great big solo adventure that lays much of the groundwork Gerber would later explore and expand within the entire series. Issue 16 would be the first of Gerber's deviations from the standard and publish his own unfiltered thoughts through the medium on the medium. Issue 21 is Gerbers direct response to Disney's lawsuit, and details his clear frustrations, and disagreements with the company. Through genre and metaphoric rhetorical perspectives, I argue Steve Gerber was a visionary that was ahead of his time, he was frustrated with the medium, and sought to point it out within the pages of Howard the Duck. Comic books to tell the superhero story constructed the genre way back in 1932 with the publication of Action Comics #1 and the introduction of Superman, however times changed and the genre was not relegated to simple black and white storytelling rather than expanding on the realistic more complex nature of the character. Howard the Duck was the trailblazer that offered a shift in

heroic dynamics. On top of utilizing metaphors in satire to be able to highlight the issues that the industry had gotten comfortable on that was causing its own downfall.

Claudia Serrato

IL - Governors State University Honors College

Discipline: Health and Human Services

Authors:
#1 Claudia Serrato

Abstract Name: Epidemiological Examinations of COVID-19: A Literature Review of Forecasting Research to Improve Public Health Responses

The COVID-19 pandemic revealed many challenges that were often overlooked or never addressed. From how people learn in school, commute to different locations, socialize, buy groceries, and even how they access healthcare. Epidemiology is the study of infectious diseases which deals with the incidence, distribution, and possible control of diseases and other factors relating to health. The analysis of population health shapes how society responds to these diseases both biologically and socially. This is important as examining relevant resources on past, current, and developing epidemiological practice barriers, and their impact on not just COVID-19, but other diseases can help improve future responses. In this project, understanding the barriers of these epidemiology practices will be examined with a close look at how they impacted the COVID-19 pandemic. A literature review of sources since 2021 from the National Library of Medicine, including statistical, mathematical, and computational sequences aimed at describing, modeling, and forecasting the spread of diseases in these contexts will be utilized. Findings from the literature view suggest there are many factors that contribute to a lack of understanding on how to mitigate the spread of COVID-19 in public spaces. Examples include social determinants, access to health care, and misinformation. Implications of these findings suggest there needs to be a reform of how information is shared with the public to accomplish a more cohesive social and medical response to public health emergencies in the future.

Alimamy Sesay

CA - Medanos College

Discipline: Natural and Physical Sciences

Authors:
#1 Emeely Jauregui
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Abstract Name: How does the yellow starthistle affect the surrounding soil moisture at Big Break Shoreline Regional?

Yellow starthistle (Centaurea solstitialis) is a highly invasive plant species in North America that poses a danger to agriculture, wildlife, and biodiversity. Despite its potential to overtake native species, little is known about its impact on soil moisture levels in invaded regions such as Big Break Regional Shoreline in Oakley, California. In this study, we aimed to investigate the impact of yellow starthistle on soil moisture in the park. We hypothesized that the plant absorbs more soil moisture than it needs due to its dry environment

origins (Mediterranean Basin). To test this hypothesis, we collected soil samples from locations with and without yellow star thistle and assessed their moisture content. Our statistical analysis revealed a significant difference in soil moisture levels across the three sites ($F = 47.73913$, $p = 0.000036$), indicating that yellow star thistle is associated with lower soil moisture levels. These findings have important implications for understanding the impact of this invasive species on its surrounding environment and for developing effective management strategies. However, our study has limitations as we only collected data across three sites and five points in time. Further research with more extensive data collection is needed to confirm our findings and to better understand the mechanisms by which yellow star thistle absorbs soil moisture.

Unnati Seshadri

GBR - Cambridge Centre for International Research

Discipline: Engineering and Architecture

Authors:
#1 Unnati Seshadri

Abstract Name: Detection and Suppression of Parkinson’s Disease Tremors

Parkinson's Disease affects over 10 million people globally, causing various motor problems, including tremors. A prototype device has been developed to automate the detection and suppression of tremors using Soft Robotics and granular jamming. The device works by detecting vibrations from hand movements, analyzing the frequency to confirm the presence of a tremor, and triggering a wrist cuff filled with coffee grounds. The vacuum-induced rigidity of the coffee grounds creates a rigid exoskeleton-like structure around the trembling hand, arresting the tremor. The device was tested by simulating tremors on a skeletal hand, and out of 50 trials, there was a 92% tremor detection accuracy and 100% suppression activation accuracy. The device reduced tremor-induced movement by 84.6%, making it an effective and non-invasive alternative to costly and invasive treatments like surgery and drugs. This innovation can significantly improve PD patients’ qualities of life at a low cost of under $25.

Reena Sethi

VA - Virginia Commonwealth University

Discipline: Business and Entrepreneurship

Authors:
#1 Reena Sethi

Abstract Name: Culture of Abundance Robs Consumer Satisfaction: An Analysis of the Paradox of Choice

The paradox of choice, initially proposed by Barry Shwartz in 2004, suggests the theory wherein an abundance of choice leads to diminished consumer satisfaction: a phenomenon counter to intuitive expectations. This paper employs a mixed method approach incorporating both quantitative surveys and qualitative interviews to gain deeper insights as to how the prevailing culture of abundance within the United States influences consumer satisfaction. Findings reveal that an expanded choice set can exert adverse impacts on purchasing behaviors, including decision fatigue and paralysis. Participants reported feelings of anxiety, overwhelm, and dissatisfaction when confronted with an ample array of selections, leading to a consequent heightening of regret and diminished contentment with their choices. Nevertheless, research indicates that the repercussions of choice abundance can be mitigated. Individual characteristics such as decision-making style and personality traits play a moderating role, with individuals exhibiting heightened

decisiveness and stronger desires for closure generally experiencing less susceptibility to the consequences of overload. Implications of the study underscore the importance for marketers to exercise caution regarding the harmful effects of extensive choice sets. Strategies to help enhance satisfaction may include reducing option size, extending guidance in decision-making, and offering pathways to simplify the buying process. Further research is suggested to explore the paradox in diverse cultural and contextual settings.

Rohan Sethi

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Rohan Sethi

Abstract Name: Cardiomyocyte GSK-3β Interaction with Immune Cells: A Regulator of Inflammation

The role of cardiomyocyte glycogen synthase kinase-3β (CM-GSK-3β) in the adult heart is not fully defined. To investigate its role, an α-MHC promoter-driven, inducible CM-GSK-3β knockout (CM-GSK-3β-KO) model was utilized. Mice were subjected to a tamoxifen (TAM) chow diet for 2 weeks at 12 weeks of age, followed by regular chow for an additional 5 weeks. Post-TAM protocol, electrocardiography revealed reduced ejection fraction and fractional shortening in KO mice, indicating severe systolic dysfunction and dilative cardiac remodeling. Masson's Trichrome staining demonstrated increased fibrosis in the KO heart. Flow cytometry analysis revealed an elevated frequency of infiltrated CD45+ leukocytes and myeloid cells in KO mice, suggesting potential cross-talk between cardiomyocytes and immune cells. To validate these findings, a co-culture experiment was performed. Adult cardiomyocytes (CM) were isolated from CM-GSK-3β knockout and control mice following a 30-day washing period post a 14-day TAM diet. Isolated adult cardiomyocytes were cultured, and the supernatant or conditional media was collected post 48 hrs. Bone marrow (BM) cells were co-cultured in the conditional media to study the impact of CM-GSK-3β on myeloid immune cells. After 72 hours of co-culturing in the conditional media, immune cell polarization and inflammation markers were analyzed using flow cytometry and qRT-PCR. The results demonstrated that GSK-3β regulated inflammation on myeloid cells. The absence of GSK-3β in cardiomyocytes led to increased proliferation of immune cells, accompanied by a pro-inflammatory phenotype as evidenced by flow cytometry and qRT-PCR analysis.

Jason Sethiadi

NY - Weill Cornell Medical College

Discipline: Natural and Physical Sciences

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Abstract Name: Utilizing Stereolithography to Engineer Multi-Well Systems for Organoid Culture

Organoids and three-dimensional spheroids are multicellular aggregates that can model the complexity and physiology of tissue architecture and organs in vitro. Multicellular organoids and spheroids have become a standard in tissue engineering, serving as highly applicable tools in bioengineering, drug development, and

investigating the effects of disease on cellular phenotypes and function. Specifically, we developed hepatic organoids that co-aggregate primary hepatocytes with non-parenchymal cells, such as fibroblasts, to study and model liver function. To diminish the heterogeneity during organoid and spheroid formation, we utilized photolithography to build a polydimethylsiloxane-based (PDMS) multi-well system that can accommodate the organoids. However, one substantial challenge that remains in organoid biology is ensuring the spheroids' survival over extended periods of time. Facilitating an environment conducive to their physiology is crucial since organoids are prone to detaching from their wells or losing their spherical shape. This poses a problem for studies requiring the model to be functional for multiple weeks or months. Using stereolithography (resin printing), we gained greater control over the design and specifications of each well and developed a more suitable environment for the generation of spheroid aggregates. By optimizing the dimensions and geometry of the multi-well system and applying this system to hepatocyte-fibroblast spheroids, we observed that this created a more stable environment for the organoids. Compared to previous multi-well systems, the optimized system increased the duration of the spheroid's lifespan over this period. Furthermore, we observed significantly higher albumin secretion levels over prolonged durations in the hepatocyte organoids of the optimized multi-well system. This demonstrates the versatility of resin stereolithography as a technique in engineering three-dimensional organoid systems and presents an opportunity for modifying and optimizing this multi-well system for culturing different types of organoids.

Hannah Sexton

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Hannah Sexton
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Abstract Name: How Do Social Essentialist Beliefs Predict Learning Motivation among First-Generation College Students?

Social essentialism refers to the belief that the categorization of individuals into social groups (such as gender and race) reflects innate, meaningful differences in people that are distinct and unchanging. Holding essentialist beliefs can result in prejudice and discrimination such as racism, sexism, and classism. However, little research has investigated the predictors of essentialist belief and its impact on academic motivation, particularly in first-generation college students. The current project aims to examine how first-generation status shapes essentialist beliefs about social class among college students. We will recruit 146 KSU undergraduate students from SONA. Participants will complete an online survey measuring social essentialist beliefs, academic motivation, and psychological well-being. We hypothesize that compared to non-first-generation students, first-generation college students will endorse lower levels of essentialist beliefs about social class because of their ongoing effort to alter their social status and the lived experience that accompanies their identity. Additionally, we anticipate that those with lower essentialist beliefs would have stronger academic motivation and better psychological well-being. Findings from this study could provide insight into contributing factors of essentialist beliefs and prejudice.

Jaylin Seymour-Valery

VA - Norfolk State University

Discipline: Business and Entrepreneurship

Authors:

#1 Jaylin Seymour-Valery
#2 Mojtaba Sirjani

Abstract Name: Is Wealth Maximization Better Than Profit Maximization in Businesses

The Profit maximizing rule is a fundamental part of running a business that has been around for so long. In addition to profit maximization, wealth maximization is a more modern concept that has become a crucial component of businesses that is beneficial in building a business up and promoting longevity. In this paper, I will gather a large sum of data and information highlighting profit maximization and why it is vital for businesses to implement it. I will also do the same regarding wealth maximization and its benefits. The benefits of both the profit maximization rule and wealth maximization in businesses have been tremendous and have helped mold the economy to this day. Using the data, statistics, and other information I have gathered from various reliable sources, I will determine which of the two business assumptions is better for the overall success of a business. The profit-maximizing ideal is still vital in businesses today and will continue to be that way for a long time. Along with the maximizing profit-maximizing assumption, wealth maximization will continue to enhance a business. It is just a matter of which business assumption will be proven to be the most beneficial to the success of a business.

Khaled Shaaban

UT - Utah Valley University

Discipline:

Authors:
#1 Khaled Shaaban

Abstract Name: Guiding Students to Research Success: A Mentor's Approach

In this work, I share my journey as a mentor of fostering student involvement in real-life research projects, guiding them through the process of writing peer-reviewed papers and fostering collaboration as co-authors. By providing firsthand experiences, this work offers insights into effective mentorship strategies employed to inspire and support students in their research endeavors. The sequence develops from the initial encouragement to active participation and culminating in the co-authorship of peer-reviewed papers. This work also sheds light on the challenges faced and the lessons learned, aiming to contribute to the broader discourse on empowering undergraduates through mentorship for successful engagement in academic research.

Elizabeth Shaf

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Elizabeth Shaf
#2 Pooja Sidney

Abstract Name: Taking a Bite of the “Feedback Sandwich”: Investigating Order and Ratio of Feedback

We receive feedback every day (Mory, 2004), however, feedback does not always improve our behavior

(Bangert-Drowns et al., 1991). In this study, we aim to examine whether the content and format of feedback affects its efficacy. Instructors are taught to use the “feedback sandwich,” defined as a critical statement (i.e., constructive feedback) surrounded by two positive ones (Procházka et al., 2020). While there is some evidence supporting its use, the reason for the feedback sandwich's efficacy remains unclear. Perhaps the mere presence of positive feedback improves performance or perhaps the 2:1 ratio is critical. Furthermore, perhaps giving positive feedback first “softens the blow.” The goal of the current study is to examine whether the effects of the “feedback sandwich” are due to the ratio and/or order of constructive and positive feedback. Undergraduate students (N = 160) will be randomly assigned to receive constructive feedback in a 2 (positive feedback before or not) x 2 (positive feedback after or not) design resulting in four conditions: constructive feedback (C), constructive and then positive feedback (CP), positive and then constructive feedback (PC), or feedback sandwich (PCP). The feedback is given in the context of a writing task, with students receiving feedback after a first writing task and before a second one. We are measuring uptake of constructive feedback, self-esteem, writing anxiety, and self-efficacy. Data collection is ongoing. We plan to conduct a series of 2 (positive first) x 2 (positive second) between-subjects ANOVA on all outcomes. We expect both order and ratio of positive to constructive feedback to matter for feedback uptake, self-esteem, and self-efficacy. If these hypotheses are supported, we will highlight the importance of the feedback sandwich for enhancing uptake of constructive feedback in educational settings and workplaces and provide evidence for its mechanism (i.e., higher self-esteem and self-efficacy).

Tara Shafie

CA - San Francisco State University

Discipline: Humanities

Authors:
#1 Tara Shafie
#2 Ria Thakur
Ria Thakur

Abstract Name: "Cool" Japan Strategy in Japanese Popular Culture: A Critical Analysis

What some consumers of Japanese media and pop culture may not know is that Japan’s current image is part of an official image-based endeavor spearheaded by the Japanese government. Following the fascist regime during World War II, Japan heavily industrialized, becoming one of the world’s leaders of industry. As the economy grew stagnant, the government made an intentional move toward becoming an intellectual property-based nation. Japanese pop culture revolutionized, which brings us to the present, where Japan has a largely positive image internationally. This is known as the “Cool Japan”, a PR Strategy, which began in 2002, for the purpose of exporting popular culture, and making Japan seem more friendly internationally. However, this pop culture is not “cool” for everyone. Our analysis of examples from “Cool Japan” in text in image is informed by a feminist approach, as much of the exported pop culture is misogynistic. Through critical analyses of various Japanese popular cultural products, one peels back the deep-rooted misogyny which outlines female depictions, indicating harmful trends of hyper-sexualization and pedophilic sensibilities. An exploration of positive and negative depictions of female bodies and gender presentation in pop culture exports—through a new historicist and feminist reading—reveals the contemporary cultural understandings which further large-scale patriarchal hegemony in the “cool” strategy. First, we provide a literature review and synthesis of existing research on Japanese pop culture trends. Second, we analyze several representative images of Japanese “cool” strategies through a feminist lens, specifically shōnen media, which tend to be the most popular. Finally, we analyze government documents from the Japanese Cabinet Office and the Nihon-Gatari-Sho guidelines for the “re-narration of Japan”. We demonstrate an evolution in the rebranding of Japanese pop culture, providing a fresh feminist analysis of images and documents not previously studied.

Antara Shah

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
#1 Antara Shah

Abstract Name: Faster R-CNN for microscopic image analysis.

In modern biomedicine, cell analysis plays an important role in diagnostics, treatment planning, and research. Cell counting, the process of identifying the number of individual cells in an image, is an important step in cell analysis. Cell counting is often conducted manually by humans and is both time and resource intensive. This task becomes even more difficult due to cell overlap, non-uniform backgrounds, variations in the shape and size of cells, and different techniques of image acquisition. Moreover, the variability in cell counts per image presents a significant challenge, emphasizing the need for adaptable methodologies. Addressing this need, Convolutional Neural Network (CNN) models have emerged as crucial tools for advancing cell image analysis. CNN models are a type of deep learning model specifically designed for processing and analyzing large data, such as images. They use specialized layers that extract hierarchical patterns and features from an input image which improves accuracy in tasks like image recognition, object detection, and classification in comparison to traditional approaches. The goal of this research is to train and test a CNN model to accurately detect and predict the number of individual cells present in an image by employing Faster-RCNN, a CNN with region proposal. This work aims to improve automation and efficiency of cellular image analysis and test the potential of Faster-RCNN in biomedicine.

Samay Shah

FL - University of South Florida

Discipline: Natural and Physical Sciences

Authors:
#1 Samay Shah
#2 Alexey Shevelkin
#3 Kevin Yu
#4 Shiliang Zhang
#5 Marisela Morales

Abstract Name: 3D Reconstruction of an Axon Terminal in the Dorsal Striatum Releasing Both Glutamate and GABA from the Ventral Tegmental Area: A Study Using Correlative Light and Electron Microscopy

Introduction: The neurons that project from the Ventral Tegmental Area (VTA) to the Dorsal Striatum (CPu) are heavily implicated in reward pathways involved in drug use disorders. Recently, it was discovered that neurons from the VTA co-transmit glutamate and GABA neurotransmitters. It is known that cholinergic interneurons are common within the CPu but little is known how the VTA projecting neurons that co-transmit glutamate and GABA interact with the cholinergic interneurons within the CPu. The current study aims to determine the types of synapses a single VTA axon that releases glutamate and GABA makes on cholinergic interneurons in the CPu.Method: The study used correlative light and electron microscopy (CLEM) to investigate the aim. CLEM is a protocol that allows for fluorescent and electron microscopy images of the same section of tissue to be merged to label multiple neurons while visualizing the section in ultrastructural detail. We used vesicular glutamate transporter 2 (VGlutT2) to label glutamate, vesicular GABA transporter (VGaT) to label GABA, and choline acetyltransferase (ChAT) to label acetylcholine.Results: The single VTA axon that contains VGlutT2 and VGaT tags forms terminals that establish asymmetric (excitatory) synapses on ChAT-negative dendrites and dendritic spines. Also, the same VTA axon that contains VGlutT2 and VGaT

tags forms symmetric (inhibitory) synapses on a ChAT-positive soma. In the section of tissue, the axon interacted with at least nine different dendrites in the CPu.Conclusions: The single axon only interacted with cholinergic interneurons by forming symmetric synapses in the soma. The axon also interacted with at least nine different dendrites in the CPu, indicative of the modulatory power that a single axon from a single neuron has in the VTA to CPu circuit. Future research should replicate this study in other axons within this circuit to validate these findings.

Pearle Shah

PA - Drexel University

Discipline: Engineering and Architecture

Authors:
#1 Steven Kurtz

Abstract Name: 3D-PRINTING AT THE POINT-OF-CARE: PATIENT-SPECIFIC PEEK ANKLE FUSION IMPLANTS FOR DIABETIC PATIENTS

Background: Failed total ankle replacements, ankle trauma, or destructive processes such as Charcot neuroarthropathy are just a few conditions that may be treated by ankle fusion (arthrodesis) surgery. However, post-treatment complications are common, with one cohort of diabetic ankle arthrodesis patients having a complication rate exceeding 75% due to issues such as infection and non-union which can lead to reoperation and, in severe cases, amputation. Current off-the-shelf ankle fusion cages fail to address the complex anatomies of ankle defects. Conversely, customized 3D-printed metal cages may pose challenges including metal allergies, cage subsidence, or long manufacturing times. Purpose: To address complex ankle defect anatomies in diabetic patients and to reduce implant manufacturing times, this study aims to define the design envelope for the development of patient-specific ankle fusion polyetheretherketone (PEEK) cages for 3D-printing at the point-of-care (POC). Methods: A dataset of patient CT scans with a primary cause of death of diabetes was analyzed to identify the smallest and largest ankle defects. These scans were segmented using CT segmentation software (DICOM to Print) to determine the size and shape of defects across various patient anatomies. The worst- and best-case cage designs were then modeled using nTopology and Geomagic Freeform software. Three-dimensional models of the cages were exported to 3D-printing slicing software (Simplify3D) for printing on a fused filament fabrication PEEK printer. Dimensional analysis and mechanical compression testing were conducted for each printed cage design. Results: Anticipated results from both dimensional analysis and mechanical testing are expected to confirm the printed cages' dimensions and strength of at least 3600 N (as per ASTM F2665: Standard Specification for Total Ankle Replacement Prosthesis), demonstrating promising results for clinical applications. Conclusion: This approach strives to shift current clinical standards for ankle fusion surgeries, especially in diabetic patients, through customized POC PEEK ankle fusion implants.

Abdullah Shahkhan

MN - University of Minnesota - Twin Cities

Discipline: Engineering and Architecture

Authors:
#1 Abdullah Shahkhan
#2 Matthew Johnson
#3 Ming Lei

Abstract Name: Development of Preclinical Modeling Deep Brain Stimulation (DBS) Planning Software for Accurate DBS Electrode Placement

Deep brain stimulation (DBS) is an effective Parkinson's disease treatment. To target brain structures and place DBS electrodes accurately, preclinical preoperative imaging data requires subject-specific analysis. This study analyzed morphological brain differences in preoperative imaging data of rhesus macaque non-human primates (NHP) using anatomical and stereotactic neurosurgical software's electrode based coordinates. The Macaque Neuromaps Atlas provided coordinates for the dorsolateral subthalamic nucleus, a DBS target for motor movement regulation. By comparing Cicerone-generated STN coordinates for five NHPs with the reference Macaque NeuroMaps Atlas anterior-commissure STN coordinates, this study identifies significant differences of 14mm, 1.1mm, and 0.16mm in ML, VD, and AP coordinates, indicating a need for electrode relocation in DBS surgeries with software. The development of a user- friendly GUI with a DBS chamber can be integrated in 3D Slicer to meet Cicerone users' visualization needs. The study emphasizes accurate DBS electrode placement in preclinical models and improving DBS trajectory planning using Cicerone. DBS placement based on the Macaque NeuroMaps Atlas presents a detrimental impact on DBS surgical outcomes. Cicerone users will benefit from locating other brain structures through further developments of a 3D Slicer extension.

Hassan Shaikh

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:
#1 Hassan Shaikh
#2 Scott La Tour
#3 Ashley Keiser
#4 Marcelo Wood
Scott La Tour

Abstract Name: The Weekend Warrior Effect: Consistent Intermittent Exercise Induces Persistent Cognitive Benefits

Our previous studies demonstrate that brief, 2-day reintroduction to exercise following a sedentary period can reactivate cognitive benefits, providing evidence for a molecular memory window where cognitive benefits are maintained. Here, we examine whether intermittent exercise (the weekend warrior effect: 2 days of exercise a week) displays similar or distinct cognitive benefits as previously examined with 14 continuous days of exercise. To test this, we used an Object Location Memory (OLM) task with sub-threshold training conditions to examine three distinct groups of mice: one with 14 consecutive days of voluntary wheel running (VWR), one with 2 days a week for 7 weeks (intermittent), and one with only 2 days (control). The results demonstrate that both continuous and intermittent exercise parameters similarly facilitate hippocampus-dependent memory compared to the 2-day exercise control group. To further assess the duration of these benefits, mice were provided with a 7-day sedentary period (brains were collected 1-hour post OLM for qPCR). Results demonstrate diminished benefits in continuous exercise and maintained benefits in intermittent exercise. Further, compared to continuous exercise, intermittent exercise mice exhibited elevated levels of Acvr1c and Bdnf in the dorsal hippocampus (critical genes for long-term hippocampal-dependent memory). Together findings suggest that consistent intermittent exercise persistently facilitates learning. Further, intermittent exercise may enhance the molecular memory window duration of exercise-induced cognitive benefits. Current work aimed at investigating the underlying epigenetic and molecular mechanisms allowing for the maintenance of exercise benefits on cognitive function will shine light on optimal lifestyle and therapeutic applications for cognitive enhancement.

Dilasha Shakya

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Dilasha Shakya

Abstract Name: Sentimental Analysis using Machine Learning

In this digital age where everyone is on social networking platforms like Facebook, Instagram, and Twitter, opinions, and emotions expressed in these sites have been crucial for different entities. The information extracted can be used for business ideas, marketing, getting updated with recent trends, and communication. The feedback and ideas that people express on social media are also important for companies to boost their products or improve on drawbacks. For all these purposes, sentimental analysis can be used to analyze and evaluate users' attitudes and opinions from subjective texts. Sentiment analysis utilizes machine learning techniques and natural language processing (NLP) to identify the emotions behind texts. This involves pre-processing data, extracting crucial features/words, and evaluating polarity through diverse machine-learning algorithms. The process of sentimental analysis starts from unstructured data from the internet that includes spelling errors, sentence repeats are analyzed and removed. Significant adjectives are then chosen to categorize the data's polarity. Some researchers use polarity markings for each word/emoticon, aiding overall emotion determination. Feature extraction methods encompass Bag of Words, word embedding, word count, and noun count. Classification methods categorize data based on its features. We measure the performance of the classifier in terms of recall, precision, and accuracy. Machine learning algorithms stand out in this research due to their proven accuracy in various models. Sentimental analysis is an advancing field that can be used in most systems in this technological age assisting in good customer-company relationships, healthcare systems, crisis management, political analysis, marketing, and trading. Machine learning approaches constitute an essential part of sentiment analysis tasks. Hence, using the right approach with increased model performance measurements is essential to help us enhance the efficiency of sentimental analysis systems.

Muhammed Shalan

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Muhammed Shalan
#2 Sonja Virkus
#3 Andrew Hardaway

Abstract Name: Assessing the Dose-Dependent Influence of Acute Cocaine Exposure on Gcg Neuron Activity in the Caudal Nucleus of the Solitary Tract.

Glucagon-like peptide-1 (GLP-1), traditionally recognized for its role in glucose homeostasis and appetite, has emerged as a potential modulator of reward pathways in recent research, offering promise in understanding the neural mechanisms of cocaine addiction. Cocaine addiction poses a significant concern, with over two million regular cocaine users in the US, and its usage contributing to 20% of drug overdose deaths. Understanding these mechanisms can guide therapy development for cocaine addiction. Recent studies have highlighted the presence of GLP-1 receptors and GLP-1-producing cells (Gcg cells) in key areas of the brain associated with reward processing, such as the caudal nucleus of the solitary tract (NTS). Here we investigated the role of GLP-1 signaling on addictive behaviors, focusing on cocaine consumption.In a

behavioral assay, Gcg-GFP mice were randomly distributed into three experimental groups: 1) Saline, 2) 5 mg/kg cocaine, and 3) 20 mg/kg cocaine. 1.5 hours post-injection, the mice were transcardially perfused and their brains dissected. An anatomical characterization of Gcg cells in the NTS was performed. Post-perfusion, coronal brain sections, targeting the region of the caudal NTS, were cryosectioned using free-floating collection techniques. The sections were subjected to c-Fos immunohistochemistry, an effective method for mapping neuronal activation. The immediate early gene c-Fos, a molecular marker of neural activity, illustrated the brain regions activated by cocaine exposure. The sections were imaged using a Keyence BZX-800, and CellProfiler cell counting software was utilized to quantify Fos-positive nuclei and assess changes in neuronal activation. Analysis of this data establishes the impact of acute cocaine exposure on the activity of Gcg neurons in the NTS. Utilizing this data, future experiments could use chemogenetic transgenes to manipulate the activity of Gcg neurons to investigate their impact on cocaine-seeking behavior and the establishment of residual memories associated with cocaine exposure.

Lalitha Shanmugasundaram

DC - The George Washington University

Discipline: Interdisciplinary Studies

Authors:
#1 Lalitha Shanmugasundaram

Abstract Name: Balancing Gender Equality and the Environment to Combat India’s Menstrual Waste Issues

In India, with over 355 million menstruating individuals, challenges persist for women in achieving proper menstrual hygiene management (MHM), crucial for gender equality. Despite governmental and NGO efforts, MHM schemes distributing plastic products contribute to a significant waste problem, harming the environment. To mitigate this, the government has installed incinerators in schools to balance product use with environmental concerns. Yet, a critical research gap questions the effectiveness and successful implementation of these incinerators. This project explores India's menstrual waste management, delving into incinerators' benefits and detriments as a disposal method for sanitary napkins. The goal is to scrutinize how stakeholders can address menstrual waste without compromising women's right to choose products aligned with their bodies. A comprehensive analysis of 12 menstrual health policy initiatives highlights gaps in the Indian context, while 54 in-person interviews with college students in Coimbatore unravel women's lived experiences with incinerators. The findings reveal a nuanced scenario, emphasizing the need for substantial improvements in policy development and implementation. The crux lies in reconciling gender equality and environmental sustainability, challenging the notion that they are mutually exclusive in addressing menstrual health. This research advocates for a holistic approach that transcends the dichotomy between personal choice and environmental stewardship, offering a clarion call for a more balanced and integrated strategy.

Amal Sharafkhodjaeva

MN - Minnesota State University - Mankato

Discipline: Social Sciences

Authors:
#1 Amal Sharafkhodjaeva
#2 Rohit Paruchuri
Rohit Paruchuri

Abstract Name: "Vibe Check": Examining the Link Between Relationship Satisfaction and Life Goals

This study investigated the connection between life goals, individual well-being, and relationship satisfaction. Investigators hypothesize that partners with similar life-goal rankings will have higher relationship satisfaction levels. Previous research suggested that lack of similarity in partners' life goals is related to increased divorce rates. Conversely, perceived support for life goals within a marriage relates to increased marital satisfaction. Investigators did not find prior research that found a connection between differences in individuals' prioritization of life goals and couples' relationship satisfaction. As new approaches (e.g., Tinder) to finding a long-term partner are being developed, it is important to understand differences in partners' life goals and how they can influence the well-being of long-term relationships (e.g., families). The data can predict individuals' compatibility and well-being in relationships, which will help individuals form lasting, satisfactory connections. The study explores how partners prioritize their goals across seven domains: career, social life, immediate family values, hobbies and interests, religion and spirituality, healthy life choices, and forming personal and romantic relationships, and examines satisfaction and priority rankings between paired participants. The Couples Satisfaction Index (CSI) will be used to measure relationship satisfaction, and ranks for the life goals of individuals will be used to find critical differences in individuals' life goals prioritization. Investigators will compare different couples to examine the extent of similarity in their life goals ranking and relationship satisfaction. The findings will serve as a foundation for larger-scale studies to reveal crucial life goals to be ranked similarly between partners to make relationships more satisfactory. Additionally, the study may contribute a new theory on relationship satisfaction and the influence of life goals ranking to multiple fields in psychology, including family counseling, which will help people form healthier families.

Abigail Sharath

MI - University of Michigan - Ann Arbor

Discipline: Natural and Physical Sciences

Authors:
#1 Abigail Sharath
#2 Dr. Vipin Paliwal

Abstract Name: Studies on Diclofenac and its Metabolism

Drug induced liver injury (DILI), also referred to as drug induced hepatotoxicity, is a challenge to predict despite substantial preclinical and clinical testing. Several factors such as sex, age, weight, height, and BMI contribute significantly to DILI due to idiosyncratic reactions. There are various nongenetic and genetic factors that impact the way in which the body responds to xenobiotics. Due to the unpredictable nature of idiosyncratic reactions, it can be difficult to understand the detailed mechanisms of DILI. This project studies the metabolic degradation of diclofenac, a nonsteroidal anti-inflammatory drug, in order to gain a better understanding of its hepatotoxicity and its metabolic clearance. The involvement of liver enzyme cytochrome P450 responsible for metabolic degradation of diclofenac was studied. Various concentrations of diclofenac were incubated with rat liver microsomes. These microsomes are a rich source of cytochrome P450 enzymes. Following incubation, the samples were evaporated to dryness in order to isolate the amount of diclofenac remaining in the incubation mixtures. The loss of the parent drug was observed to determine toxic concentrations of diclofenac and its metabolic clearance. Quantitation of diclofenac was done using Thin Layer Chromatography (TLC) at various time points followed by UV-visible spectroscopy at 276 nm. Over the course of this study, a method for determining the metabolic degradation of diclofenac by rat liver cytochrome P450 was optimized. The metabolic degradation was followed from 5 minutes to 45 minutes. The percent loss of the parent drug was found to be 5%,10%, and 14%, at 5, 15, and 45 minutes respectively. It is believed that metabolic degradation continues beyond 45 minutes, and future studies are planned to follow degradation for extended time periods.Keywords: diclofenac, cytochrome P450, thin layer chromatography

Maryam Shariff

IL - University of Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Maryam Shariff

Abstract Name: Tumor Phagocytosis by Macrophages in Prostate Cancer

While immune checkpoint inhibitors are effective in subsets of patients across multiple malignancies, their efficacy is limited in metastatic, castrate-resistant prostate cancer patients (mCRPC). mCRPC demonstrates a “cold” tumor microenvironment (TME) with a sparse immune cell infiltrate. This “cold” TME contributes to the lack of effectiveness of immune checkpoint inhibitors and immunotherapy. Tumor-associated macrophages (TAM), are key immunosuppressive myeloid cells that predominate the immunologically “cold” prostate TME. Within the TME, reprogramming TAM to work against prostate cancer cells could result in enhanced efficacy of immune checkpoint inhibitors. NLRP3 inflammasome is a complex of multiple proteins that activate the innate immune system and inflammatory response signals. Our laboratory discovered that ADT enhances NLRP3 expression within tumor-promoting M2 TAM. Using a small-molecule activator of NLRP3 (NLRP3 agonist), we propose to reprogram TAM, destroying tumor cells through phagocytosis. We hypothesize that the activation of NLRP3 will overcome TAM-mediated immunosuppression in ADT-treated prostate cancer, resulting in the sensitization of advanced prostate cancer to immune checkpoint inhibitors. Through conducting a phagocytosis assay, I aim to dissect the mechanism of how concurrent AR blockade and NLRP3 agonist (BMS-392959) treatment enhances phagocytosis of cancer cells by M2-TAM. I will also investigate NLRP3-primed phagocytic (NPP)-iBMDM expression of PD-L1 and CD86 following the treatment with ADT and NLRP3 agonists. My contribution to research with M1/M2-polarized immortalized murine macrophages will add to our understanding of the mechanistic basis of the NLRP3 inflammasome, crediting NLRP3 activation as a novel “macrophage phagocytic checkpoint” in advanced prostate cancer treatment.

Abigail Sharkis

DC - American University

Discipline: Social Sciences

Authors:
#1 Abigail Sharkis
#2 Ali Valenzuela

Abstract Name: Review of Literature on the January 6th Insurrection

While working with Professor Valenzuela this Summer, I identified and read all the relevant literature that addressed political violence, anti-democratic behavior, elite messaging, partisanship, polarization, and racial consciousness. What follows is a theoretical synthesis of the literature and some potential research questions that come out of it. In terms of explaining the insurrection at the Capitol on January 6th, I will argue that those who participated had an underlying grievance surrounding their attachment to white identity which was activated by political elites through the construction of a narrative of a stolen election. Election fraud is the respectable veil for a deeper desire to protect white political power and priorities.Through historical analysis, Rachel Kleinfeld identifies 4 risk factors for electoral violence: highly competitive elections, partisan divisions based on identity, electoral rules that enable winning based on exploiting identity cleavages, and weak institutional constraints on violence. In 2020, the United States exhibited all four of these characteristics. While Kleinfeld (2021) gives us an explanation for why there was violence around the 2020

election, it does not help us identify why certain individuals were more likely than others to engage in political violence and undemocratic behavior. The popular explanation espoused by the right is that most people were at the Capitol to protest election integrity and the alleged fraud of Joe Biden and the Democrats. However, the literature suggests that even though 'election integrity' is the explanation, the far-right was actually motivated by a perceived attack on white identity and white power.

Divija Sharma

IA - University of Iowa

Discipline: Social Sciences

Authors:
#1 Divija Sharma

Abstract Name: Information Distortion of Visual Stimuli in Making Predictions

Decision makers often establish an early preference after being exposed to preliminary information about their choices—and this early preference can affect how subsequent information about choice options is processed. Importantly, such 'information distortion' can have a substantial influence on people's final judgments and decisions. In this study, we aim to test the role of information distortion when making predictions about future outcomes. Namely, we are testing whether people's initial predictions about potential outcomes can impact how additional prediction-relevant information is processed at a later stage—and how information distortion resulting from early predictions can impact final predictions.The study employs a paradigm involving visual stimuli as the primary or initial information presented as they are processed more fluently allowing for quick processing. Participants are presented with basic information about two artists and asked to make predictions about who won a prize. The art portfolios are equal in quality and different media (drawings, paintings, etc.) are presented at each trial and participants are asked for their evaluation of the art and prediction about the winner. We predict that after the first round of presentation of stimuli, participants would have a leading alternative that would influence their later evaluations and predictions about other media. Their initial preference would influence their judgment of other media and final prediction about who won the prize. This can also be tested with more real-world relevant contexts like looking at resume designs as the first information and predicting success of job application. This demonstrates how information distortion extends to a level beyond personal preferences, i.e., to factual analysis as well.

Divija Sharma

IA - University of Iowa

Discipline: Social Sciences

Authors:
#1 Divija Sharma

Abstract Name: Information Distortion of Visual Stimuli in Making Predictions

Decision makers often establish an early preference after being exposed to preliminary information about their choices—and this early preference can affect how subsequent information about choice options is processed. Importantly, such 'information distortion' can have a substantial influence on people's final judgments and decisions. In this study, we aim to test the role of information distortion when making predictions about future outcomes. Namely, we are testing whether people's initial predictions about potential outcomes can impact how additional prediction-relevant information is processed at a later stage—and how

information distortion resulting from early predictions can impact final predictions.The study employs a paradigm involving visual stimuli as the primary or initial information presented as they are processed more fluently allowing for quick processing. Participants are presented with basic information about two artists and asked to make predictions about who won a prize. The art portfolios are equal in quality and different media (drawings, paintings, etc.) are presented at each trial and participants are asked for their evaluation and feedback. We predict that after the first round of presentation of stimuli, participants would have a leading alternative that would influence their later evaluations and predictions about other media. Their initial preference would influence their judgment of other media and final prediction about who won the prize. This can be tested with more real-world relevant contexts like looking at resume designs as the first information and predicting success of job application. This demonstrates how information distortion extends to a level beyond personal preferences, i.e., to factual analysis as well.

Riddhi Sharma

CA - Aspiring Scholars Directed Research Program

Discipline: Engineering and Architecture

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Abstract Name: Using Quantum Neural Networks (QNNs), Quantum Vision Transformers (QVT), and the Mathematical Morphological Reconstruction Algorithm (MMR) for Brain Tumor Detection

Brain tumors affect millions around the world, so detection is critical to helping doctors determine treatment. Currently, radiologists manually identify tumors through MRI (Magnetic Resonance Imaging) scans; however, this poses several limitations: it creates a heavy reliance on the experience of radiologists, has become increasingly costly and time-consuming, and is not as accessible to areas that lack the necessary resources and doctors. With the advancement of deep learning algorithms, a more accessible and efficient solution is possible. Given the existing research in classical Convolutional Neural Networks (CNNs) for tumor detection, Quantum Convolutional Neural Networks (QCNNs) and Quantum Vision Transformers (QVT) offer a promising approach to the problem. Mathematical Morphological Reconstruction (MMR), another image processing method, provides a relative metric for success in the QCNN, and is another classical alternative to CNNs. This research compares the accuracy and computational speed of the MMR, QCNN, QVT, and CNN algorithms to determine whether introducing a quantum aspect presents any noticeable advantage. To build these models, extensive datasets of MRI brain scans were collected. The MMR algorithm involved applying various techniques such as dilation, erosion, and skull stripping through OpenCV2's morphology functions. The QCNN algorithm utilizes quantum power to encode the data into a parametrized quantum circuit and apply convolutional and pooling layers. Futurewise, QVTS will be implemented with QCNNs for higher spatial understanding. So far, our results indicate that the MMR algorithm achieved up to 92% accuracy. These results will be compared with the accuracy of the QCNN, QVT, and CNN algorithms.

Armaan Sharma

CA - Ohlone College

Discipline: Interdisciplinary Studies

Authors:
#1 Armaan Sharma
#2 Aarthi Raghavan
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Aarthi Raghavan
Jessica Kim

Abstract Name: A Correlation Analysis: Investigating the Gender Bias In High School Public Forum Debate

For the past few decades, there has been a clear difference in success between male and female debaters in high school and collegiate debate. The dominant explanation for this trend is gender bias – there are several gender stereotypes relevant to persuasive speaking such as brilliance, leadership, and assertion that can influence a judge's decision. While previous research focuses on the success disparity between males and females, speaker points have been untouched as a method of analysis. Speaker points are numerical values given to individual competitors by judges to assess their general speech and presentation throughout rounds. Previous research, however, has not focused specifically on the speaker points data and has also not controlled for representation. We use publicly available data from Tabroom to further study the gender bias in three of the most prestigious debate tournaments for high schoolers, using speaker points and overall representation as our metrics. The overall gender representation in entries is compared with the gender representation in Top 20 speakers to determine if an imbalance exists. In line with previous trends, it is highly likely that a gender bias is present in high school Public Forum debate, with male representation in the Top 20 speakers increasing roughly 6% to 8% from overall representation and vice versa for female competitors. Because speaker points are subjective, male speakers consistently receiving higher points than females compared to representation illustrates the general inequity in Public Forum debate.

Brock Sheehan

UT - Utah Valley University

Discipline: Natural and Physical Sciences

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#12 Ruhul Kuddus

Abstract Name: Association of Cyclooxygenase 1 (COX-1) rs4648298 and Cyclooxygenase 2 (COX-2) rs20417 Polymorphisms and Prostatic diseases Among Lebanese Males

Background: COX-1 and COX-2 genes encode prostaglandin-endoperoxide synthases (PTGS) isoenzymes,

involved in inflammation and possibly neoplasms. The genes are expressed in the prostate gland. Both genes have several polymorphisms. Here we examine the association of rs4648298 (A-G transition) and rs20417 (G-C transversion) polymorphisms and prostatic diseases. This research was approved by the Utah Valley University IRB. Materials and Methods: DNA was extracted from a blood sample of 56 healthy volunteers, 51 volunteers with benign prostate hyperplasia (BPH), and 61 volunteers with clinical prostate cancer (PCa). Genotyping was conducted through PCR-RFLP analyses. The restriction enzymes used were BaeGI (for rs4648298) and AciI (rs20417), respectively. Alleles with the restriction site were considered recessive. The association was inferred through statistical analyses of the distribution of the genotypes (BB, Bb, and bb or AA, Aa and aa), and allele frequencies among the controls and the affected groups. A p-value of ≤ 0.05 was considered significant. Results: The distribution of the genotypes is in Hardy-Weinberg equilibrium for all three groups. The b allele of the COX-1 gene is extremely rare (less than 3%), and no significant association between the B or b allele or BB, Bb, and bb genotypes and prostatic disease was observed. The a allele of the COX-2 gene is more common in the BPH group ($p=0.011$), but not the PCa group ($p= 0.472$) or the combined affected group ($p=0.068$) compared to the control group. Conclusions: There is no association between the rs4648298 polymorphisms of the COX-1 gene and prostatic diseases. The a allele of the rs20417 polymorphisms of the COX-2 gene is associated with higher risks of BPH and possibly PCa. The small sample size, sampling from one ethnic group, and the low distribution of the b allele in the Lebanese population are limitations of this study.

Brock Sheehan

UT - Utah Valley University

Discipline: Natural and Physical Sciences

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Abstract Name: A preliminary investigation on the association of the single nucleotide polymorphisms rs693 and rs10420331 of the APOB gene and prostate cancer

Background: The APOB gene encodes apolipoprotein B-48 and apolipoprotein B-100, which are major components of chylomicrons and LDL, respectively. Recent reports indicate an association between the single nucleotide polymorphisms (SNPs) rs693 and rs10420331 of the APOB gene and breast cancer. The APOB gene is expressed both in the breast and prostate gland to a nearly similar level. Breast and prostate tissues have lobular glands, and both tissues are sensitive to gonadal steroids. Here we investigated the association between the two SNPs and prostate cancer (PCa). This study was approved by the Utah Valley University (IRB #1013). Method: Blood samples were obtained from consented volunteers (50 years and older) who participated in a prostate disease screening campaign in Lebanon. DNA extracted from blood cells of 58 healthy subjects with no prostatic diseases and 44 subjects with confirmed PCa was genotyped by PCR-RFLP method. The restriction endonucleases XbaI and EcoRI were used for genotyping rs693 and rs10420331. Alleles with the restriction site were considered recessive. The association of the SNPs with PCa was tested by examining the differences in the frequency of the alleles (X or x, and E or e) and the distribution of genotypes (XX, Xx, xx, and EE, Ee and ee). A p-value of ≤ 0.05 was considered significant. Results: The distribution of the genotypes for both the SNPs is in Hardy-Weinberg equilibrium. No significant difference in the frequency of X and x alleles ($p=0.171$) and E and e alleles ($p=0.06$) and

distribution of the genotypes between the control and the affected group was observed. Conclusions: This preliminary examination showed no association between the SNPs rs693 and rs10420331 and prostate cancer risk. We are currently investigating a larger sample and included other prostatic diseases (including benign prostate hyperplasia) in this study.

Alexandra Shehigian

PA - Messiah University

Discipline: Humanities

Authors:
#1 Alexandra Shehigian

Abstract Name: Women's Role in Shaping the Narrative of American History Textbooks, 1800-1865

Prior to the Civil War, history textbooks were an integral source of information about the American past to the public. Beyond conveying facts and figures, these books enabled writers to control the ideologies consumed by new generations of learners. The textbooks that surfaced during the first hundred years of the United States' existence provide a unique window into common beliefs of the time. They are widely understood to contain the creation story of America, casting the United States as a noble project launched by the European "discovery" of North America. This is especially true for textbooks authored by white women between 1800 and 1865, which enjoyed widespread readership, shaped standards for other history textbooks, and defined a broader sense of American identity.Although comprehensive studies of early American history textbooks have surfaced in the past decade, greater attention to the impact of women textbook authors is needed. In the early nineteenth century, educational reformers established numerous girls' schools across the United States, with over 180 such institutions founded between 1790 and 1830. As more women received formal schooling, they gained footholds in other areas of education, including the history textbook. Some women authors found immense influence in the educational community: their textbooks were read in multiple states, enjoyed numerous reprints, and, in the case of Emma Willard, were even copied by male authors. These women were heavily influenced by prevalent gender expectations casting women as civic and spiritual educators for their families. This study considers the contents of textbooks authored by women such as Emma Willard and Elizabeth Peabody, published between 1800 and 1865. Thorough analysis of textbook contents reveals abundant appeals to both civic virtue and providential support of Anglo-American colonization and expansion. These narratives created a distinct sense of American exceptionalism which was readily consumed by the public.

Mina Sheikh

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

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#1 Mina Sheikh
Emily Clemens
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Abstract Name: Bacteria-Induced Internal Egg Hatching in Caenorhabditis elegans

The microbiome has been linked to many host-related health factors, including metabolism, immune function, and longevity. Mechanistically understanding how the microbiota impacts host physiological

processes can lead to the development of potential therapeutics. The genetic tractability of Caenorhabditis elegans makes it an ideal model organism to examine how bacteria impact host reproduction and life span. A lifespan experiment was conducted utilizing the wild-type C. elegans strain N2. These nematodes were raised on either Ochrobactrum BH3, a commensal microorganism found in their natural habitat, or E. Coli OP50, their conventional laboratory diet. The results indicate that BH3 induces a high percentage of internal egg hatching (28.0+9.8%), compared to a low percentage on OP50 (0.5+1.22%, p-value = .0001). This is a novel finding because previously pathogenic strains of bacteria have been reported to increase internal egg hatching but decrease life span. N2 was then screened with the CeMbio collection, a library of strains isolated from the natural C. elegans environment. This enabled the study to explore the role of bacteria in modulating reproduction and life span in manner physiologically relevant to C. elegans. Three additional bacteria that induce internal egg hatching were identified. This project explores the role of commensal bacteria in C. elegans reproduction and life span that might be conserved across other model organisms.

Zachary Shelor

VA - James Madison University

Discipline: Natural and Physical Sciences

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Abstract Name: Synthesis of N-Pyrazolyl and N-Benzotriazolyl Derivatives as Chelating Ligands for Ruthenium complexes

In this study we are preparing and studying 2,4- dimethylpyrazolynethylproponoate (L1), the symmetric (L3) and asymmetric (L4) isomers of N- benzotriazolylmethylproponoate, and their corresponding carboxylates. These are potentially hemilabile ligands that can coordinate to a metal through a heterocyclic nitrogen and/or an oxygen in the ester or carboxylate moiety. The solvent-free, catalyst-free Michael addition of 3,5-dimethylpyrazole with methyl acrylate resulted in the formation of an ester (L1) with high yields. L1 was allowed to react with tetrabutylammonium hydroxide (TBAH) to form the carboxylate anion (L2) of the ester as a viscous liquid. L2 was characterized using NMR and IR spectroscopy. L2 was allowed to react with RuCl2(PPh3)3 and the products were investigated with 31P NMR spectroscopy. These data indicate that the reaction yielded multiple products, which have yet to be separated and individually characterized. Under similar conditions, the Michael addition of benzotriazole with methyl acrylate yielded two isomeric esters (L3 and L4) which were separated by elution chromatography. When treated with TBAH, both L3 and L4 formed the corresponding carboxylates (L5 and L6). Treatment of these anions and the precursor esters with RuCl2(PPh3)3 is currently being investigated.

Peter Shen

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

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Abstract Name: Title: Impaired motor learning and molecular layer morphology changes in Rett syndrome mice with MECP2 deletion in Purkinje cells

Rett syndrome (RTT) is a severe autism spectrum disorder that primarily occurs in females. It manifests as cognitive and behavioral impairments, as well as repetitive behaviors, motor disabilities, and decreased social skills. RTT is caused by mutations in the MECP2 gene, which is situated on the X chromosome. Considering the role of the cerebellum in motor coordination and learning, we hypothesize that Purkinje cells, the principal neuron type in the cerebellum, are linked to motor dysfunction in mice with the absence of MECP2. In this study, we compared two mice groups: mice with MECP2 knocked out in Purkinje Cells (MECP2 PC cKO) and controls. The viability of the two groups was first confirmed using an immunofluorescence assay. We further examined motor learning by investigating classical eyeblink conditioning in which a signal light is paired with an air puff to generate a conditioned response. Our data shows that mice with MECP2 deletion in Purkinje cells exhibit impaired conditioned response, suggesting deficits in motor learning. We then trained mice in a forelimb-based motor task to monitor their performance in more difficult tasks beyond eyeblink conditioning. Lastly, immunostaining and western blotting were used to analyze the dendritic morphology and receptor density in the molecular layer of the cerebellum. Our data shows significant differences in the density of GluA1 and GluA2 AMPA receptor subunits between the control and knockout groups.

Allyson Shenkman

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Allyson Shenkman

Abstract Name: Diet Change Over Time in the Ais Community of Cape Canaveral, Florida

Diet change over time is assessed for a Malabar II period (900 C.E. to 1565 C.E.) Ais Indigenous community in Cape Canaveral, Florida, at the Penny Plot site (8BR158). To this end, 7,760 faunal fragments were examined, with 1,876 identified at the species, genus, or family level. Through identification and analysis of faunal remains, it can be concluded that, while the amounts of overall remains left behind as a whole increased, there were no significant changes in the types of fauna utilized or patterns of consumption. This suggests that the indigenous people who occupied this site managed their food resources very effectively for a long period of time and likely passed on management strategies through generations to allow for plentiful food for years. The proposed resource longevity in this area corroborates with other precontact areas along the Southeast Atlantic coast of the United States, providing evidence that these indigenous coastal societies carefully sustained their resource supplies for centuries. This area of Florida has received little serious attention from scholars in the past, and through studying sites such as the Penny Plot site we are starting to paint a picture of precontact and colonial era Indigenous life in coastal Central Florida. Thus, we are better educating ourselves about the people who came first to Florida and their complex relationship with their surrounding environment, paralleling that of modern Floridians'.

Noah Shepardson

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
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Abstract Name: Convolutional Neural Networks for Density Map-Based Analysis of Adult Stem Cells Imagery

This research aims to investigate the use of deep learning methods for identifying and characterizing adult stem cells for nerve regeneration through chemical and electrical stimulation. Traditional methods of analyzing data from stem cell images can be time-consuming and subject to human error, making it challenging to derive accurate and consistent results. We propose using deep learning techniques to automatically identify and label stem cells in images with different staining methods and determine their boundaries and properties to address this issue. The deep learning approach is expected to enable faster and more accurate analysis of large datasets of cell imagery, providing a more comprehensive understanding of the behavior of adult stem cells under different conditions. Our proposed model uses a convolutional neural network (CNN) architecture to identify individual cells and place bounding boxes around them. We will train the model using a labeled image dataset collected at Iowa State University and evaluate its performance against attempted techniques. The trained model will help explore the possibility of electrical stimulation in modulating stem cell differentiation and potential applications for neural regeneration.

Mary Sherrard

KY - Morehead State University

Discipline: Social Sciences

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#5 Gregory Corso

Abstract Name: Associations Between Religion and Mental Health

Research into the relationship between religion and mental health has grown dramatically over the past 50 years. The literature has demonstrated that religion can positively impact mental health by decreasing drug overdoses and suicide rates (Wojciechowska, 2021). However, it also revealed that religion can negatively impact mental health by fostering feelings of guilt and inadequacy (Ellison, 2014). This research investigated additional issues relating to mental health by exploring other connections between mental health and lifestyle factors. To do so, a questionnaire consisting of 76 multiple-choice and open-ended questions was developed using SurveyMonkey.com and delivered using Prolific.com. Prolific.com was also used to recruit 500 participants, restricted to U.S. citizens living in the continental U.S., 18 years old or older, and English-speaking. After an initial screening of the responses, the data from 44 participants were excluded from the analysis. All 500 participants were paid 3.00 USD for their participation. The initial analysis showed several significant findings. Using Chi-Square tests for independence, the responses to the question concerned with committing suicide and the responses to the question about being diagnosed with any mental disorders by a medical professional were found to be statistically significant (X2 (1, N = 456) = 49.141, p < .001). This may be because mental illness and thoughts of suicide are probably interrelated. The responses to questions about religion and mental health were not statistically significant. However, subsequent analyses may provide additional insights. The questions about mental health and religion may have been too general. Further research should address specifics of the religion, the extent to which participants believe in various aspects of their religion, and the depth of those beliefs. While specific results about religion and mental health were

lacking, other results from this study provide insights into the connections between mental health and other lifestyle factors.

Layne Sherwood

MN - University of Minnesota - Duluth

Discipline: Social Sciences

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#1 Layne Sherwood
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Abstract Name: Do placebos have their effect because of cerebral laterality?

Layne Sherwood: sherw124@d.umn.edu United States, Minnesota University of Minnesota Duluth Psychology major Department of Psychology Faculty Mentor: Dr. Robert Lloyd This research project intends to explore the neurological basis of placebo effects. We hypothesize that the placebos differentially activates the left hemisphere. The right hemisphere of the brain mediates negative emotionality, such as pain. Research has shown that greater right frontal activity occurs as a response to watching films which elicit negative emotions. On top of this, people with damage to the right hemisphere tend to show manic symptoms, and inversely, people with damage to the left hemisphere show depressive symptoms thus illustrating that the right hemisphere mediates negative emotionality. To study this, participants are told that we are assessing pain thresholds of a medicinal plant extract. The experimental group is told they will be testing the effectiveness of a natural pain reliever, which is actually inert, and is applied to their hand. All subjects will be asked to hold a shock probe and to let go once it becomes too painful, but it is never activated. Neurological activity in the two hemispheres is computed by observing the power spectral density of alpha activity in frontal, temporal, and parietal homologues. The relative activity in the two hemispheres at these sites will be compared at baseline and during shock expectation. We hypothesize that lateralization of activity to the right hemisphere will increase with anticipation of shock, and that this shift in activity will be attenuated in the placebo group. Such results will help elucidate the neurological basis of placebo effects. Unexpectedly, multiple participants have reported feeling a shock from the probe, despite it having no ability to do so. This has shown us that suggestion can have a very powerful effect, especially in the context of this project.

Zifang Shi

CA - Irvine Valley College

Discipline: Mathematics and Computer Science

Authors:
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Zixuan Yin

Abstract Name: Understanding the Impact of ChatGPT on College Education: A Comprehensive Study

Recently, an artificial intelligence language model like ChatGPT has grown in popularity among college students, increasingly pervasive in higher education from academic tutoring to personal productivity. This comprehensive study will utilize information from academic papers found on Google Scholar and data collected among college students to analyze and assess the multifaceted impact of ChatGPT on college

education in terms of disciplinary perspectives, academic writing skills, STEM education, challenges in learning, ethical considerations, and the integration of AI tools in the classroom. By surveying students and educators, we analyzed how different majors use ChatGPT and its varying impact on the quality of academic writing, creativity, and critical thinking. Our research explored in-depth the perceptions of STEM students, assessing the unique challenges and benefits they encountered. We also discussed the ethical dimensions of using the ChatGPT, examining issues such as plagiarism and academic integrity. We further investigated the effectiveness of the tool in addressing specific academic challenges and compared it to traditional learning tools, aiming to gain insight into its broader impact on education. Moreover, we assessed the long-term impact of the ChatGPT on learning outcomes, exploring its effect on critical thinking development and overall academic success. This study ultimately presents educators with guidelines for responsible AI integration and advocates for the development of comprehensive institutional policies to navigate ethical considerations. Our findings provide educators, students, and policymakers with valuable insights into the dynamics of AI in higher education.This comprehensive study navigates the evolving landscape of ChatGPT in higher education, providing insights into discipline-specific dynamics, academic impacts, ethical dimensions, and the future integration of AI tools into formal educational settings.

Allison Shibata

NC - Elon University

Discipline: Education

Authors:
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Abstract Name: Examining the Effects of Walking Curriculum on Two Autistic First-Graders

Nature has positive effects on the mental, emotional, and physical wellbeing of children and adults. Nature-based learning (NBL) leverages these benefits to create an enriching and positive educational experience. Despite the evidence on the benefits of NBL, there is little research on its use with autistic students. Friedman and Morrison (2021) studied the effects of NBL with five autistic students, and they found that the students encountered affordances related to social and academic proficiencies. Additionally, the educators involved in the case study had positive outcomes. Friedman et al. (2023) also investigated practitioners' roles in facilitating NBL for autistic children. Four key themes were developed from interviews with practitioners from three countries, highlighting their active role in affirming and supporting autistic learners, while also uncovering the challenges faced by both autistic students and practitioners. Because school is often a stressful environment for autistic students, NBL offers an alternative way to support their social and academic needs. One form of NBL is called walking curriculum (Judson, 2020), which integrates outdoor walks with a curricular focus. My co-mentors and I are conducting a case study at an elementary school with one teacher and two autistic students in her class who go on walks every day. Our research questions are as follows: What are the effects of walking curriculum on autistic students? What affordances and challenges do autistic students and their teacher experience on walks with a curricular focus? What are caregivers' perspectives on walking curriculum with autistic students? Data collection includes interviews with the teacher, the two students and their caregivers, field notes on the walks, and document analysis. We will be collecting data from September 2023 until April of 2024, and we will use Braun and Clarke's (2021) reflexive thematic analysis to develop codes and themes.

Siddhartha Shibi

CA - San Jose State University

Discipline: Mathematics and Computer Science

Authors:
#1 Siddhartha Shibi

Abstract Name: Furthering the Natural Language Processing Capabilities of Humanoid Robot Pepper through application of RLHF

Humanoid robots have the potential to revolutionize many aspects of our lives, from providing companionship, to assisting with tasks in the home and workplace. As they get older however, outdated software or hardware limit the utility which a humanoid robot provides. This project expands on the previously explored concept of integrating LLMs (Large Language Models)—to supplement and enhance the capabilities of such robots—by applying human-emotion analysis through RLHF (Reinforcement Learning with Human Feedback), and improving quality of response from such emotion detected. The subject of this project is the humanoid robot Pepper, by Softbank Robotics, a popular robot designed to interact with humans; however, due to its weak natural language processing (NLP) capabilities, it struggles to adequately articulate responses in human-robot conversation. Our previous approach incorporated PaLM2 into Pepper's existing system with the goal of improving the robot in conversation. A potential problem with the solution was the possibility of the LLM producing hallucinations which may confidently provide incorrect responses. By integrating RLHF, the robot is capable of determining the accuracy of provided responses from reading human facial features and modifying provided responses. The goal is that integrating RLHF into the robot's NLP system will significantly improve its ability to generate more coherent responses, leading to more natural human-robot interactions. Overall, this presentation will build upon the previous integration of PaLM2 by using RLHF to adjust responses. It's believed that the proposed approach can pave the way for developing more intelligent human-robot interactions in the future.

Hesham Shiekhtholth

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: AAV-progranulin gene therapy corrects phenotypes associated with progranulin deficiency up to one-year post injection

Frontotemporal dementia (FTD) is a common form of early-onset dementia and is characterized by neuronal dysfunction in the frontal and temporal lobes, resulting in progressive lingual and behavioral impairments. Mutations in the progranulin gene (GRN), which codes for the lysosomal glycoprotein progranulin, can cause FTD. Of the 70 identified pathogenic GRN mutations, the majority are loss-of-function, making AAV-progranulin gene therapy a promising approach for FTD. Previous work from my lab has demonstrated the effectiveness of neurotrophic AAV-mouse progranulin (AAV-mGrn) gene therapy in progranulin-deficient mice. Neurotrophic AAV-mGrn gene therapy can reverse lysosomal deficits, lipofuscinosis, and microgliosis observed in mice with complete loss of progranulin (Grn-/-) 8-10 weeks post AAV injection. However, the long-term effects have not been studied. To understand long-term effects of AAV-mGrn, Grn-/- mice were aged 6-9 months and then injected with AAV and allowed to age for 12 months prior to tissue collection. As a control, age matched Grn+/+ and Grn-/- mice were injected with AAV-GFP and allowed to age 12 months. To understand if AAV-Grn increases progranulin protein, we will use immunohistochemistry (IHC), ELISA, and western blotting techniques to measure the total amount of progranulin protein in brain regions as far as the cerebellum. To do this, we froze one hemisphere for ELISA or Western blot analysis and fixed the other hemisphere in 4% PFA for IHC. We hypothesize that there will be an increase in AAV-derived progranulin that leads to a correction in lipofuscinosis and gliosis phenotypes associated with progranulin deficiency using IHC for CD68 and Iba1. Together, these studies provide important data on the long-term effects of progranulin gene therapy up to one-year post injection.

Meklit Shiferaw

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

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#2 Analía Dall'Asén

Abstract Name: Assembling and testing an atomic force microscope to examine carbonaceous meteoritic fragments.

Atomic force microscopy (AFM) is a technique that can be used to analyze several properties of a sample's surface (e.g., optical, topographical, mechanical, chemical, magnetic and electrical properties) through non-destructive and accurate measurements with very high resolution at the nano- and micro-scales. In this work, we assemble and test an educational AFM system with different AFM tips and appropriate samples with the final goal of characterizing fragments of carbonaceous chondritic meteorites by examining their topography and mechanical properties, such as adhesion and hardness. These properties allow us to investigate what structures are on the surfaces of the samples and how they have stuck together. Our findings can provide

novel valuable evidence about how planets formed in our Solar System since carbonaceous chondritic meteorites are relics that date back to the origin of the planets. In addition, from a pedagogical point of view, this study was conceived as an undergraduate research project to expose students, in particular physics majors, to all the stages of an experimental scientific work.

Elijah Shiflet

IN - Indiana University Purdue University Indianapolis

Discipline: Natural and Physical Sciences

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Abstract Name: Method Development for the Extraction of Insensitive Munitions from Water

Insensitive munitions (IM) are compounds that can withstand a higher degree of stimuli without reacting. These compounds are used in military operations to prevent accidental, or enemy caused discharge of weaponry. 2,4-dinitroanisole, nitroguanidine, and nitrotriazolone are amongst the insensitive munition compounds. In addition to these IM compounds, after discharge they also develop the transformation products 2,4-dinitrophenol and 2-methoxy-5-nitrophenol. Although these munitions are beneficial to military operations they are left behind in the environment as small particles after detonation or discharge. These compounds are known to contaminate the ground or soil and various water sources. To investigate the harmful implications of these IM compounds a detection method must first be developed. The goal of this project is to create a method that can detect the IM compounds and their transformation products in water at high recovery rates. The goal will be achieved by using a solid phase extraction (SPE) process that is mix mode meaning it has reverse phase and anion exchange. First, the solid phase extraction recovery of the IM compounds will be tested in water. In addition, the solvents and resin will be tested and varied to improve overall recovery. Finally, recovered compounds will be analyzed through a previously developed liquid chromatography-mass spectrometry (LC-MS) method. As a result of the SPE testing, recovery of all the insensitive munition compounds is expected. The IM compounds are expected to elute through the chromatography column during the span of a 15-minute LC-MS run. In addition, the mass to charge ratios of the IM compounds are expected to be displayed on the mass spectrometry spectrums. This research is important because it will allow researchers to have a method for detecting these insensitive compounds in water. This research can eventually lead to the detection of other IM compounds that may reside in different mediums.

Judah Shirley

WA - Central Washington University

Discipline: Health and Human Services

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Abstract Name: TOBBACO USERS' PERSPECTIVE ON THE IMPACT OF COVID-19 PANDEMIC ON BEHAVIORAL AND CONSUMPTION PATTERNS IN A MIDDLE-INCOME COUNTRY: A QUALITATIVE STUDY

Purpose: To qualitatively evaluate tobacco users' perspective on the impact of the COVID-19 pandemic on the behavioral and consumption patterns within a middle-income country.Research Context: Brazil ranked third in the world in terms of total COVID-19 cases and deaths. Prior quantitative data showed discrepancy between consumptive pattern and higher chance of COVID-19 severity. It is relevant to research a broad set of tobacco products, both smoked and smokeless, which are common in low-middle income countries.Methodology: Participants involved were over 18 years of either gender and consumed tobacco products for a minimum of 12 months. Participants were recruited as a sub-sample of a survey study conducted nationally in Brazil. We conducted a qualitative study using focus groups with semi-structured interviews for data collection. We evaluated types of tobacco as well as health assessments and the use of the Fagerstrom test for nicotine dependence. The results of the focus group interviews were recorded and transcribed verbatim and took place 14 days apart from one another. Data were analyzed using an inductive content analysis.Results: The screening for unit of analysis resulted on two main themes; Theme 1: Behavioral and Psychological Factors Impacting Consumption and Theme 2: Consumption Patterns, Dependence, and Information. Negative changes in mental health, including increases in anxiety and stress levels, were identified as a potential barrier to quit during the pandemic. In addition, individuals in social isolation reported that the absence of social pressure was a facilitator to keep tobacco use and reduce motivation to quit. Despite showing awareness of nicotine usage in relation with COVID-19, stress with high-volume media contributed to increase in product.Conclusion: Discrepancies on consumption patterns were observed. Social isolation, awareness of nicotine usage, changes in routine, and absence of social pressure contributed to increase or no change in tobacco usage during COVID-19.

Ermal Shpuza

GA - Kennesaw State University

Discipline:

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Abstract Name: Undergraduate Research for Learning from Public Spaces in Historic Cities

Successful public spaces in cities are key for enhancing social cohesion and improving health and safety. Learning from historic cities involves the development of representational and analytical tools aimed at capturing their essence as places of human interaction. The research reports mentoring undergraduate students for findings of the spatial analysis of twenty Adriatic and Ionian coastal cities, which addresses the question of how the network of public spaces calibrates different degrees of spatial enclosure necessary for creating successful social interactions. Cities in the littoral region include well-preserved historic centers that are renowned for the successful integration of urban squares into the urban fabric. For the purpose of this study, we define urban squares according to areas visible from key public buildings and measure the compactness and convexity of their shapes. We then plot the plaza shapes of all twenty cities in a two-dimensional matrix and classify them into groups that represent various degrees of enclosure and spatial interaction. The study discovers the existence of three main classes of plazas found in cities along The Adriatic and Ionian coastline, suggesting the effect of specific regional and national influences on urban form. On the one hand, the study develops analytical methods for capturing the degree of spatial enclosure of public spaces, and on the other hand, it suggests principles of contemporary urban design based on historical precedents

Rikin Shrestha

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

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Abstract Name: CYBERBULLYING DETECTION SYSTEM USING MACHINE AND DEEP LEARNING

Internet use, particularly digital/social media and video games is growing daily. Everyone is becoming dependent on them from all ages and with many positive aspects, there are drawbacks as well, one of which is cyberbullying. Cyberbullying has effects on victims mentally, emotionally and physically. It includes low self-esteem, acting violently, despair, increased stress/anxiety, depression, self-harming/suicide, etc. Findings from this research study justify that it affects young people more which impacts their emotional development and overall safety. Real-time cyberbullying detection identifies and protects the target from further abuse and its effects. This study aids in determining the seriousness of the issue, and vulnerabilities that individuals can take advantage of to bully others. Additionally, understanding how various features for cyberbullying detection function assists in developing a strong and trustworthy system, making a healthy online community. Natural Language Processing (NLP) models assess the textual content, analyzing hashtags, and analyzing comments. Similarly, context in photographs is analyzed using Optical Character Recognition (OCR), which converts them into a machine-readable format for further examination. Deep Neural Network models, such as Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM), and Bidirectional LSTM (BLSTM). CNN is utilized for text/picture classification, LSTM is utilized for long-term dependency learning, and BLSTM expands the network's input by encoding data in both forward and backward directions. Classifiers like Support Vector Machine (SVM) and Naïve Bayes help in the detection of cyberbullying. A working cyberbullying detection system can detect cyberbullying on multiple platforms. With models being developed for different attributes providing results with high accuracy, the cyberbullying detection system contributes by leading us to a healthier online community.

FNU Shrishti

FL - University of West Florida

Discipline: Mathematics and Computer Science

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Abstract Name: Predicting Cherry Blossom Day Using Machine Learning and Weather Data: A Comparative Study of Three Locations

The captivating phenomenon of cherry blossoms tree inspires our exploration into predicting their timing using advanced machine learning and statistical modeling. This project investigates regression models to predict the cherry blossom day of the year in three different locations around the globe (US, Japan, and Switzerland). Leveraging multiple data sources on weather and climate change (temperature distribution, number of climate incidents, humidity, rain, etc.), we developed predictive models to minimize the mean absolute difference between the predicted and the actual values. R/RStudio and tidymodels packages were employed to perform the analysis.

Alexis Shumate

TN - Middle Tennessee State University

Discipline: Social Sciences

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#5 Cryille Magne

Abstract Name: Individual Differences in Prosody Sensitivity and Reading Ability: Insights from EEG Resting State Analysis

College readiness and career opportunities are heavily dependent on young adults' reading proficiency. However, recent data reveal that nearly two-thirds of twelfth-grade students lack the fundamentals needed to successfully navigate college-level reading materials. Converging evidence points to poor reading ability associated with difficulties perceiving speech rhythm cues, which include stress patterns in words. In addition, research suggests that such speech rhythm deficits may result from inefficient neural oscillations at 4-8 Hz (i.e., theta band) within auditory brain areas that fail to align with the prosodic information carried by speech. EEG in individuals with dyslexia is also associated with altered functional brain reading networks in the theta band. The current study aims to investigate brain oscillations, specifically examining whether individual variations in speech rhythm perception mediate the differences observed in the EEG theta band related to reading abilities. Participants (N = 60, 18 to 40 years of age) will be recruited from the Murfreesboro community. A 32-electrode EEG system will be used to record 8 minutes of their brain activity at rest (i.e., EEG resting state). Participants will also be administered standardized cognitive and reading assessments. By exploring the relationship between speech rhythm perception, theta neural oscillations, and reading proficiency, this study seeks to contribute valuable insights that may inform early interventions for enhancing the reading skills of individuals at risk for dyslexia. Addressing this gap in understanding is essential for creating a more inclusive educational environment and improving long-term outcomes for poor readers.

Victoria Siaumau

CA - California Polytechnic State University - San Luis Obispo

Discipline:

Authors:
#1 Victoria Siaumau
#2 Jane Lehr
Jane Lehr

Abstract Name: Leading for Equity: Supporting Students in Accessing and Navigating the Academic Secret Menu

What is the role of offices of student research in leading for equity? This presentation focuses on the work of the Office of Student Research at California Polytechnic State University (Cal Poly in San Luis Obispo) and the ways in which this context has created opportunities to focus on equity and navigating the "Academic Secret Menu." This presentation will discuss context-specific recommendations that prioritize equity in student research programs. Part of the 23-campus California State University system, Cal Poly is a highly selective, predominantly white institution committed to a Learn by Doing pedagogy. Cal Poly has an

established history of undergraduate research. Given the scale of existing infrastructure to support student researcher activity at Cal Poly, the establishment of the Office of Student Research (OSR) was not motivated by a need to establish mentored student research programs. Rather, OSR is designed to make visible and challenge what the ReclaimingSTEM Institute calls the “Academic Secret Menu.” An Academic Secret Menu (also called a “hidden curriculum”) refers to information about the higher education system — including how student research and graduate education work — that some students have access to and others do not. In addition to increasing transparency of access to opportunities and addressing inequitable participation rates across student populations, OSR offers equity-focused professional development for mentors to guide, inspire, and elevate student research experiences; partners with campus entities to enhance existing programs; works to increase funding available to address variation across disciplines; provides professional development workshops for students that center the transformative impact of mentorship; and is developing, testing, and integrating meaningful metrics that measure outcomes and impact.

Ross Sibley

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ross Sibley
#2 Kevin Bicker

Abstract Name: Effects of Cyclization on Antifungal Peptoid Efficacy, Cytotoxicity, and Permeability

Cryptococcus neoformans and Candida albicans are two fungal pathogens responsible for lethal infections of brain tissue including cryptococcal meningitis and invasive candidiasis, respectively. The rising occurrence of antimicrobial-resistance in fungal pathogens in combination with the scarcity of safe and effective clinical antifungals necessitates the discovery of novel antifungal agents with blood-brain barrier (BBB) permeability. RMG8-8 and RMG9-11 are two linear peptoids, or peptidomimetic N-substituted glycines, that have demonstrated significant efficacy against these two fungal pathogens. While these linear peptoids have similar activity in vitro to current antifungals on the market, previous studies suggest that cyclization could improve efficacy through increased rigidity. The goal of this study was to compare the antifungal efficacy, mammalian cytotoxicity, and BBB permeability of RMG8-8 and RMG9-11 with their cyclic derivatives, RHS3 and RHS6. Antifungal efficacy of all four peptoids was evaluated in terms of minimum inhibitory concentration (MIC). The cyclization property of RHS3 and RHS6 did not yield significant antifungal improvement compared to parent compounds RMG8-8 and RMG9-11, though there were some instances of similar activity between parent and cyclic derivative. Mammalian cytotoxicity was evaluated against HepG2 liver cells and single donor human red blood cells (hRBCs). Though the linear parent and cyclic derivatives exhibited similar cytotoxicity against HepG2 liver cells, there was greater variability against the hRBCs as RHS3 was roughly twice as toxic compared to its linear parent, RMG8-8. Finally, the potential of each peptoid to cross the BBB was evaluated by a parallel artificial membrane permeability assay (PAMPA). Interestingly, both RMG9-11 and its cyclic derivative RHS6 exhibited high permeability across the artificial membrane while RMG8-8 and RHS3 did not. Overall, the data collected indicates that the effect of cyclization varies on a case-by-case basis.

Tasneem Siddique

PA - Drexel University

Discipline: Health and Human Services

Authors:

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#2 Aleister Saunders
#3 Swathi Swaminathan

Abstract Name: Exploring Techniques to Visualize Aβ Induced Changes to Primary Cilia

Alzheimer's disease (AD), a progressive neurodegenerative disorder, is one of the leading causes of death in the United States. AD is characterized by the accumulation of toxic Aβ plaques and hyperphosphorylated tau tangles; ultimately neuronal death. Primary cilia are immotile signaling organelles present in all eukaryotic cells including neurons and astrocytes. Defects in the primary cilia lead to ciliopathies, such being impaired neuronal development and cognitive domains, also compromised in AD. Previously in Dr. Saunders' lab, it was observed that in the presence of both extracellular and synthetic Aβ, primary cilia become disrupted. The purpose of this study is to determine if the localization of the cilia axonemal protein IFT88 is altered in response to elevated Aβ levels. Traditional fixation techniques are not necessarily adequate for investigating a wide range of cilia protein localizations. From previous experiments, we have an understanding that there should be an abundance of ARL13B and IFT88 positive cilia in the PFA treatment which is an established fixation method. To visualize IFT88 we tested two alternative fixation methods, a 1xPHEM treatment, and a 100% methanol treatment. To achieve this, 3T3 cells were cultured in the presence or absence of synthetic Aβ and fixed using PFA, 1X PHEM, or 100% methanol. Immunofluorescence techniques were used to visualize cells and their cilia. Under control conditions, methanol fixation resulted in highly visible IFT88 and ARL13B staining in primary cilia, while 1X PHEM fixation resulted in only IFT88 being visible. When exposed to Aβ, cells had dramatically decreased levels of both IFT88 and ARL13B staining. This study extends our previous findings by demonstrating that the ciliary membrane and axoneme receptors are disrupted after 24 hours of Aβ exposure.

Garrett Siebels

CA - Dominican University of California

Discipline:

Authors:
#1 Michaela George
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#4 Naila Saghir
#5 Garrett Siebels
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Abstract Name: Root causes of homelessness in Marin County and prevention strategies

Even with increased prevalence of homelessness in the US, there is limited research that investigates circumstances that can lead to homelessness. This lack of understanding perpetuates the inequities in health and wellbeing, access to basic necessities, effective prevention strategies and meaningful policy changes. This qualitative analysis consisted of a total of 25, semi-structured interviews conducted in the Spring of 2023 by public health student researchers. Individuals (18 and older) who were seeking support from a local community partner (the Ritter Center) were interviewed. Interviews consisted of a verbal consent in English as well as a set of IRB approved questions about the participants life circumstances and background that may have led to homelessness. Transcribed interviews were coded and several themes emerged. After coding 25 transcripts, thematic analysis supports three main themes: abandonment, mental health struggle, and substance misuse. Abandonment appeared from personal stories from childhood where individuals experienced abandonment from their parents/family. In extreme examples, this was not just emotional

abandonment but led to legal foster care. Mental health struggles revealed depression, emotional abuse, feelings of betrayal, or lack of trust experienced throughout their life. The most common theme was reliance on substances and the misuse of those substances. Common themes of abandonment, mental health struggle, and substance misuse suggest that these are recurrent circumstances that led to individuals experiencing homelessness. Understanding the root causes of homelessness can help public health departments implement upstream interventions to prevent the perpetuation of homelessness.

Julia Sikes

TX - Lubbock Christian University

Discipline: Humanities

Authors:
#1 Julia Sikes

Abstract Name: PERCEIVED AUDIENCE RESPONSES TO CHRISTIAN RHETORIC IN FILM

Film is a relatively new form of media in Western culture, and its impact on viewers' attitudes is still being researched. The purpose of this interdisciplinary study is to discover the impact on audiences watching films with varying degrees of Christian rhetoric in both the short- and long-term. This particular study focused on a general audience reception of films with Christian messages, whether subtle or overt, and whether Christian rhetoric provides a basis for cultivating moral growth or religious interest. First, evidence was provided from general psychology film studies to give an understanding of the psychological effects of watching a film. The study then categorized Christian film into three groups: "overt" (Christianity is key to the plot), "in-between" (strong Christian themes plus a secular plot), and "subtle" (secular plot with some understated Christian symbolism) to determine whether any of these types of films were effective in either teaching positive moral behavior, piquing religious interest, or shaping positive opinions about Christian values. The study presented three representative films (The Passion of the Christ, The Lion, the Witch, and the Wardrobe, and Gran Torino) and discussed their symbolism and placement into their respective categories. A survey instrument was developed to determine audience opinion about the effect of these films in their lives, and it was sent out as a snowball survey on social media. There were 222 total participants. Although most of the respondents came from Christian backgrounds, there were several respondents providing perspectives from other religious backgrounds. Findings indicated that there is a correlation between these films and moral growth or religious interest, especially in children who already had some Christian foundation.

Cameron Siler-Nixon

NC - High Point University

Discipline: Health and Human Services

Authors:
#1 Cameron Siler-Nixon

Abstract Name: Distortion Product Otoacoustic Emissions in Ears with Hearing Instability

The pathophysiology of hearing instability (HI) remains undefined and may be related to a variety of genetic and environmental factors, including an enlarged endolymphatic duct5, congenital otologic abnormalities5, autoimmune dysfunction6, and several other comorbid conditions4,7. HI disorders include conditions characterized by sudden changes or fluctuations in hearing, including Meniere's disease.Meniere's disease (MD) is an inner ear disorder characterized by symptoms of fluctuating sensorineural hearing loss, tinnitus,

aural fullness, and episodic vertigo. Classically, it is associated with the histological hallmark of endolymphatic hydrops (EH), which is a buildup of endolymph in the cochlea resulting in excessive stiffness in sound-sensitive structures. We are investigating several measures to serve as biomarkers and diagnostic tools for MD, as current audiometric diagnosis requires a demonstrated fluctuation in hearing and lacks a measure amenable to diagnosis at a single time point. One of these measures is distortion production otoacoustic emissions (DPOAEs).DPOAEs are emissions generated by the outer hair cells of the cochlea in response to two stimuli tones: F1 (lower) and F2. (higher). Previous literature has identified that the phase of these emissions varies with body tilt as intracranial pressure (ICP) and intralabyrinthine pressure (ILP) fluctuate1,3. In MD patients, the manipulation of ICP and ILP, induced by body tilt, has a much larger effect on phase shift when compared to healthy patients2. Therefore, phase shift could assist in assessing the integrity of the cochlea and has the potential to be an efficient way to diagnose MD and other HI conditions.To better understand cochlear function in ears with HI, the relationship between body tilt and DPOAE phase shift was analyzed, over a series of visits, in a cohort of patients presenting with unilateral or bilateral HI.

Isabelly Silva

PA - Moravian University

Discipline: Natural and Physical Sciences

Authors:
#1 Isabelly Silva

Abstract Name: Fishy Behavior in Shrimp: Shelter Use and Predator Harassment in Grass Shrimp

This study examined how the presence of a predatory fish (mummichog, Fundulus heteroclitus) affected the habitat choice and group behavior of grass shrimp (Palaemon pugio). Although grass shrimp are abundant and ecologically important in salt marshes along the east coast of North America, their responses to predators have been minimally studied. The goal of this research was to determine how much the shrimp used the shelter with and without the presence of predators. Groups of shrimp were recorded before and after the introduction of the fish to quantify the amount of time spent in or near shelter, with fish shelter use recorded as well. We found that shrimp did not change their shelter use patterns in the presence of fish, indicating that shelter is probably not their primary means of avoiding fish predation. Shrimp also repeatedly attacked and harassed the predatory fish, in a novel antipredator behavior. These results shift our understanding of antipredator behavior in marine invertebrates, as we typically assume that small invertebrates will hide from or avoid predators, something these shrimp did not do.

Erin Simmons

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Erin Simmons

Abstract Name: The Impact of External Factors on Urban Youth Behaviors

In what ways are urban youth behaviors in educational settings influenced by external community factors and experiences? It is important for educators to understand a student’s holistic experience such as their home dynamics, surrounding community, and the unique circumstances they endure. This is especially true for

children in urban communities that are exposed to systemic oppressions given that their experiences encompass higher levels of trauma, adversities, abuse, single-parent households, poverty, etc. It has been found in previous literature that students exposed to higher levels of adversities will externalize their experiences through, what is perceived as, “disruptive” behaviors in the classroom as their method of defense against their environment. Highly punished actions within academic spaces are often reflective of the many emotions a child feels in response to their triggering experiences but are unable to communicate. Researchers have noted that educators that label urban youth behaviors opposed to understanding their experience often re-trigger students and perpetuate the academic achievement gap found in urban communities. This study will build upon this body of research literature through identifying specific in-classroom behaviors and experiences to further the guide to understanding, predicting, and intervening with students’ behaviors properly. This will serve to support urban youth’s academic success and social interactions through adolescence and early adulthood. The methodology for this study consists of a qualitative approach that involves interviews and observations. There will be one focus group for educators/ staff at a local non-profit afterschool program followed by observations and interactions with the youth. Select youth will be invited to be interviewed based on the unique behaviors observed accompanied with an interview with their guardian to understand their personal home situation. It is expected that students who are reprehended more often than their peers will display unique behaviors that reflect their adverse experiences within their community.

Jane Simoncic

MD - Salisbury University

Discipline: Natural and Physical Sciences

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#1 Jane Simoncic

Abstract Name: The effects of Lavendustin-A on peripheral nerve degeneration and skeletal development in hyperglycemic zebrafish (Danio rerio)

Previous work from the Clark lab has demonstrated that the induction of hyperglycemia in larval zebrafish (Danio rerio) causes peripheral nerves degeneration and bone defects. Preliminary data suggests that Lavendustin-A (LavA), an epidermal growth factor receptor (EGFR) inhibitor, promotes nerve regeneration in this model. Here, we were interested if skeletal defects would be corrected once nerves regenerate (following LavA treatment) and reinnervate the skeletal system, or if these defects were occurring independently. Larvae were incubated in 120mM glucose or egg water from 5-10dpf. At 10dpf, control larvae remained in egg water+1% DMSO (Cont). Glucose larvae were split into Glucose (120mM glucose+1% DMSO), GlucoseLav (Glucose+65.5µM LavA), Recovery (egg water+1% DMSO), or RecoveryLav (Recovery+65.5µM LavA). At 12dpf, lateral images of Alazarin red-stained vertebrae were collected and analyzed. No significant difference in skeletal development was observed following EGFR-inhibition in GlucoseLav compared to Glucose fish. Removal from hyperglycemic conditions improved bone development; the area of mineralized centra was significantly greater in Recovery (p<0.01) and RecoveryLav (p<0.0001) than GlucoseLav, and no difference was found between Recovery and RecoveryLav. The area of mineralized centra was greater in Cont fish compared to Recovery (p<0.0001) and RecoveryLav (p<0.0001), indicating that complete recovery was ongoing. Taken together, this suggests that EGFR activation is not directly responsible for the bone defects seen in this hyperglycemic zebrafish model. Furthermore, coupling this with preliminary data showing that EGFR plays a role in nerve degeneration (which is reversed by LavA), the current work suggests that nerve regeneration (and in turn, reinnervation) alone cannot reverse the bone deficits observed in this model. Moving forward, efforts will be focused on elucidating distinct molecular pathways for these two dynamic phenotypes.

Emma Simpson

NC - Elon University

Discipline: Social Sciences

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Abstract Name: Intellectual Humility and Investigative Behaviors in Relation to Overclaiming of Knowledge

Fake news and other forms of misinformation are becoming increasingly prominent in today's world. Research has shown that people vary in their susceptibility to believing false information, but few studies have explored the factors that potentially aid individuals in avoiding misinformation. Intellectual humility (IH), or openness to recognizing the fallibility of one's opinions and beliefs, is related to discerning true from false information (Zmigrod et al., 2019). Research has also shown that IH is negatively related to one's tendency to overclaim one's knowledge and positively related to engagement in investigative behaviors such as fact-checking (Deffler et al., 2016; Krumrei-Mancuso et al., 2019, Koetke et al., 2022). This study examined investigative behaviors as a possible mechanism in the relationship between IH and the tendency to overclaim knowledge of false information. Participants (N = 120) completed the General Intellectual Humility Scale (Leary et al., 2017), an adapted measure of investigative tendencies, and the Overclaiming Questionnaire-150 (Paulhus, 2003), a questionnaire that asks participants to indicate their familiarity with existent (e.g., prejudice) and nonexistent topics (e.g., consumer apparatus). Correlational analyses showed that IH was not significantly related to claiming familiarity with either real or fake topics. However, high-IH participants (vs. low) were more willing than others to investigate all topics. Additionally, a negative correlation was found between overclaiming bias and investigative tendencies, showing that individuals who wanted to learn more about topics on the Overclaiming Questionnaire were less likely to overclaim their knowledge. These findings have implications for decreasing susceptibility to false information including fake news. People who are aware of the connections among these variables may be more likely to fact-check topics they encounter and avoid overclaiming knowledge.

Robin Lee Simpson

CA - California Polytechnic State University - San Luis Obispo

Discipline: Interdisciplinary Studies

Authors:
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#3 Ningqiao Li

Abstract Name: Worker-robot collaboration in hospitality tasks: Revealing robotic integration opportunities through image analytics

This research project explores a critical question at the intersection of technology and service: How can collaborative robots be optimally integrated within the hospitality industry to bolster the synergy between human and robot workers? The focus is to pinpoint specific areas and tasks in hospitality settings where robot-human collaboration can effectively reduce the workload of human staff. The study stands out for its attention to the hospitality industry, a sector still experimenting and exploring the full benefits of robotic assistance, particularly in contrast to manufacturing. Notably, while Asia has seen widespread adoption of robotics in this domain, North American and European markets are just beginning to explore these possibilities. This project aims to identify where robots can meaningfully contribute to the daily operations of hotels, restaurants, and similar venues, thus enhancing overall efficiency and customer experience. Our methodology is rooted in a data-driven approach. We plan to compile an extensive dataset of images

depicting robots in various hospitality environments. This dataset, sourced through targeted web scraping using specific keywords, will be systematically categorized into 'yes', 'no', and 'unsure' segments based on the relevance of robotic assistance in each image. Annotators then label these images to identify the specific roles. These labeled images assist in the development of a machine learning model that will provide deep insights into current trends and future potential for robotic deployment in hospitality. We aim to uncover patterns in robot utilization and effectiveness, offering strategic guidance for their integration. We anticipate that this study will yield significant insights into effective robotic integration in hospitality, paving the way for a more efficient and sustainable service industry. The findings will be crucial for industry professionals and policymakers, providing a roadmap for enhancing operational efficiency, worker well-being, and customer satisfaction through innovative human-robot collaboration.

Maya Singh

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Maya Singh

Abstract Name: Using Music Therapy to Reduce Recidivism and Improve Post release Behavior in Solitary Confinement prisoners

Despite the research and studies completed on the effects of solitary confinement, restrictive housing, or administrative segregation, and supermax facilities, there have been few studies done on the aftereffects, such as recidivism, connected with solitary confinement and no studies done on how to reduce the recidivism rates among prisoners who have served time in solitary confinement. Studies completed in both the US and internationally on solitary confinement prisoners, the connection between solitary confinement and recidivism, and the use of music therapy on prisoners, cancer patients, and patients with schizophrenia, were analyzed to determine if music therapy could be a potential method to reduce recidivism among solitary confinement and supermax prisoners. Overall, prisoners who are serving time in solitary confinement or who have already done time in solitary confinement are oftentimes more violent and have been convicted of more serious crimes and have some pre-existing mental illnesses. By being extremely isolated for long periods, prisoners' behavior worsens as does their social or interpersonal skills causing them to reoffend at higher rates and with more violent offenses. Music therapy could provide a space, in both individual and group settings, where prisoners could learn how to control and cope with their emotions and mental illness symptoms as well as learn how to manage their anger, stress, and violent behavior, which could reduce recidivism and violent offenses after being released.

Toodashwarie Singh

NY - York College

Discipline: Business and Entrepreneurship

Authors:
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Abstract Name: Impact of Neglected Ecological Considerations in Economic Models on Societal Well-being.

Economic models are widely used as a foundational tool to analyze market behavior, but they glaringly ignore the complex interplay between the environment and economics. This is not just an academic error; it

has far-reaching consequences for the planet and society. This study explores the reasons behind economists' disregard for environmental factors, examines the effects of this disregard, and proposes a paradigm shift that includes ecological factors in economic models. This discussion highlights the need to incorporate environmental concerns into economic discourse to promote a sustainable and harmonious coexistence between ecological well-being and economic prosperity. It is a call to action, highlighting the necessity of an all-encompassing strategy that takes into account the demands of the environment and the economy before irreversible effects materialize.

Samantha Singh

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Oxidation of Ferrous Alloys

Oxidation is an important phenomenon that affects the performance of metallic alloys. In this study, ferrous alloys including carbon steels and cast irons, were exposed to a range of temperatures and times in air with the aim of characterizing the oxide films that form under these conditions. A number of methods were used to characterize the oxide films including macrophotography, optical microscopy and spectral reflectometry. Iso-chromatic conditions were explored for the different alloys. Results will be presented and discussed.

Jessica Singh

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
#1 Jessica Singh

Abstract Name: Developing Antibodies to Block the Glyco-Immune Checkpoint Inhibitors, Siglecs

Current immunotherapy efforts focus on targeting proteins and are highly promising, but insufficient. We need to discover new immunological targets. Glyco-Immune Checkpoints are lectin (glycan-binding proteins) that transmit inhibitory signals to immune cells by binding to their glycan ligands on cancer cells. Siglecs are a family of inhibitory lectins expressed on immune cells, and they bind to Sialic acid on cancer cells. This binding allows cancer cells to evade immunosurveillance. We aim to develop blocking antibodies to a particular member of the Siglec family (Siglec-X). We will perform ELISA and Flow-based assays to validate the specificity of the produced antibodies to Siglec-X. We will examine the efficiency of these antibodies in enhancing immune-mediated clearance of cancer cells using in vitro cytotoxicity assays.

Jujhar Singh

IN - Indiana University Purdue University Indianapolis

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Photoinduced Anti-Markovnikov Hydroxylation-Amination of Unactivated Olefins by HAT from Pyridine N-Oxide

The purpose of this research is to apply a visible-light photocatalytic alkene oxidation strategy to develop a simplistic synthesis for anti-Markovnikov hydroxylation-amination reactions. Anti-Markovnikov reactions are appealing due to how rare they are in chemistry because anti-Markovnikov compounds are made when a radical, when generated, moves to a less stable form than to the predicted more stable one. This is unusual for radicals to do since they naturally want to go to whatever structure makes them the most stable. The appeal of researching organic synthesis is the ability to increase efficiency and reduce the cost of synthesizing complex molecules. Even though organic synthesis, despite decades of ground-breaking research, is still underdeveloped in drug-discovery projects. Making projects allowing for innovative and cheaper reaction pathways for drug development very valuable, none more so than amination pathways. Many common drugs, such as antibiotics, blood pressure medications, and nausea/vomiting medications, contain nitrogen. Making novel amination pathways have a strong potential for drug discovery. This is a highly appealing synthetic process because current strategies use transitional metals and/or stoichiometry amounts of sacrificing chemical reagents. In contrast, our proposed pathway uses commercially available reagents that can initiate versatile radical cascade reactions for alkyl activation through amination and hydroxylation reactions. In addition, visible light is a much more sustainable and plentiful resource than precious transitional metals such as gold, palladium, cobalt, and more.

Gagandeep Singh

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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Abstract Name: 3D Optical Coherence Tomographic Imaging of Fibroblast-Populated Collagen Matrix

Fibroblast-populated collagen matrices (FPCMs) are tissue models that facilitate the investigation of fibrosis, wound healing, and cancer progression. The unique cellular and physical properties of fibroblasts play a crucial role in maintaining the structural and biomechanical homeostasis of the collagen extracellular matrix. Consequently, the study aims to image and quantify the cell-dependent morphological changes in developing FPCMs. Using optical coherence tomography (OCT), a noninvasive imaging technique, to capture detailed 3D structures of FPCMs under different conditions, it was reconstructed as 3D models of FPCMs using high-resolution cross-sectional OCT scans. A procedure was developed for the reconstruction using open-source Python software with assistance from ChatGPT. This software converts the 2D pictures from JPEG to NRRD, consolidating all the images into one file. After completing the file type conversion process, the file is imported into another open-source software, Slicer. In Slicer, the OTSU method is employed to find the

threshold and select all the pixels of the lattice, allowing the creation of a 3D model and calculation of the volume. These models are pivotal for unraveling the nuanced reactions of fibroblasts under various conditions. Currently, the main focus is reducing the noise to ensure that the results are not hindered when making the model and finding the structure and volume data. By studying the cell-dependent morphological changes of these 3D tissue models, we aim to uncover valuable insights into the dynamics of cell-collagen interactions, paving the way for novel treatment methods for various fibrotic disorders.

Isha Singh

PA - Children's Hospital of Philadelphia

Discipline: Natural and Physical Sciences

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#1 Isha Singh

Abstract Name: Paralog Buffering in Genes TRA2A and TRA2B in Cancer Cell Lines

Alternative splicing allows for the creation of different RNA transcripts, and when abnormal, can lead to tumor formation. Alternative splicing is partially regulated by RNA binding proteins, including the paralogs tranformer2alpha (TRA2A) and transformer2beta (TRA2B). TRA2A and TRA2B have been implicated in cancer due to their regulation of the CHEK1 gene responsible for coding a DNA damage response protein. Double-gene CRISPR screens indicate that TRA2A and TRA2B are essential together, suggesting functional redundancy. However, we found that depletion of TRA2A only results in strong lethality in a subset of cancer cell lines. TRA2A dependency was validated in 2 sensitive cell lines (NCI-H23 and LN319) and 2 insensitive cell lines of the same tumor type (A549 and LN229, respectively). Re-expression of TRA2A or overexpression of TRA2B rescued lethality in sensitive cell lines, suggesting a dosage-dependent buffering mechanism between the TRA2 paralogs. Paralog buffering was tested by using a dual-guide CRISPR interference (CRISPRi) competition assay. Cell lines expressing ZIM3-KRAB-dCas9 were infected with a BFP-virus containing guides targeting TRA2A and TRA2B, only TRA2A, only TRA2B, or a control locus. Cell populations were tracked using flow cytometry to measure BFP-positive cells over time. We observed strong cell lethality only in all cell lines when TRA2A and TRA2B were both depleted compared to the control locus. A549 and LN229 cells displayed little to no sensitivity to loss of TRA2A or TRA2B alone. LN319 cells showed moderate lethality to TRA2A depletion. NCI-H23 cells exhibited varying lethality in all conditions. These results suggest that the loss of TRA2A and TRA2B display synthetic lethality, but some cancer cell lines display high dependency when just one paralog is lost. By determining the effects of targeting TRA2A and TRA2B in both sensitive and insensitive cell lines, we can further understand paralog buffering between these two genes.

Rajvir Singh

CA - San Jose State University

Discipline: Health and Human Services

Authors:
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Abstract Name: Leveraging AI for Potable Water Prediction: A Study of Drinking Water Quality in Developing Countries

The quality of drinking water stands as a pivotal public health concern, significantly affecting millions in developing nations. Given the substantial financial constraints faced by governments unable to invest in advanced water purification systems, this study endeavors to confront the challenge by harnessing the power of artificial intelligence (AI) to forecast water potability based on known impurities. Drawing upon U.N.O. guidelines on drinking water standards and an extensive dataset on water quality, we concentrate on ten key features, including pH value, to discern the health implications of water quality. Our hypothesis posits that AI and machine learning, specifically leveraging IBM Watson, can proficiently construct predictive models for water potability through novel analysis tests. Employing the IBM Watson platform, we formulated and assessed models using two advanced algorithms—the XGB Classifier and Extra Trees Classifier. The XGB Classifier yielded the highest accuracy (~69%) in model development, incorporating various enhancements such as HPO-1, FE, and HPO-2. The results substantiate the efficacy of these models through diverse metrics, including summary features, ROC curves, and confusion matrices. Several pivotal features were identified in constructing these models. For instance, in the case of Extra Trees, the percentage significance of sulfate, pH, hardness, chloramines, and solids was approximately 100%, 92%, 69%, 56%, and 46%, respectively. Correspondingly, in the case of the XGB classifier, these values were 78%, 100%, 43%, 31%, and 34%, respectively. A more in-depth discussion on ROC curves and confusion matrices will be presented. This study concludes by reflecting on the potential of AI to enhance water quality analysis in resource-limited settings and outlining avenues for future research and development in this crucial area. This innovative approach presents a cost-effective and accessible solution for governments and communities in developing countries, opening up new possibilities in the pursuit of safe drinking water.

Raj Singh

VA - Virginia Military Institute

Discipline: Mathematics and Computer Science

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Abstract Name: Risk Ontology: Safe Web Search Ontological Model for Children

As children use the Internet more frequently and freely, they are more likely to come across inappropriate content while searching for information. To prevent the younger generations from being exposed to inappropriate content, this research has explored the potential of an ontological modeling approach to create effective algorithms for future safe search engines. Other researchers have proposed different safe search approaches to deny inappropriate content to children. However, during our study of more than 225 research articles, no research has explored the properties and usages of ontological approaches in this particular domain, i.e., safe search for children. This work summarizes the state-of-the-art research findings and presents a novel ontological model called risk ontology. The continuation of this research has the potential to create more efficient, child-friendly, safe search engines.

Mridula Singh

FL - University of South Florida

Discipline: Interdisciplinary Studies

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Dana Smith

Abstract Name: Examining the Effect of Art Therapy on University Students Psychological and Social Well-being

According to the National Center for Biotechnology Information, art therapy is a clinical intervention in which artmaking and interaction is used to improve physical, mental, and emotional well-being. It is often used in medicine to ease symptoms of various mental health issues. Art therapy can include complex strategies such as incorporating Cognitive Behavioral Therapy such as the use of positive reinforcement of something like listening to music or solving puzzles. It can also just incorporate one type of art into one's daily life, such as playing an instrument for a certain amount of time every day. Researchers have found that music specifically has a profound effect on anxiety and cognitive functioning. The aim of this study is to investigate if there is a correlation between art therapy and university student mental health through literature review. This study's purpose is to identify sustainable habits that improve mental health with students and encourage implementation of art within course syllabus. This topic will focus on music, art and literature looking into anxiety levels, overall wellbeing, and depression in undergraduate university students. Following this review, our team aims to produce an app to test our findings by integrating art into university student's lifestyle and assess their psychological and social wellbeing over time. We aim to use this application in a variety of course levels, majors, and honors distinction.

Jagjot Singh

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Jagjot Singh
#2 Andrew Hardaway
#3 Sonja Virkus

Abstract Name: Impact of various feeding diets on the action potential kinetics of preproglucagon

Understanding of the basic molecular mechanisms behind feeding behaviors has been a widely discussed phenomenon over the past few decades. This is due to the idea that properly understanding these mechanisms can lead to the development of therapies and treatments for diseases relating to eating behaviors, such as obesity which has been on the rise in recent years. Glucagon-like peptide 1 (GLP-1) is a hormone that is able to regulate the mechanisms of eating and has become the target for many weight-loss drugs on the market. GLP-1 works by activating GLP-1 receptors, which in the brain have been shown to decrease overall eating behavior. The endogenous GLP-1 system of eating and motivation is still being explored in the brain and is the focus of this study. This project focuses on the analysis of the action potentials of GCG cells, a precursor peptide that produces glucagon and GLP-1, in the nucleus of the solitary tract (NTS) of the brain. Previous studies have concluded that neuronal cell bodies encode information in the frequency patterns of their action potentials, and that the shape of action potentials is different depending on types of the neuron. These shapes can influence the frequency of the action potential. For example, more narrow spikes are correlated with fast-spiking behavior. We used a mouse model and fed three cohorts of mice different diets: ad lib, food deprived for 24 hours, or refeed on chow. Next live cell-clamp electrophysiology was performed to record action potential data; we then analyzed the data using Clampfit, which analyzes the varying kinetics of action potentials. Understanding the action potential kinetics of GCGNTS cells will be important in understanding

the impact they have on eating and motivation and exactly what roles they play in advancing current therapies of obesity related illness.

Manik Singhal

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
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#2 Connor Davidson
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Abstract Name: Overexpression of Rad51KA results in increased rates of homology directed repair in zebrafish

Rad51 is a homolog of RecA protein from Escherichia coli. Here, we overexpressed rad51KA, a mutant in rad51 unable to hydrolyze ATP, to test its role in homology-directed repair at CRISPR/Cas9 double-strand breaks in zebrafish. We used a fluorescent reporter system in the noto gene of the zebrafish that can repair via engineered 48 bp repeats. Following generation of a double-strand break at this site, repair can utilize a variety of repair mechanisms, but only repair utilizing the homology will generate a RFP signal in the notochord. We divided the fish into two groups. One of the groups was injected with the CRISPR/Cas9 and ugRNA, while the other one had CRISPR/Cas9, ugRNA, and rad51KA. The individual zebrafish embryos were screened for RFP in the notochord to identify the individuals that showed a homology-based repair in their genome. We saw a higher percentage of embryos showing homology-directed DNA repair when rad51KA was overexpressed, suggesting an important role in homology-based repair.

Jiya Singla

AZ - Arizona State University Main

Discipline: Social Sciences

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#1 Jiya Singla
#2 Sudeep Sharma

Abstract Name: Socioeconomic Inequality and School Shootings

Background: The recent prevalence of school shootings in the United States has created increasing alarm throughout the nation. This study aims to examine the correlation, or lack thereof, between several aspects of shootings and their frequency. Few studies have been conducted on the relationship between economics and school shootings.Method: To study the economic factors that could possibly affect school shooting frequencies, we used data on school shootings in the USA throughout the past three decades, until April 2021, obtained from the Washington Post. Using data from the US Census Bureau on average household income and income inequality per geographic region from 2007-2021, as well as data on these statistics for the USA as a whole, we analyzed the relationships between the Gini index in different areas and the frequency of school shootings. We also observed the correlation between household income in these regions and shooting frequencies.Results: An analysis of 228 shooting statistics showed a correlation between

economic inequality and status with the frequency of these shootings. We also found that states with higher Gini coefficients, or higher income inequality, observed a higher number of school shootings through 2007-2021. We also observed that the number of shootings in the first 4 months of 2021 was 280% of the number in 2017. In analyzing the data on household income by county, a majority of shootings occurred in counties with an above-average household income. On average, household income in these counties was greater than the US average by 16700 USD. Conclusions: There's a positive correlation between average regional income and school shooting occurrences. There's also evidence of a positive correlation between income inequality and shooting frequency. However, further studies are necessary to conclude whether these economic factors have a role in increasing the likelihood of school shootings in the USA.

Pritvik Sinhadc

CA - California Institute of Technology

Discipline: Natural and Physical Sciences

Authors:
#1 Pritvik Sinhadc

Abstract Name: Estimation of the Stochastic Gravitational Wave Background from Binary Mergers

The ground-based International Gravitational-Wave Observatory Network (IGWN), including LIGO, VIRGO, KAGRA, has detected gravitational waves (GWs) from Compact Binary Coalescence (CBC) sources in distant galaxies (8 Gigaparsecs) at a redshift >1. More distant sources are too faint to be detected as individual events, but are expected to be numerous to be detectable as Stochastic Gravitational Wave Background (SGWB). While stringent upper-limits on SGWB strength as a function of frequency in units of the cosmological closure density of the universe—ΩGW(f)—have been made via IGWN, there has been no observed SGWB detection. While this was overturned (June 2023 announcement on preliminary detection of SGWB from supermassive black hole mergers), the overall astrophysical background from all CBC sources is still to be detected. Early SGWB implications from the first observation of Binary Black Hole mergers, and recent LIGO-VIRGO advanced data-models have provided estimates of CBC merger rate, suggesting we are close to detecting SGWB. All estimated limits on SGWB aim at constraining energy density of the SGWB over frequency domain. We analyze all methods, reproduce current estimates, and study the degree to which they agree with each other and the extent to which the results depend on uncertainties in the merger rate as a function of mass and redshift distributions of the sources. The aim is to investigate the SGWB prediction-parameters and create novel constraints on its limits, thereby decoding how the background changes due to uncertainties in crucial variables to aid in the long-term goal of refining SGWB estimates.

Julain K. Sinkler

IA - Iowa State University

Discipline: Interdisciplinary Studies

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#2 Aude Watrelot

Abstract Name: Comparative Study of Folin-Ciocalteu and Iron-Reactive Phenolics Assays for Phenolic Compound Concentrations in Wines

Phenolic compounds are essential in food and wine quality, as they are responsible for color, taste, texture, and flavor. Those compounds are antioxidants and are highly reactive with a variety of free radicals. Common methods used to quantify phenolic compounds in food and beverages include colorimetry and detection using spectrophotometry. Despite the rapidity, low cost and ease of the traditional methods, some of them are not specific to phenolic compounds, such as the Folin-Ciocalteu (FC) method. The FC method uses the reaction between hydroxyl groups with the FC reagent which often overestimates the concentrations of phenolics. In wines produced from non-Vitis vinifera grapes, the concentration of antioxidants tends to be higher than in Vitis vinifera wines. Given the high proteins and phenolics concentration in those red wines, it is expected to have a higher concentration of phenolics using FC method compared to other common methods. Phenolic compounds concentrations were quantified in red wines made from Marquette, Crimson Pearl, Frontenac, and Petite Pearl grape varieties of different vintages, using FC method and Iron-Reactive Phenolics method (Harbertson –Adams assay (HA)). After reactions, the absorbance values were recorded at 765 nm and 510 nm, respectively, using a UV-Vis Spectrophotometry. The concentrations were expressed as catechin or gallic acid equivalent using external calibration curves. The experiments were carried out in triplicate for each wine and standard. In all wines, the concentration of phenolics was two times higher using the HA assay than using FC method and the two methods were not correlated (r-square value lower than 0.4). These results were contradictory to the hypothesis and suggested that neither HA assay nor FC method were specific to phenolic compounds in wines. Subsequent experiments will focus on assessing phenolic concentration of standards, to evaluate the interference from compounds of the wine matrix.

Alyssa Sirianni

CT - Eastern Connecticut State University

Discipline: Natural and Physical Sciences

Authors:
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#3 Amy Groth

Abstract Name: How Does odd-1 Affect Expression of Genes in Caenorhabditis elegans?

Odd-skipped genes are transcription factors, which control whether other genes are expressed. The human odd-skipped genes OSR1 and OSR2 are reported to be cancer suppressor genes. Research on these genes show that downregulated OSR1 can be a potential biomarker for gastric cancer and ovarian cancer. Caenorhabditis elegans is a model organism that has two related genes to the human odd-skipped genes, odd-1 and odd-2. In our experiment, we analyzed the effects of an odd-1 mutation. In C. elegans, odd-1 is expressed in the intestine. We developed a list of genes that contain possible binding sites for ODD-1 and that are expressed in the intestine. Using quantitative RT-PCR, we compared the expression of these candidate genes in normal worms (N2 strain) and worms that do not express odd-1 (ACG4 strain). Five genes have been shown in replicated experiments to be downregulated in the ACG4 mutant strain, indicating they are normally activated by odd-1 (dhs-3, ntl-2, and gly-5 (n =3) and K0911.1 and C24G6.61 (n =2)). In humans, one of the genes, dhs-3, works in response to oxidative stress. If dhs-3 is not expressed, oxidative stress can become uncontrollable and may be linked to cancer progression by increasing DNA mutations. As we continue to test other gene candidates, we also plan to analyze the expression of fluorescent reporters in the odd-1 mutant. Fluorescent reporter strains allow for the visualization of candidate gene expression in the worm. Confocal microscopy will be used to determine whether the fluorescence decreases when odd-1 is mutated.

Rosa Sisneros-Jimenez

NM - University of New Mexico - Valencia Campus

Discipline: Health and Human Services

Authors:
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Abstract Name: Culturing non-small cell lung carcinoma cell lines without carbon dioxide supplementation using carbon dioxide-independent medium.

A standard methodology of culturing human cell lines in vitro typically involves an incubator with carbon dioxide (CO2) supplementation. This gas next reacts with water to produce carbonic acid, which prevents a toxic alkalization of culture medium. However, such CO2 supplementation requires specialized equipment and continuous logistical effort. The purpose of this study was to test if CO2-independent culture media, recently introduced by one of the leading biotechnology companies, could serve as an alternative for small scale research projects utilizing such cultures. We selected two non-small cell lung carcinoma (NSCLC) cell lines which we plan to use for future functional studies, H1299 and H1975, to address this question. These cells were cultured in standard conditions of temperature and humidity, but without elevated CO2 concentration. Instead, CO2-independent medium from Life Technologies with added standard set of supplements (fetal bovine serum, L-glutamine) was used. Our data show that culturing H1299 and H1975 cells over the course of four weeks in such conditions is manifested by the same proliferation rates as those reported for CO2-supplemented incubators. Analysis of the culture medium metabolized by cells demonstrated that its pH remained neutral at all times it was tested. Lastly, no abnormal changes in morphology or increased cell mortality was found. Therefore, our results suggest that the use of CO2-independent media provides a viable alternative for external CO2 supplementation that can be utilized by research laboratories for small scale functional studies involving cancer cell in vitro models.

Sadikshya Sitaula

TX - Southern Methodist University

Discipline: Education

Authors:
#1 Sadikshya Sitaula

Abstract Name: Breaking Barriers to Learning: Empowering Nepalese Teachers with Knowledge and Understanding of Learning Disorders and ADHD in Children"

This awareness project targeted elementary school teachers in Nepal to educate them on mental health disorders in children, mainly ADHD and Learning Disorders. The project stems from personal experience and observation, emphasizing the need for knowledge, identification tools, and support for children with such challenges. Due to the nature of the disorder, it severely impacts children's academic success; hence, identification of the disorder by elementary school teachers at an early age could positively impact the lives of children. Awareness events were conducted across multiple schools across Nepal through seminars, presentations, discussions, and interactive activities to foster a deeper understanding of the disorder. Through collaboration with medical professionals and school authorities, the project helped elementary school teachers understand the biological and environmental interplay in the disorder, emphasizing the need for strong cooperation between parents, schools, and health to help children with the disorder. The project also gathered statistics on preexisting knowledge and prior understanding levels of elementary school teachers, which could be an excellent guide for future children's mental health initiative projects in Nepal. .

Trisha Sivam

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Trisha Sivam
#2 Brian Soto Miranda
#3 Sara Biswal
#4 Carmen De Miguel

Abstract Name: Deficiency of ETB Receptor Results in Regional Differences in Renal Expression of the Inflammasome Component Pstp1 During Salt-Sensitive Hypertension

The vasoactive peptide endothelin-1 (ET-1) has an integral role in hypertension and the associated kidney inflammation. The inflammasome is a member of the innate immune response involved in hypertension. However, if the ET-1 system plays a role in activating the kidney inflammasome during hypertension is unclear. We hypothesized that the dysfunction of the ETB receptor leads to an exaggerated activation of the inflammasome in the kidney during hypertension. Male transgenic (TG) controls and ETB deficient (ETB def) rats (n=4-5/group) were placed on a 4% NaCl diet for three weeks to induce salt sensitive hypertension. RT-PCR was conducted on the cortex and outer medulla of the kidney (normally rich in the ETB receptor) to assess gene expression of different members of the inflammasome family. Results were normalized to the expression of the housekeeping gene Rpl18. Dysfunction of the ETB receptor resulted in a dramatic downregulation of the negative modulator of the inflammasome pathway, Pstpip1, in the cortex (TG Controls vs. ETB Def: 1.27±0.11 vs. 0.32±0.04, p=0.003), but not in the outer medulla. Interestingly, the rest of the inflammasome genes (Nlrp1, Nlrp3, Pycard, Il-1B) had a tendency of downward expression in the cortex and upwards expression in the outer medulla. Together our results demonstrate that expression of Pstpip1 gene is regulated by ETB receptor in the cortex but not in outer medulla during high-salt feeding. More studies are needed to fully understand how the downstream pathway of the inflammasome is affected by dysfunction of the ETB receptor, especially in regard to sex differences in the response. Funded by NIH K01HL145324 to CDM and NIH U54 DK137307 as O'Brien Scholar to BSM.

Kadienne Sizemore

CO - University of Northern Colorado

Discipline: Humanities

Authors:
#1 Kadienne Sizemore

Abstract Name: Female Faithfulness Encouraged: Gendered Piety in Early American Baptist Publications

Following the American Revolution, membership in Baptist churches grew exponentially. As one of the fastest-growing Protestant denominations in early America, the interests of Baptists were often indicative of larger trends in religiosity. Conceptions of piety, including beliefs surrounding obedience, faithfulness, and duty, were central to the structure of Baptist congregations and their proximate communities. This paper explores the role of gender in the construction, presentation, and justification of Baptist notions of piety in their publications during the Early American Republic. It will further address questions of female autonomy and gender roles as illustrated in this discourse. Through a rhetorical analysis of denominational print publications, I will identify the places where ideas of gender permeated the values of these communities as well as examine the tools used to form and disseminate gendered notions of piety. The Massachusetts Baptist Missionary Magazine and its equivalents in surrounding spheres will serve as my main primary source base,

providing examples of published discourse that a large number of early American Baptists subscribed to. By analyzing the language used to set these standards, I will be able to highlight the congruence between Baptist values and male interests in 19th-century New England. The outcome of this was the deepening of ties between religiosity and gender structures in early America.

Kaitlyn Sizer

MN - Minnesota State University - Mankato

Discipline: Health and Human Services

Authors:
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#2 Hailey Eibs
#3 Emily Rowbotham
#4 Jasmine Jimenez
Jasmine Jimenez

Abstract Name: Capitalizing on Engagement and Senses for Individuals with Dementia

The stigma against dementia persists while few dementia friendly programs currently exist. Montessori-based activities are designed to offer active and meaningful engagement and provide socialization and enjoyment for individuals with dementia despite their cognitive deficits (Hindt, Morris, Sohre, & Buchanan, 2018; Jarrot, Gozali, & Gigliotti, 2008). Research participants in this study comprised of eight college students who completed specialized dementia-friends training. Student participants conducted two 30-minute activities with a small group of residents with dementia twice a week for ten weeks. This study aims to examine meaningful engagement by comparing two Montessori-based activities addressing verbal modality vs. multiple senses. Two Montessori activities, Memory Bingo and a Sensory Station have been created to facilitate among individuals with dementia. The Sensory station allows individuals with dementia to explore a variety of theme-based objects (e.g., leaves, miniature pumpkins, harvest corn, and other fall theme related objects) along with a theme-based scent all incorporated in a slime mixture in a plastic container. This activity allows individuals with dementia to work alongside a student volunteer while capitalizing on their five senses promoting them to reminisce and engage in theme-based conversation without requiring demand on their impaired short-term memory. Memory Bingo is similar to Bingo but replaces the numbers on the bingo cards with theme-based sounds that may be familiar to the individual. This activity allows individuals with dementia to recognize sounds and relate the corresponding sound to a memory they may potentially have. Qualitative and quantitative measures prior to and after completing the program will be conducted to measure student perceptions on ageism, dementia and meaningful engagement. The expected outcome of this programming is for student volunteers to develop and facilitate purposeful engagement activities by maximizing the abilities of individuals with dementia.

Shannon Skelley

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

Authors:
#1 Desarae Tasnady
#2 Shannon Skelley
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#4 Blanca Calderon

Desarae Tasnady

Abstract Name: Enhancing Organic Contaminant Removal from Wool Scouring Wastewater Using Chemically Modified Biochars

In recent times, biochar has emerged as a promising and sustainable solution for COD reduction in wastewater treatment. This study explores the potential of chemically modified bio-chars as efficient adsorbents for the removal of organic contaminants, specifically oils, fats, and grease (OFG), from wool scouring wastewater. Proximate analysis revealed distinct properties among the biochars, with the KOH-treated biochar demonstrating the most promising characteris-tics, including lower volatile matter, higher fixed carbon content, and reduced ash content, indicat-ing a stable and carbon-rich structure. A meticulous examination of the KOH-treated biochar's sur-face characteristics revealed the presence of elevated carbon and nitrogen content, complemented by an expansive surface area measuring 724.4 m^2/g. This surface area was at least twice as extensive as that observed in the other post-treated biochar samples. The kinetic adsorption of COD and sol-uble COD was well-fitted by the pseudo-first-order model, with equilibrium achieved in approxi-mately 200 min. The KOH-treated biochar exhibited the highest equilibrium adsorption capacities for both COD and soluble COD in both Dorset and BFL wastewater, highlighting its efficacy in OFG removal. Despite these promising results, further research is needed to explore biochar's surface characteristics, pore structure, and performance under diverse conditions, as well as its integration with existing treatment processes and potential for regeneration and reuse. This study contributes to advancing sustainable wastewater treatment methods using chemically modified biochars.

Gregory Skinner

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Gregory Skinner

Abstract Name: Does Consumerism Have an Effect on Relationships? The Influence of Consumeristic Tendencies and Empathy on Relationship Satisfaction.

Materialism and consumerism have been linked to higher levels of loneliness, an increased focus on extrinsic goals, various social challenges, and lower overall well-being of individuals. Previous research has linked people with higher levels of consumeristic/materialistic values to a lower frequency of intrinsic and pro-social pursuits. The area of discussion has primarily often looked at relationships and societal-level challenges separately and has a limited assessment of platonic personal relationships. This study adds to this discussion by addressing the gap in more friendship-oriented relationships, looking at how the same set of individuals are affected in both personal and societal connections, as well as seeing how various individual factors, such as religious affiliation and socio-economic class may impact these effects. This research will use mixed research methods, including surveys and in-depth interviews, to see how individual attitudes toward consumerism relate to their behavior and values toward their immediate social circle and larger communities. The samples were gathered from among the United States population and were collected at random through the use of online collection methods. The participants were contacted through the use of snowball sampling as well as the use of online platforms which include SurveySwap and SurveyCircle to acquire representative samples. The survey data will be examined through the use of multivariate analysis. The interview data will be reviewed through thematic analysis. The addition of this study will increase our understanding of not only how consumerism and materialism affect the individual’s well-being but also their capacity to meaningfully connect with their various communities.

Kaylyn Skinner

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Kaylyn Skinner

Abstract Name: Education of Neonatal Intensive Care Unit (NICU) Nurses Regarding Evidence-Based Management of Feeding Tubes in Neonates

The aim of this evidence-based practice proposal is to educate Neonatal Intensive Care Unit (NICU) nurses on the most recent literature regarding best practice in management of feeding tubes in neonates. A comprehensive review of literature identified themes in three distinct domains: infection in feeding tubes, measurement for placement of feeding tubes, and verifying placement of feeding tubes. Despite conclusive evidence in these subjects, NICU nurses still use techniques that are less accurate or effective in their daily practice. Educational material created based on the review of literature will be dispersed to NICU nurses in a local hospital. This education will provide a new frame of reference and increase nursing knowledge, thereby changing the way nurses care for infants with feeding tubes. Nurses' understanding of the material will be assessed following the education to determine if the education was effective.

Maylee Skovron

KY - University of Kentucky

Discipline: Interdisciplinary Studies

Authors:
#1 Maylee Skovron

Abstract Name: The Value of Survivor Narratives in Social Justice Education

After World War II it was not uncommon for American Holocaust survivors to talk at schools to discuss their personal experiences through tragic events of the war. Fred Gross and his family spent years fleeing numerous countries across Europe in attempts to evade Hilter's grasp. They ran through war-torn trenches, stayed in hotels and castles, were held in Grus French internment camps, and hid in Switzerland. Fred Gross later wrote the book One Step Ahead of Hilter: A Jewish Child's Journey Through France which captures his family's experience through the Holocaust. In addition, Fred Gross toured and spoke at primary and secondary schools in Kentucky to talk about his experiences as a Holocaust survivor before his death in 2021. He did this to teach younger generations from his first-person perspective of history. Using the archival collection of Fred Gross Thank You Letters, 1997–2019, at the University of Kentucky Libraries Special Collections Research Center, research will investigate what students learned from his visits by analyzing their handwritten thank you letters sent to Gross after his visit. Research methods will quantify feelings identified by the students and what they learned from his visits. Further analysis will determine how effective survivor narratives are in genocide education and in invoking empathy in students. Today there are few Holocaust survivors left and statistics bear that Millennial and Gen Z generations know little about the event. As access to first-person Holocaust narratives disappears, it is vital to learn how to preserve their accounts and educate future generations.

William Slater

CA - University of Southern California

Discipline: Engineering and Architecture

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#1 William Slater
#2 Subha Kumpaty

Abstract Name: Investigation on the Effect of Photo Dose Parameters on Mechanical Properties of Photopolymer Resin

Digital Light Processing (DLP) has become a popular method for additive manufacturing due to its ability to cure a product layer by layer, decreasing production times. One important parameter of a DLP printer is the photo dose which is the product of the exposure time to light and the intensity of light. This project aims to see how varying the ratio of exposure time to intensity, while keeping the photo dose constant, affects the printed product's mechanical properties. This project also investigates how changing the photo dose itself effects these same properties. This was done by printing "dog bones" (ASTM D638 standard - Type I) from a DLP 3D printer, using a material by the alias Material X. Batches of dog bones were printed at 3 different ratios of light intensity to exposure time with each batch undergoing tensile strength tests to measure the tensile strength at break, elongation percentage at break and tensile modulus as well as hardness test. Similar tests were done on two more batches with varying photo doses. All batches were printed in the Z orientation. Tests showed that changing the ratio while keep the photo dose constant had no significant effect on the mechanical properties of the objects while changing the photo dose itself showed lower tensile strength and tensile modulus for products with a lower photo dose.

Savannah Slayton

OK - University of Oklahoma Norman Campus

Discipline: Humanities

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#1 Savannah Slayton
#2 Dr. Farina King

Abstract Name: Exploring the Legacy of Colonialism on Oklahoma Education: Using Historical Foundations of Education in Oklahoma to Understand Contemporary Education in Oklahoma and its Impacts on Native Youth.

As the sun sets on the plains of Oklahoma, it casts a long shadow that stretches far beyond the horizon—a shadow shaped by the intricate and often overlooked impact of colonialism on the state's educational foundation to what it is now. To understand Oklahoma's education system and how Western ideologies and European colonialism have impacted Native youth, you must trace back through Oklahoma's history to when the removal and genocide of Indigenous people across the U.S. by the federal government was a devastating reality. Therefore, how have Native communities been impacted by educational policies, especially Native communities in Oklahoma? Education became a tool for both assimilation and preservation, with the federal government implementing policies aimed at erasing Indigenous languages and traditional ways of life. One of the most pivotal moments in Oklahoma's history is the forced assimilation of Native children through the establishment of residential schools. These institutions were designed to eradicate Indigenous ways of life, with the aim of assimilating Native children into Euro-American society. The policy had devastating effects on Native communities, leading to cultural disconnection, loss of identity, and intergenerational trauma. Many Indigenous languages are now endangered, with only a handful of speakers remaining. Understanding this policy's impact is essential for acknowledging the historical trauma that continues to affect Native communities' social and educational experiences. Understanding how non-Natives used education as a form

of cultural erasure is significant to understanding Oklahoma's education system as we know it today. The purpose of this oral history is not to simply discuss Oklahoma's horrific Indian boarding school system, but rather to use historical foundations of education in Oklahoma, including the Indian boarding school system, to understand how colonialism had impacted and continues to impact Indigenous youth and their educational experiences in Oklahoma and all across the U.S.

Olivia Smaldone

NY - SUNY Geneseo

Discipline: Social Sciences

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#2 Susana Castillo-Rodriguez

Abstract Name: Imagery of Remembrance: Exploring Collective Memory and Political Trauma in Post-era Argentine University Students

From 1976 to 1983, the Argentine Republic was under the rule of the military dictator Jorge Rafael Videla. Historians have studied this dictatorship as a "dictadura de Estado" (dirty war). Student political activism and youth organizations played an important role in this era as they confronted the regime and were often victims of the state's systematic terror. Grounded in Maurice Halbwachs's collective memory theory, posthumously published in 1950, this paper aims to explore the impact of Argentina's military dictatorship on university students born post-era, emphasizing the role of modern visual representations on collective social memory and generational trauma. This study also aims to observe how literary artifacts of this era contribute to shaping and preserving such collective memory for university students. One of Halbwachs's statements is that the strength of collective memory derives itself from the individual memories of a cohesive social group, and that individual memories do not exist outside the influence of the collective memory. Additionally, the study of Natzmer (2002) on Post-Pinochet Chile will act as a parallel case to compare the political outcomes and findings of this study. Methodologically, the research is based on, first, qualitative analysis of original photographs of contemporary murals and visual displays at Universidad Nacional de Córdoba in Argentina. These photographs were collected during my study abroad within the span of several months—secondly, four semi-structured interviews of university students. I have registered and transcribed several hours of interviews for this study.This research highlights that Argentina's truth commission did not close any wounds. On the contrary, visual representations serve as a manifestation for strengthening the collective and individual memories of the trauma experienced by Argentine citizens under the military junta.

Nicole Small

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Nicole Small

Abstract Name: Mental Healthcare Access In Military Service Members

Background: Mental healthcare (MHC) is important to the well-being of the men and women serving in the military. There are many stressors that are a part of serving in the military. These stressors may accumulate and increase the risk of mental illnesses developing or worsening in the service member (SM). Despite the

need for SM to have access to mental health care (MHC) and it being available to them, many do not seek MHC. Purpose: This study aims to assess whether the acceptance and commitment therapy (ACT) app or peer support networks are more effective to increase access to MHC. Method: Service members (SM) in the community will be invited to participate using convenience sampling. After receiving information about the two interventions being studied; the ACT app and peer support networks; they will be given the Department of Defense (DoD) Health Related Behaviors Survey (HRBS) with questions added assessing for preferences between the two interventions as well as any additional questions. Conclusion: There are many barriers to MHC among SM, with stigma being a key barrier. With fears of impacts to their careers, SM may refuse to seek MHC often worsening long-term outcomes. Two interventions; ACT app and peer support networks; are being studied to assess how effective they are at increasing access to MHC. With implementation of one or both of these interventions, it is hopeful that access to MHC will increase, as well as decreased stigma towards MHC and mental illness. Keywords: Mental health care, stigma, military service members, acceptance and commitment therapy (ACT) app, peer support networks

Gabriel Smerillo

WI - University of Wisconsin-Eau Claire

Discipline: Business and Entrepreneurship

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#3 Divya Sadana
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Gabe Wilhorn

Abstract Name: COVID and Pollution: Evidence from Pandemic Lockdowns

Pollution has always been considered as one of the major environmental sources of detrimental health and deaths worldwide, due to which economies have always implemented policies to reduce pollution. According to World Health Organization (WHO), air pollution directly impacts the lung development, thus causing various respiratory diseases such as asthma, emphysema, and chronic obstructive pulmonary disease (COPD). Latest literature has shed light on how COVID-19 pandemic and lockdowns impacted the labor market, various outcomes of health and well-being of individuals, and time spent by people on various activities. But little research has been done on the impact of pandemic on pollution in the US. COVID-19 stay-at-home (SAH) orders create a natural experiment to investigate the effect of COVID-19 on air pollution, as SAH orders significantly impacted the individual mobility and economic activities in the US. In this paper, we exploit the differential timing of SAH orders in different states and utilize a staggered difference-in-difference (DID) econometric strategy/framework to compare the pollution levels of the counties with and without the SAH orders. We hypothesize that the pollution level in the counties with higher levels of SAH orders would reduce significantly as compared to the pollution level of counties with lower levels of SAH orders. As an extension, we also study its consequent impact on health outcomes due to reduced pollution. Since 2020, COVID-19 has hugely impacted the US and the whole world in various adverse ways. This project contributes directly to the literature of Environmental and Health Economics through the impact of COVID-19 on pollution and consequently on health of individuals. Also, it uses one of the widely used Econometric Models (Staggered DID) to achieve the main objective of the paper.

Vanesa Smielak

FL - Florida International University

Discipline: Social Sciences

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#3 Aaron Mattfeld

Abstract Name: The Impact of ESI on Reaction Time

Attention and memory are closely related, however the role that memory training plays in the interaction between attention and memory is not well understood. Episodic specificity induction (ESI), a memory training, is said to help individuals vividly recall past events, improving memory accuracy. Results from past ESI studies have highlighted its potential for application in individuals with overgeneralized memory, such as patients with anxiety. To explore attention concerning memory accuracy, it is necessary to assess the impact of ESI on reaction time variability – a behavioral correlate of sustained attention. Previous studies have associated less variable reaction times with sustained attention. Participants (n=147) underwent ESI which consisted of watching a brief video and recalling details of the surroundings, people, and actions in the video. After ESI (or control impressions), participants were shown pictures for which they made negative/neutral judgments. After a short delay, participants were given a memory test where they were asked to differentiate between the images they had seen before (targets), images they had not seen (foils), and similar images (lures). Using the collected data, a secondary analysis has been conducted examining the influence of ESI on reaction time variability during the encoding portion in the context of memory accuracy. We hypothesize that following ESI, people will exhibit sustained attention (i.e., less variable RT) during the encoding of the images and will exhibit higher accuracy in recalling the same images. This would suggest that ESI leads to better memory performance partly through sustained attention to the task.

Anastasia Smirnova

CA - San Francisco State University

Discipline:

Authors:
#1 Anastasia Smirnova
Ava Austin

Abstract Name: Faculty-student collaboration in the ECOLE

In this presentation we dive into the dynamics of faculty-student collaboration in the context of the Experimental and Computational Linguistics Ensemble (ECOLE) lab. The lab, housed in the English Department at San Francisco State University, serves as a hub for cross-disciplinary research on language. Students participating in the lab come from a variety of disciplines, from computer science and math to education and psychology. Diverse perspectives and backgrounds form a strong foundation for collaborative environment. Student-researchers have a complementary set of skills, from behavioral data science to qualitative research methodologies. Over the years, we have explored the topics that pertain to the nature of human-computer interaction, the cognitive foundations of language, and the role of language in society. The lab's most recent research project focuses on Large Language Models, such as ChatGPT. Using this project as an example, we discuss the dynamics of faculty-student collaboration and how the project evolves based on the unique contribution of lab members, who bring to the table expertise from diverse academic fields, curiosity, and passion for research.

Theodore Smith

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
#1 Theodore Smith
#2 Farzad Sabzikar

Abstract Name: Enhancing Machine Learning with Tempered Fractional Gradient Descent

Fractional order gradient descent methods have grown in popularity on account of their practical applications in the training stage of machine learning. Compared to their well defined whole number (integer) counterparts, fractional gradient descent methods have been used to improve the speed of convergence in optimization algorithms. There is an interesting development in this area called tempered fractional calculus. Here, we add an exponential term to the fractional operations, making them a bit more complex but potentially more effective. In this paper, we will explore the addition of an exponential term to a fractional order gradient descent to see if this change can make algorithms reach their best performance more quickly. The exponential term creates a tempered fractional gradient descent, which will model the gradient descent function as a semi-heavy tailed function. To test this, we will conduct simulations on common machine learning training datasets to explore the effect of the tempered fractional gradient descent method on convergence speed and accuracy in comparison to older fractional order methods as well as the integer order methods. The study is expected to show that these new tempered models are better in several ways compared to the non-tempered fractional order method. One big plus is that our new model is more flexible. It has an extra 'tempering' parameter, which gives us more control over the method's memory. This could be a big step forward for optimizing how machines learn.

Grace Smith

PA - Pennsylvania State University

Discipline: Health and Human Services

Authors:
#1 Grace Smith
#2 Diane Williams

Abstract Name: Exploring Gender Differences in ADHD through Narrative Competency

Individuals affected by Attention-Deficit Hyperactivity Disorder (ADHD) often present with pragmatic language impairment. While not unanimous, existing literature on narrative language use generally provides evidence of a relationship between ADHD and narrative impairment. However, despite the large body of work studying ADHD and language, very little of it focuses on adults. Additionally, there is only a small (but increasing) data pool describing the effect of gender on ADHD symptomatology. The present study explores whether young adults with ADHD have less cohesive and coherent narratives than young adults without ADHD, and whether there is a gender component to narrative competence. Three prompt-driven narratives were collected from 4 groups of 5 people each: Clinical women (i.e. women with ADHD), clinical men, non-clinical women, and non-clinical men, and analyzed with regards to coherence and cohesion. Because these are largely mental organizational/executive functioning (EF) skills, study activities were designed to ensure participants were genuinely challenged in those areas. In the opinion of the investigators, activities used in prior research such as story retelling or other highly structured narrative tasks may mask deficits due to an insufficient EF load placed on the narrator. EF measures were also collected from participants using the Executive Skills Questionnaire (ESQ). It is expected that young adults with ADHD will have less cohesive and coherent narratives than young adults without ADHD and that gender will have a significant effect on the cohesion and coherence of narratives, with men having more difficulty than women. Understanding how ADHD affects narrative abilities may enhance understanding of ADHD's effect on areas such as executive function, social interaction, and language use for spoken discourse. Additionally, it may guide professionals' treatment of ADHD patients who struggle in any of those aspects.

Emily Smith

AL - University of Alabama

Discipline: Social Sciences

Authors:
#1 Emily Smith
#2 Yi Ting Chua
#3 Adam Ghazi-Tehrani

Abstract Name: How Dark is the Dark Web? Examinations on the Purpose of TOR and Dark Web Usage

There have been hundreds, if not thousands, of studies conducted concerning the TOR Browser and Dark Web in general. However, many of these studies focus on the effects of the Dark Web rather than the issue of accessibility to the Dark Web and its harmful forums, blogs, and marketplaces. Harviainen, Haasio, and Hämäläinen conducted a study of similar nature in January 2020. This study scrubbed Dark Web forums to find users buying illicit drugs and find connections between their personal lives and lives online. Additionally, in June 2021, Davis and Arrigo detail the pitfalls and side effects of easy accessibility to the

Dark Web and find that they are wholly negative. To date, there is little research examining the use of the TOR browser and the Dark Web with a comprehensive approach. In this light, this paper examines the effects of unbridled access to the Dark Web through the TOR Browser and its effects on individuals' behaviors, specifically as it relates to extremist activities. Through the use of survey and browsing history collected via Wireshark, this research highlights the spectrum of TOR Browser and dark web usage. Studying this issue is beneficial for areas of cybersecurity and foreign and national policy and may assist in filling the gaps of data in these areas.

Isabel Briana Smith

WI - University of Wisconsin-Stout

Discipline: Interdisciplinary Studies

Authors:
#1 Michael Tetzlaff
#2 Darcy Hannen
#3 Tyler Betanski
#4 Jacob Buelow

Abstract Name: Kintsugi 3D Viewer: User-Centric Design for Cultural Heritage Accessibility

This design project focuses on the creation of both 2D and 3D elements to develop and support the usage of the application Kintsugi 3D Viewer. The project aims to create appealing elements that simplify navigation and increase interaction while also representing the ethos of the application. Created to increase access to more accurate digital representations of cultural heritage objects, the application was designed to be used by a wide audience with varying levels of digital proficiency. With this information in mind the design approach rested heavily on the development of proto personas with a strong focus on accessibility. This approach along with concept testing, A/B testing, and surveying helps to guide the creation of minimalist iconography, logo, and UI that draw on commonly used practices and symbols. The design helped to define the image of Kintsugi 3D Viewer and enhance users' experience and usage of the application. This project illustrates the value of user-centric design and its positive impact on cultural heritage and computer sciences.

Elizabeth Smith

UT - Brigham Young University

Discipline: Social Sciences

Authors:
#1 Elizabeth Smith
#2 Melissa Chavez
#3 Tavish King
Melissa Chavez
Tavish King

Abstract Name: Is asking about suicidality in a population with ASD and Social Anxiety a protective factor?

Suicidality is a major public health issue. A prevalent myth is that discussing or asking about suicidality can increase one risk of dying by suicide. This has been proven false, and that asking about suicidality can help mitigate it for the typical person. However, suicidality is a larger issue for those with ASD (O'Halloran et al., 2022) and social anxiety (Leigh et al., 2023). These groups have not been researched in the same way, and

there is no conclusive answer whether asking about suicide helps or hurts these populations. Thus, we pose the question: is asking about suicidality a protective factor for those with ASD and Social Anxiety? To answer this question, we recruited 95 individuals with 72 fitting into the clinical population. We sent out a survey over Metricwire every evening asking about suicidality. We then had participants come in every 6 weeks and we administered CSRSS to assess suicidality. We compared the CSRSS scores to the visit that the CSRSS was administered to get our results. Participants with autism decrease over a quarter of a point more each visit in their CSSRS scores (E=-0.28, SE=0.07, p<.001). We observed a similar decrease in the subjects with social anxiety (E=-0.35, SE=0.07, p<.001). This indicates that asking about suicidality can decrease suicidality in these populations. While the results from this study are promising, it still needs to be taken with a few limitations in mind. First, several participants dropped out of the study. Another limitation was that this was completed in a small group. Overall, this study is somewhat promising for potential treatments, however, this needs replication to further the investigation of whether talking about suicidality is a protective factor.

Halle Smith

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

Authors:
#1 Halle Smith
#2 Christine Calderon

Abstract Name: Investigating Undergraduate Students' Persistence in Academic and Extracurricular Domains

We explored whether college students' coping strategies and intentions to persist differed between academic and extracurricular domains. Participants included 125 students from one Midwestern university. They were recruited from the athletics department, music and theater department, and the psychology department's online participant pool. Through one 10-minute online survey, students responded to two sets of items about their setback experiences: one in academic settings and the other with extracurriculars. In both domains, we measured active, avoidant, distraction, and support-seeking coping (support-seeking reflected venting in this study). Stakes captured the extent to which students felt that a particular domain was central to their long-term goals. Persistence measured the extent to which students would continue trying to complete tasks even after they encountered challenges. We addressed the following sets of questions: 1. Do students report different degrees of stakes and persistence across academic and extracurricular domains? 2. Do students differentially engage in coping strategies following setbacks in academic and extracurricular domains? 3. Do students' coping strategies and perceived stakes predict their persistence on tasks in academic and extracurricular domains? Students indicated that their performance on academic tasks was more central to their long-term goals than their performance on extracurricular tasks. However, students also reported greater persistence for extracurricular activities than for academic tasks. Active coping in academic settings predicted greater persistence in that domain, whereas more venting predicted lower persistence. Distraction coping (using humor) after extracurricular setbacks related to greater persistence in that domain. These results help us understand how undergraduate students value academics and extracurriculars. Different coping strategies may help support persistence among college students, especially when perceived stakes are higher. With this, we can develop methods to better support students through obstacles within the university system.

Emma Smith

WI - University of Wisconsin-Oshkosh

Discipline: Natural and Physical Sciences

Authors:
#1 Jessica Lucas

Abstract Name: An Exploration into Potential Function Conservation of the Kinesin 7 in Arabidopsis thaliana

This project examined the function of kinesin 7, a protein involved in mitosis (separation of duplicated chromosomes into daughter nuclei). Mitosis is a vital process conserved in all eukaryotes. While much research explored the role of kinesin 7 in animal mitosis, little is known about kinesin 7 function in plants. A comparative analysis of these protein across Plant and Animal kingdoms will provide insight into the differences between evolutionary lineages. To study kinesin 7 in plants, multiple SALK lines of the genetic model flowering plant Arabidopsis thaliana predicted to harbor an insertion allele at the kinesin-7 gene locus were used for genotyping. A PCR/gel electrophoresis genotyping protocol to genotype each plant to recover a homozygous recessive plant. Resulting genotypes will be linked to phenotypes of each plant, to reveal the plant kinesin protein's functionality and highlight differences in the protein across kingdoms. Possible homozygous recessive plant were found but have not yet been fully confirmed. Based upon a protein alignment of five kinesin 7 proteins among five different model organisms across both kingdoms, the results indicate a possible conservation within the motor domain of the protein. This conservation of the motor domain may indicate of function conservation, as similar protein domain structure often results with similar functionality.

Zsuzsanna Smith

PA - Slippery Rock University of Pennsylvania

Discipline: Interdisciplinary Studies

Authors:
#1 Zsuzsanna Smith

Abstract Name: Money In Movement: A Cry For Federal Arts Advocacy

The starving artist is a stereotype used to describe how painters, musicians, and dancers who pursue their passion do so at the expense of their financial wellbeing. While not all artists find themselves in financial struggle, there is undeniable truth to the difficulties dancers face in their pursuit of a career in contemporary movement. While dancers in many developed countries in Europe and North America alike do not find themselves in the highest income bracket, dancers in the United States especially struggle to fiscally sustain themselves without making sacrifices to their health and lifestyle. Despite the struggles that artists face, some politicians in the United States actively try to defund the arts, thereby further increasing the difficulties dancers encounter. This study analyzes the current state of federal arts funding in the United States and its impact on the field of dance. The National Endowment for the Arts is an independent federal agency that provides grants to dance organizations. In addition to supporting specific dance companies, this funding positively impacts the surrounding community and economy as a whole. This paper compares the total number of federal grants and the total amount of money provided to dance organizations in the 1980s versus that of 2022, and also takes inflation into account. Using data from the US Bureau of Labor Statistics, and personal accounts of dancers in various countries, it compares arts funding in the United States to that of European countries and describes the wages and living experiences of dancers in these countries. Federal funding towards dance companies in the United States has not adjusted to account for inflation and has actually decreased significantly. Dance organizations and the entire United States economy would benefit if there was an increase in federal funding allocated to arts organizations.

Kayla Smith

OK - Langston University

Discipline: Health and Human Services

Authors:
#1 Kayla Smith
#2 Britton Scheuermann
#3 Shannon Parr
#4 Stephen Hammond
#5 Vanessa-Rose Turpin
#6 Olivia Kunkel
#7 Carl Ade

Abstract Name: Impairments in Cerebral Autoregulation and Cerebrovascular Reactivity in Cancer Survivorship

Roughly 46% of cancer survivors report cognitive dysfunction across many types of cancer, which has been associated with anti-cancer therapy and often results in reduced quality of life. Pre-clinical studies have suggested that the underlying factors of cognitive decline likely involve cerebrovascular dysfunction. We aimed to characterize local cerebrovascular regulatory functions (cerebrovascular reactivity and cerebral autoregulation) and central large artery stiffness (aortic arch stiffness) in cancer survivors, within 1-5 years of completing treatment compared to age- and sex-matched healthy controls. Aortic arch pulse wave velocity (aaPWV) was determined using Doppler ultrasound scans of the aortic valve and the descending aortic arch. Cerebrovascular reactivity was assessed as the change in middle cerebral artery velocity relative to the change in end-tidal carbon dioxide during a modified rebreathing protocol. Cerebral autoregulation was determined using Mx, a moving correlation coefficient between finger plethysmography-derived arterial blood pressure and cerebral blood velocity of the middle cerebral artery. Higher Mx values indicate poorer cerebral autoregulation. 11 women were recruited (5 healthy controls and 6 cancer survivors who had received treatment). Mx values were higher in cancer survivors. Both cerebrovascular regulatory functions were impaired in cancer survivors compared to healthy controls and decreases in cerebral autoregulation were associated with increases in aortic stiffness. The present findings highlight the importance of monitoring cerebral and global vascular function in cancer survivors who are at high risk for cognitive decline.

Clara Smith

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
#1 Clara Smith
#2 Gennie Parkman
#3 Garrett Otrimski
#4 MiKaela Field
#5 Steven Stanley
#6 Sheri Homlen

Abstract Name: The Role of TIMP1 in Melanoma

Melanoma is the deadliest form of skin cancer due to its ability to metastasize to other organs, specifically the brain. A better understanding of the mechanisms of brain metastasis, the pathways, and genes that play a role in this mechanism can lead improved treatments. We are investigating genes in melanoma to study their influence on metastasis and identify possible therapeutic interventions. Differential gene expression analysis

between human melanoma brain metastases and extracranial metastases revealed differences in several genes, including higher expression of Tissue Metallopeptidase Inhibitor 1 (TIMP1) in melanoma brain metastases. TIMP1 is a multifunctional protein that has a primary role of inhibiting the activity of metalloproteinases (MMPs), which in turn inhibits the degradation of the extracellular matrices surrounding the cell. It has also been discovered that TIMP1 activates intracellular signaling pathways to promote cell growth and cell survival. In melanoma, TIMP1 was found to activate signaling pathways that have been previously found to promote metastasis and increase resistance to anoikis, which is a type of cell death that occurs following detachment from the extracellular matrix. In this study, we evaluated the effect of TIMP1 expression on melanoma progression and metastasis. We utilized in-vitro assays of melanoma cells expressing TIMP1 to study its effects on migration and invasion, as well as in vivo melanoma mouse model based on the well established RCAS/TVA avian retroviral system. The results of this study will have a profound impact on the understanding of melanoma metastasis and may identify TIMP1 as a possible target for future treatments in patients.

Nicholas Smith

NJ - Stevens Institute of Technology

Discipline: Business and Entrepreneurship

Authors:
#1 Nicholas Smith
#2 Wei Zheng
#3 Peter Dominick

Abstract Name: A Pragmatic Framework for Inclusive Leadership Capabilities

The purpose of this research is to identify the capabilities (knowledge, skills, and mindsets) that enable leaders to be inclusive. We regard inclusive leadership as a set of leader behaviors and actions that facilitate group members contributions to process and outcomes by elevating their sense of belongingness and yet retain their sense of uniqueness. Inclusive Leadership is a rather new concept and needs significant more development. Through a thorough review of academic and practitioner's literature we first make the argument that earlier research on inclusive leadership has enriched definitions and grounded the concept in theory, but there lacks an understanding of how to pragmatically develop inclusive leadership capabilities. Capabilities fuel the identified inclusive behaviors grounded in literature; however suggested behaviors cannot be executed without developing inclusive leadership capabilities. We next propose a framework consisting of six dimensions namely, understanding oneself, creating connections, fostering collaboration, creating equity, motivating a diverse mindset, and conflict resolution to work with differences. These dimensions were selected by consolidating existing theories and definitions of inclusive leadership and building upon them to address the lack of focus on developing inclusive leadership capabilities. These capabilities can be built on for an individual leader rather than a framework for team or organizational growth. This model provides a practical framework to guide an inclusive leader's development and advances our conceptual understanding of how to become more inclusive. Our model can formatively influence organizations' leadership development programs and inclusive leadership education. It also provides direction for future research in developing measurement and evaluation tools for inclusive leadership competence and for identifying related developmental paths and experiences.

Madison Smith

TX - Tarleton State University

Discipline: Health and Human Services

Authors:
#1 Camela Rodgers
#2 Maria Jimenez
Camela Rodgers
Maria Jimenez

Abstract Name: The Impact of Organizational Restraints on the Accessibility of Educator Resources

Campfire has many educators who utilize the resources available to them. Although Campfire wants to help as many families as possible, there is a roadblock to assisting outside families not associated with the agency. Social work students are currently in the process of working with the Camp Fire agency within their community to develop a research outline leading to conducting community-based research which will lead to an intervention to address this accessibility concern.

Robert Smith

MN - College of Saint Benedict/ Saint John's University

Discipline:

Authors:
#1 Robert Smith
#2 Mason Nibbe
Mason Nibbe

Abstract Name: Prescribed burns: Is there an impact on small mammal diversity?

North American small mammals of the orders Rodentia (mice, voles, squirrels, etc.) and Eulipotyphla (shrews) hold important functions in many ecosystems. They act as prey for predators, consume vegetation, aerate the soil via digging, and disperse seeds. One notable habitat for small mammals is the prairie, an ecosystem whose area has declined by more than 90% due to habitat conversion (agriculture and development). Controlled burns are a common management tool in recovering and maintaining prairie ecosystems, but the link between the impact of burns and small mammal diversity is incomplete. To delve into this topic, we hypothesized that there would be a relationship between burn year and small mammal diversity. Our study was implemented during June – July of 2023. Small mammals were live-trapped and the following data collected, species, weight, gender, reproductive condition, and body length. Trap lines were distributed on three burn ages; year of burn (2023), burned in 2021, or burned more than three years ago. In our 594 trap nights, we captured 130 small mammals. Data analysis suggests a significant difference between the burn site age and species caught ($\chi 2 = 84.5$, df = 2, p < 0.001), which supported our hypothesis. These results contribute scientific information about the impact of controlled burns on the small mammal community in the prairie ecosystem.

Claire Smith

MI - Michigan State University

Discipline: Education

Authors:
#1 Claire Smith
#2 Barbara Schneider

Abstract Name: The Impact of Test-Optional Application Cycles on Institutional Diversity

The objective of my study is to analyze college admission requirements in light of increasing test-optional college applications, specifically, the rate of test score submissions in relation to student demographics. I will observe this over a period of four years (2019-2022) and look at various college categories (e.g., private selective). The primary perspective I have taken into consideration while designing this project is the widely held belief that standardized tests, specifically the SAT, are racially biased and exacerbate the systemic biases that exist within education. Many studies prove that there is racial bias embedded in standardized testing. If students were not required to submit test scores, would there be an uptake in the number of minority students enrolled in the more competitive institutions? That is the question that many parents, students, and university employees have asked in light of COVID and the push for test-optional applications, and that is the question I aim to answer with my study. My research began with an analysis of the common app data that reported on the demographics of students reporting test scores. I then moved to IPEDs data and selected 20 schools that fell into one of four categories: public selective, public non-selective, private selective, and private non-selective. I also conducted individual interviews with admissions representatives from 2-3 schools per category. These interviews addressed specific information on 2020 and 2021 first-year enrollment data. The primary conclusion, at this time, suggests that the move towards test-optional had a slight impact on the proportion of diverse students among the four different types of institutions, including the most competitive.

Madison Smith

VA - Roanoke College

Discipline: Humanities

Authors:
#1 Madison Smith
#2 Stella Xu

Abstract Name: "Is a Heathen Worth Educating?" Korean Student's Perspective on Race and Racism in the Jim Crow South

Yun Ch'i-ho, a Korean student at Vanderbilt University and Emory College in the late 19th-century, found himself in a society deeply invested in Jim Crow era racism and xenophobia, and kept records of his daily life in a diary he would maintain for 43 years. Despite being such a valuable source, there has been little scholarship connecting his experiences to the context of his time, as Yun is premierely remembered for being a pro-Japanese traitor, and is still relatively unknown to Western historians because of how quickly he had been shunned by the Korean people for the remarks he made during the Korean Independence Movement in 1919. However, as the only Korean in the American South, Yun Ch'i-Ho was placed in a unique position as a "foreign other" to observe and be observed by the white American population. This project is a deep read of the diary entries from 1889-1893, the years he spent as a student in America, that are then used to understand the relationship Yun personally has with racism in America. He was not only a victim of anti-Asian racism and discrimination, but this unique position also allowed him to observe the aggressions of anti-Black racism without expectations to interfere. As a result of his environment, Yun began to adapt pieces of that rhetoric into his own vocabulary and use it against other Asian students and Black Americans he met, contributing to the powerful role that language has in society.

Chloe Smith

IA - Iowa State University

Discipline: Health and Human Services

Authors:
#1 Chloe Smith
#2 Logan Ott
#3 Melha Mellata

Abstract Name: In Vitro Inhibition of Bacterial Plasmid Transfer by Dietary Zinc

Background: The emergence and spread of antimicrobial resistance (AR) in bacteria are a global concern as bacteria share large AR plasmids, allowing for novel resistance, virulence, and metabolic capabilities. This poses a threat to both human and animal health and productivity. The animal gastrointestinal tract serves as a reservoir for AR plasmid transfer. Unexpensive and safe strategies to reduce or eliminate AR in bacteria are needed. Both zinc and vitamin D3 are essential components of the human diet and have predicted antimicrobial properties. The objective of this study is to assess the role of dietary zinc on the transfer of AR plasmids between the bacteria strains E. coli APEC-02-211 and E. coli HS-4. Methods: Overnight cultures of APEC-O2-211 and HS-4 were prepared under appropriate antimicrobial selection. Cultures were standardized to OD600 nm of 1.0 and mixed 1:1. Water (control), zinc, or vitamin D3 were supplemented at a 1:10 ratio at varying final concentrations. Both over-the-counter zinc tablet homogenate and zinc gluconate were tested. The well plate was serially diluted and incubated overnight before being plated on selective and differential media. Colonies were counted and analyzed to validate the efficacy of the compounds of interest. Results: Conjugations supplemented with vitamin D3 did not have significant decrease in the rate of plasmid transfer ($p = 0.0873$). Conjugations supplemented with either zinc tablet homogenate or pure zinc gluconate resulted in significantly fewer transconjugants ($p < 0.0001$) and significantly less plasmid transfer ($p < 0.0001$). Overall, our data indicate that supplementation of diet with zinc may reduce the incidence and transfer of AR between bacteria in the gut.

Christopher Smith

WV - West Virginia University

Discipline: Engineering and Architecture

Authors:
#1 Christopher Smith
#2 Raphael Oladokun
#3 Soumya Srivastava

Abstract Name: Modeling a Novel Detection Platform for Stage IV Breast Cancer using Murine PyMT+/- Models

The early detection of breast cancer is critical in improving patient outcomes; however, many patients lack access to effective methods of detection that are time-sensitive, affordable, and noninvasive. Here, I explore the dielectrophoretic-based separation of cells as a noninvasive point-of-care technique for the early detection of breast cancer. Cancer cells exhibit differences in morphology and cytoplasm contents compared to normal cells. Our hypothesis is based on the fact that changes in the cell membrane, cytoplasm, and ECM under breast cancer conditions lead to differences in their dielectric properties or bioelectric signatures, i.e., capacitance, permittivity, and conductivity of the membrane and cell interior compared to normal PBMCs which we have demonstrated in our previous study. In that study, we compared the dielectric properties of PBMCs obtained from PyMT tumor-bearing mice at age 14 weeks (stage IV breast cancer) and older with age-matched wild-type models, utilizing the dielectrophoretic crossover technique. My ultimate objective is to explore these dielectric differences to separate cells effectively by appropriately balancing hydrodynamic and dielectrophoretic forces within a microfluidics device. This has been demonstrated through simulations using COMSOL Multiphysics software version 6.1. The numerical results obtained by integrating the

creeping flow, electric current, and particle tracing modules in COMSOL v6.1 indicate that PBMCs from PyMT tumor-bearing mice can be maximally separated from age-matched wild-type models using a low voltage and frequency. This presentation also discusses the velocity profile, electrode potential distribution, and electric field streamline within the microchannel. This outcome represents an initial step towards developing a breast cancer sorting device utilizing PBMCs from mouse models. This outcome represents a crucial step towards a novel, non-invasive, rapid, and economical method for the early detection of breast cancer on a single microchip.

Tommy Smyth

IL - Elmhurst University

Discipline: Natural and Physical Sciences

Authors:
#1 Tommy Smyth

Abstract Name: Using a Quadrupole Electrodynamic Trap to Study the Equilibrium within Microdroplets

The physical environment of a microdroplet has the possibility of changing the equilibrium of certain reactions. Previous research has demonstrated that reaction kinetics show a distinct difference in microdroplets than in bulk solutions. And while it has been shown that microdroplets can be catalytic, little is known about the actual mechanism. And by using a different way to study the droplets by isolating single microdroplets in a controlled setting this research aimed to characterize the behavior of microdroplets. What is learned from this research could have particular applications in catalytic chemistry as a greener way of changing the equilibrium of stubborn reactions. This research studied the formation of an imine dye that was able to be studied through fluorescence. The reaction was characterized in bulk by measuring the equilibrium and kinetics with UV-vis and fluorescence. The conditions of the samples were tested with variations of pH, viscosity, and salt content as well as combinations of each. By using a trap to levitate the droplets their change in equilibrium was studied through their change in fluorescence as the equilibrium changed. It was found that the conditions of the microdroplet had no effect on the equilibrium of this imine formation showed through no change of fluorescence. Due to the negative result when compared to other research data, more needs to be done in order to fully discuss the conditions of a microdroplet and how they may work for certain reactions and not others.

Alexandria Snyder

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Alexandria Snyder
#2 Abigail Lustyik
#3 Sara Klein
#4 Sarah M. Belcher
Abigail Lustyik

Abstract Name: Higher depression is associated with lower self-reported adherence among patients with multiple myeloma taking oral anticancer medications (OAM)

Introduction: Patients with cancer, including patients with multiple myeloma (MM), are living longer in the

new OAM treatment paradigm. Depression correlates with reduced adherence in other chronic diseases, but little is known about these relationships in patients with cancer. We explored associations between depression and self-reported adherence among patients taking OAM for MM. Methods: Cross-sectional, secondary analysis of adherence study in patients taking OAMs for MM. The Patient Health Questionnaire (PHQ-9) assessed depression (0-27; higher=worse). Self-reported adherence was assessed by the PROMIS Medication Adherence Scale (PMAS) total score (9-45), a single item (“I took this medication as recommended;” 1-5), and subscales for medication beliefs and knowledge (MBK; 4-20) and medication-taking behaviors (MTB; 5-25); higher scores=better. Self-report and medical record review characterized sociodemographic and clinical variables. Spearman’s rank-order correlations summarized associations between depression and self-reported adherence. Results: Participants (n=73) averaged 63.9 (SD=10.3) years of age. Most (57.5%) were male; non-Hispanic white or Black (82.2% and 13.7%); and took lenalidomide (n=53) or pomalidomide (n=25) and an average of 9.4 (SD=5.0) concomitant medications. The median PHQ-9 score was 2.0 (IQR=1.0-5.0). Median (IQR) PMAS scores were: total=45 (43-45); single item=5 (5-5); MBK=20 (20-20); and MTB=25 (24-25). Moderate associations existed between depression and the PMAS total score and MBK subscale (r=-.364 and -.317, p<.01). Weak associations existed between depression and the MTB subscale and single item scores (r=-.253 and -.282, p<.05). Discussion: Self-reported adherence was high. Higher depression correlated with lower self-reported adherence (strongest relationships existing between depression and the PMAS total score and MBK subscale). Patients taking OAMs should be screened for depression. Future research should explore temporal relationships between depression and adherence and additional measures of medication adherence.

Bryan Snyder

WA - Eastern Washington University

Discipline:

Authors:
#1 Bryan Snyder
#2 Shamima Yasmin

Abstract Name: Enhancing Literary Understanding in Secondary Education through Role-Playing Games

This project explores the idea of video games in secondary education. As part of our research in game-based learning, the classic epic poem "Beowulf," widely taught in higher secondary schools, has been adapted into a role-playing game (RPG). The core objective is to refresh literary education by offering an engaging and interactive platform for a deeper understanding and appreciation of this classic work. The Unity game engine has been used as the implementation platform. In the game, players navigate the legendary village of Heorot as described in the original poem, engage with non-player-controlled (NPC) characters who offer insights and narrative progression, and confront challenges that mirror the poem's key events. The gameplay is enriched with boss fights and cutscenes that bring Beowulf's story to life.The Beowulf story has been divided into four modules. Players take on Beowulf's role in defeating monsters. Central to the game's design is the integration of educational elements, such as quiz-based interactions at the end of each module, which test the players' comprehension of the text in an immersive manner. Players are encouraged to explore and interact with the game world, which feeds them more information about the story of Beowulf with dialogue and visual storytelling.This project stands at the intersection of literature, education, and gaming, offering a unique perspective on how traditional teaching of literary works can be reimagined for modern learning environments and better engagement. Preliminary observations suggest a positive influence on student engagement and comprehension of the poem, as commented by a local schoolteacher teaching “Beowulf.” The user study aims to evaluate the efficacy of game-based learning quantitatively and qualitatively in higher secondary education. This project not only represents a novel approach to teaching classic literature but also contributes to the broader scope for innovative educational styles in the digital age.

Nicole Snyder

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Synthesis of Metallo-meso-tetraphenylporphyrin Derivative Using Zn(II) Metal

The study of metalloporphyrins has revealed enhanced reduction capabilities in porphyrins metallated with late first row transition metals, which in turn promises great potential as catalysts for different reduction reactions. These reactions include carbon dioxide reduction, oxygen reduction reactions, and hydrogen evolution reactions. Tetraphenylporphyrin was used in this experiment to determine if it could be metallated with zinc acetate and form metallo-meso-tetraphenylporphyrin. The procedure was changed over the course of multiple trials to result in the highest yield and ensure all of the porphyrin and zinc acetate were reacting. The resulting compound was analyzed using UV-Vis Spectroscopy, IR Spectroscopy, and thermogravimetric analysis. The compound was also sent to Georgia Southern in order to obtain a crystal structure. The structure revealed a slight trace of impurity but the main body of the crystal appeared to have successfully bonded with the zinc. Future work includes using other late period first row transition metals and determining if they can also react with the tetraphenylporphyrin and produce similar results. The experimental procedure as well as confirmation techniques used to determine the correct compound was made will be presented.

Adam Sobieski

WI - University of Wisconsin-Oshkosh

Discipline: Natural and Physical Sciences

Authors:
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#3 Sebastián Muñoz Leal

Abstract Name: Laboratory Life Cycle Maintenance of the Soft Tick Ornithodoros tartakovskyi

The soft tick genus Ornithodoros, of the family Argasidae, is associated with bacterial and viral diseases such as tickborne relapsing fever and the tickborne encephalitis virus complex. The purpose of this project was to generate life cycle history data for the laboratory maintenance of the soft tick Ornithodoros tartakovskyi. Ticks in this project were regularly blood-fed, and life cycle history events were quantified. Events included how many nymphal stages occur in this life cycle, how many days it takes each nymphal stages to molt to the next nymphal stage, how many minutes it takes different life cycle stages to engorge during blood feeding, how many minutes it takes for an engorged tick to detach during blood feeding, how many days it takes for female ticks to produce eggs, how many eggs are produced, and how many days it takes for eggs to hatch. This data, along with continued data collection, will be included in a manuscript entitled 'Laboratory Maintenance of Ornithodoros tartakovskyi,' which we will submit to the peer-reviewed journal Ticks and Tickborne Disease. Understanding the maintenance of this species in a laboratory setting is key to advancing research in the future. This project aims to outline approaches for continued community research.

Devin Sobottka

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

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Abstract Name: Preparative scale biosynthesis of muconic acids

Ring-cleaving dioxygenases (RCDs) are a class of enzymes responsible for breaking down aromatic compounds as a carbon source for cellular processes. These enzymes operate with chemo- and regioselectivity of their oxidation to generate ring-opened products. In particular, RCDs produce highly conjugated muconic acids and semi-aldehydes as the primary products of their reaction. These molecules have broad potential as building blocks for organic synthesis of valuable compounds, such as adipic acid. A wide variety of RCDs have been studied for their ability to metabolize aromatic compounds. However, few studies have been performed which utilize RCDs for organic synthesis. Our research aims to study the function and selectivity of a small library of RCDs on a diverse panel of substrates in order to classify the substrate scope of these enzymes. As a step toward reaching this goal, we leveraged the biocatalyst CatA for the milligram to gram-scale synthesis of several muconic acids with alkyl or halogen substituents at C2 or C3. Products were isolated and purified by trituration with cold acetonitrile in moderate to high yield. Product characterization via NMR spectrometry confirmed the stereochemistry of the resulting di-ene products.

Shine Soki

CAN - Carleton University

Discipline: Social Sciences

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Abstract Name: Increased School Absenteeism in Students with Attention/Hyperactivity Problems: A Scoping Review

Attention deficit hyperactivity disorder (ADHD) is a chronic neurodevelopmental disorder that, left undetected and untreated, can devastate and impede the life trajectory of thousands of children. Unfortunately, children and youth afflicted by this disorder often go unnoticed and unsupported within the Canadian and American education systems. Studies show that successful completion of education plays a critical role in equipping students with ADHD with the skills and resources to effectively manage their condition, leading to better overall life outcomes. Research has connected the lack of childhood skill development in managing ADHD symptoms with severe, interconnected psychosocial outcomes such as school failure, bleak employment outcomes, high crime and incarceration rates, and even premature death. Unfortunately, the COVID-19 pandemic has exacerbated children's educational outcomes, disproportionately impacting school attendance rates among children with ADHD. This scoping review aimed to investigate the relationship between attention and hyperactivity problems (AHP) among school-age children/youth and

school absenteeism in both pre-pandemic and post-onset-pandemic studies. The main objective was to investigate whether children with AHP were missing school at higher rates than their non-AHP peers. Through a systematic literature search across numerous databases, 1282 studies were assessed, identifying 37 studies focusing on the association between AHP and school absenteeism. Preliminary analyses revealed that students with AHP were more prone to experiencing increased school absenteeism, including cases of school refusal, avoidance, suspension and expulsion from school. Similar findings were noted between pre-pandemic and post-onset-pandemic articles. These findings are troubling, given that numerous studies have linked school absenteeism to adverse educational and psychosocial outcomes. In light of these findings, there is an urgent need for educational and policy reforms that prioritize supporting and accommodating children with attention and hyperactivity problems within the educational system.

Lorelei Sole

UT - University of Utah

Discipline: Health and Human Services

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Abstract Name: Investigating the Role of Concurrent NF1, BRAF, and NRAS Mutations in Melanoma

Melanoma is the deadliest form of skin cancer, largely due to its potential to metastasize. Utah has the highest incidence of melanoma per capita in the United States. Metastatic melanoma often has a poor prognosis, with a five-year survival rate estimated at 32%. Genetic alterations are major drivers of melanoma, and 91% of melanomas contain mutations that lead to hyperactivated MAPK/AKT pathway signaling. NF1 is the third most commonly dysregulated gene, behind BRAF and RAS, that can hyperactivate MAPK/AKT signaling. NF1 mutations are present in just under 20% of melanomas, and more than half of these are predicted to be loss of function mutations (NF1 LoF). Although previous research has established that NF1 LoF frequently co-occurs with mutations in the oncogenes BRAF and NRAS, as well as with mutations in tumor suppressors PTEN and CDKN2A, the cooperation of NF1 LoF, mutant BRAF, and mutant NRAS in the presence of altered PTEN and CDKN2A remains understudied. To address this, we used an established autochthonous in vivo mouse model of melanoma based on the RCAS/TVA avian retroviral system to assess the ability of NF1 LoF to cooperate with mutant BRAF and mutant NRAS in the presence of PTEN and CDKN2A loss to promote tumor progression and metastasis. These results demonstrated that mutant BRAF and NF1 LoF cooperate in the context of PTEN and CDKN2A loss to decrease survival from around 140 days (NF1 LoF alone) to 60 days (NF1 LoF and mutant BRAF). More research will be completed to evaluate cooperation in the presence of mutant NRAS. With 18% of melanomas exhibiting NF1 alterations, this research addresses a pressing clinical need and offers the potential to discover treatment options for a significant patient population.

Larkyn Soletski

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

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Abstract Name: Comparative Analysis of Patient Satisfaction: Emergency Department Care for Self-Inflicted vs. Physical Concerns

The surge in emergency department visits for self-inflicted injuries in the United States, nearly doubling from 2018 to 2021 (CDC, 2023), raises significant public health concerns. Research indicates that patients with self-inflicted injuries often report lower satisfaction with emergency department care and staff compared to other units where they have received care (Hutchison et al., 2003). This dissatisfaction may contribute to an increased level of risk post-discharge (Geulayov et al., 2019). However, it remains unclear whether dissatisfaction with emergency department care is unique to admitted patients with suicide risk. This study aims to compare responses from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) among patients (Male = 33.3%, Female= 66.7, % White=98.6%) presenting to the emergency department due to suicide risk (n = 27) versus those with other medical reasons (n=67) from January 2021 – December 2022. Anticipating lower satisfaction among patients with self-inflicted injuries, we conducted a one-way ANOVA revealing significant differences in staff responsiveness F (1,92) =26.62, p < .001, d=0.99 and ED wait time, F (1,92) =7.51, p < 0.01, d=0.57. Although the mean scores were lower in the suicide group for attitudes, courtesy, and supportive staff, the differences were not significant. Our hypothesis received partial support such that patients with suicide risk reported lower staff responsiveness and longer wait times, aligning with prior literature. However, other experiences appear to be similar to those experienced by those presenting with physical illnesses/injuries. These results can guide improvements in the quality of care for suicidal patients, recognizing the need for additional research to address the methodical limitations of the current study.

Matia Solomon

MN - University of Minnesota - Twin Cities

Discipline: Health and Human Services

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Abstract Name: The Role of Race and Gender on the Relationship Between Cancer and Quality of Life

As the population of cancer survivors in the United States increases, the implications of disease and treatment on quality of life (QOL) will become increasingly important. Numerous studies report lower physical QOL, but similar mental QOL and depression in cancer survivors compared to cancer-free individuals. However, few studies have assessed the role of race and gender with regard to mental QOL, physical QOL, and depression among those with cancer compared to those without cancer. Without such data, systemic interventions to address disparities in cancer survivorship cannot be implemented. Data for our study came from the Atherosclerosis Risk in Communities (ARIC) study, a longitudinal study of aging populations since 1987. We compared self-reported mental QOL, physical QOL, and depression in cancer survivors (1,019) versus cancer-free individuals (4,615) by gender and race in a population of white (75%) and Black (24.5%) men and women. Mental and physical QOL were measured using the SF-12 questionnaire, and depression scores by the CES-D questionnaire at ARIC visits 5 (2011-2013) and 6 (2016-2017). We compared outcomes by cancer status, stratifying results by gender and race and using mixed linear regression models adjusted for age, sex, and race. We found that regardless of cancer status, women and Black individuals reported worse mental and physical QOL and more depressive symptoms than men and white individuals, respectively.

There was no significant difference in mental QOL and depression scores by cancer status, except worse depression in male cancer survivors at visit 5. However, men, women, and White individuals who had cancer reported significantly worse physical QOL than their cancer-free counterparts; but the cancer versus non-cancer comparisons were not significant among Black individuals. Our findings suggest interaction between cancer status and race, as cancer was significantly associated with worse physical QOL in white but not Black participants.

Katherine Solosky

NY - Long Island University

Discipline: Humanities

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Abstract Name: Breaking the Silence: Tackling Cultural Beliefs and Practices that Perpetuate Heteronormative Gender Roles and Gender-Based Violence in Vienna, Austria

Gender-based violence (GBV) is a global epidemic that is rooted in gender inequality and perpetuated through cultural norms and patriarchal values, with violence against women present within every country and culture. In Austria, 20% of women have reported experiencing physical or sexual violence within their lifetime, 15% have experienced stalking and over 100,000 people are registered as victims of human trafficking (European Union for Gender Equality, 2016). Despite the prevalence of this issue, the discussion of GBV is still considered a taboo topic and, due to the stigma surrounding it, there is severe underreporting amongst survivors, and the number of incidents of GBV is estimated to be significantly higher. This transdisciplinary qualitative case study explores how cultural norms and practices in Vienna, Austria, perpetuate the patriarchal devaluation of women and how that manifests itself within Viennese society. The research was conducted over a three-month period from September to November 2023 in Vienna, Austria, utilizing semi-structured interviews, participant observation and an anonymous survey of Viennese residents. Through the evaluation of the data collected from the survey responses, interviews and ethnographic field journal entries, the research highlights the patriarchal culture that exists within Vienna, the ways in which violence manifests, and the culture of silence surrounding it. The survey participants and interviewees overwhelmingly expressed the need for change within both culture and political systems, and gave insight into the effects GBV, street harassment and systems of oppression have had on their mental health, safety, and livelihoods. This study provides a better understanding of the lived experiences and enduring realities of Gender-Based Violence, especially in cities that appear, on the surface, to be safe and progressive.

Shankari Somasekar

FL - University of Central Florida

Discipline: Natural and Physical Sciences

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Abstract Name: TIM/TAM Receptors: A Potential Biomarker for Predicting Sensitivity to Zika Virus-Induced Oncolysis in Non-Small Cell Lung Cancers

Zika virus presents a new oncolytic possibility for the treatment of non-small cell lung cancers (NSCLC). A marker predictive of cancer cell susceptibility to Zika-induced oncolysis has not been established. TIM/TAM proteins have been identified as the putative Zika virus receptors on human cells that mediate Zika virus entry. This project investigates the correlation between the expression of TIM/TAM receptors and Zika virus sensitivity in a panel of six diverse NSCLC cell lines.We hypothesize that the various TIM/TAM proteins on lung cancer cells act as activators or inhibitors of virus entry, and their expression predicts sensitivity to Zika virus-induced lysis. Based on preliminary studies, high AXL (TAM) expression correlates with cancer cell sensitivity to Zika virus-induced oncolysis. Conversely, high TIM-1 (TIM) expression correlates with decreased Zika virus-induced oncolysis.We will explore the effect of TIM/TAM receptors on Zika-induced oncolysis by siRNA knockdown of AXL or TIM-1 in each of the six lung cancer cell lines. In the cell lines sensitive to the virus, knockdown of AXL should result in reduced infection and a decrease in cytotoxicity. In the cell lines resistant to the virus, the knockdown of TIM-1 should result in enhanced infection and an increase in cytotoxicity. If siRNA-mediated silencing of AXL and TIM-1 affect cancer cell susceptibility to virus-induced lysis, then the expression of TIM/TAM receptors could be used as a predictive marker for cancer cell susceptibility.TIM/TAM expression, a predictor of cancer cell susceptibility to Zika virus-induced lysis, could be used to identify which tumors would be appropriate for Zika virus oncolytic therapy.

Sahibaan Sondh

CA - University of La Verne

Discipline:

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Abstract Name: Lightning Storm Detection on Saturn through Machine Learning Analysis of Cassini Dayside Images

From 2004 to 2017, Cassini captured high-resolution images including lightning flashes and also storm clouds on Saturn’s day side. We explore lightning storm clouds’ relationship with Saturn electrical discharges (SED) activity, and use machine learning for detecting lightning storm clouds. This paper introduces an advanced machine learning approach using the YOLOv5 algorithm for automated lightning detection and classification in previously unexplored Saturn images. The model was trained on 230 plus images of the 2010-2011 storm on Saturn’s day side, confirmed to have lightning. Furthermore, the model’s performance was evaluated on images without known lightning storms to assess its generalization capabilities. Another program, Google Cloud Vision API, successfully labeled 2010-2011 storm cloud images as lightning from its default settings without training. Our ongoing efforts aim to refine YOLOv5 algorithm’s performance for smaller lightning storm detection and improve its proficiency in analyzing storm-related phenomena on Saturn.

Sam Song

MN - St. Olaf College

Discipline: Interdisciplinary Studies

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Abstract Name: Thermal Time Parameters for Milkweed Germination

It is unclear what the determining factors are for the successful growth of common milkweed (Asclepias syriaca) plants despite large efforts to restore milkweed in response to declining Danaus plexippus populations. This project analyzed previous experimental data to understand the effect of temperature and thermal cycling on the germination rate of milkweed plants collected from various latitudinal populations. In this study, seed pods were collected from 5 plants originating from 10 different geographical locations. These seeds were then divided into 4 incubation temperature groups of 10°, 16°, 22°, and 28° C. Seeds were further divided into three pre-incubation treatments, temperature cycling and cold stratification, cold stratification only, and a control group. These treatments mimic spring conditions that may trigger seed germination. To account for the hierarchical structure of the data, mixed-effects binomial regression models were used to determine the effects of temperature and pre-incubation treatments on milkweed germination rates across different latitudinal populations. Across all latitudes of origin, we found that temperature and exposure to cycling have a positive, significant effect on milkweed germination rates. Additionally, we found significant effects of latitude of origin on germination rates with high-latitude populations germinating at higher rates after controlling for temperature. Furthermore, high-latitude populations that are exposed to temperature cycling have higher germination rates and germinate across a wider range of incubation temperatures than low-latitude populations exposed to temperature cycling. As common milkweed plants are re-introduced to new locations in an effort to increase D. plexippus populations, these results help predict if a plant is going to succeed in its new home.

Charley Soo

CA - California State University - Long Beach

Discipline: Social Sciences

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Abstract Name: The More the Unmerrier: The Impact of Ostracism, Group Size, and Self-Control on State Anger

Ostracism is the act of being excluded or ignored by either an individual or a group. Ostracism is associated with anger and other negative outcomes, and exclusion by a larger group exacerbates this effect. Self-control is defined as one's ability to consciously suppress impulsive, habitual, or automatic cognitions, emotions, and reactions in order to achieve a specific goal. Previous research indicates that individuals with reduced self-control were more likely to exhibit aggressive behavior. The current study is the first to assess the effect of ostracism, self-control, and group size on subsequent state anger. Participants first completed a measure of trait self-control and then were placed with either a group of 2 or 6 fictitious participants while they engaged in an online social media task where they were included by either all (viz. inclusion condition) or none (viz. ostracism condition) of the other participants. Finally, state anger was measured. A multiple regression

analysis revealed a significant three-way interaction between social condition (inclusion vs. ostracism), group size, and self-control on anger such that ostracism moderated the effect of self-control on anger in the context of the larger but not the smaller group size. Specifically, when ostracized by a larger group, simple slopes analyses indicate that self-control was negatively related to anger (i.e., lower self-control was associated with more anger) but there was no such relationship among participants in the inclusion condition. Implications for the impact of self-control and group size on the negative effects of ostracism such as aggression and violence will be discussed.

Lilian Sorensen

OH - Marietta College

Discipline: Interdisciplinary Studies

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Abstract Name: Analysis of Mental Toughness in Backyard Ultra Marathon

An ultra-marathon is any race with a length greater than 26.2 miles. Over the past decade there has been a new type of ultra-marathon event that has become popular, the Backyard Ultra. In this type of event participants run a 4.1667 mile loop, called a yard, every hour on the hour. The participants can run the yard at any speed they wish provided they finish before the start of the next yard. A competitor is considered to have refused to continue (RTC) if they fail to start a yard. If the competitor fails to complete a yard before the next yard begins, they are considered a did not finish (DNF). The race format is followed until there is one runner left, if the last runner fails to complete their last loop in the one-hour time limit they are also considered a DNF and there is no winner of the race. In 2022 the Backyard Ultra Team World Championship continued for 4 days (each day = 100 miles), and no winner was declared as both of the remaining athletes refused to start the next loop. Previous research in our group has shown that RTC rates are greatest at milestone yard values (12 yards = 50 miles, 15 yards = 100km, etc). After 100 miles the predominant race withdrawals occurs via DNF. Since there are two ways a competitor can withdraw from the race, we hypothesized that there may be a difference in mental toughness for these competitors. At this time no research has been done on the mental toughness of the athletes as they race in a format that has no predetermined end. Our research is attempting to describe the mental toughness of backyard athletes and see if there is a quantifiable difference between the mental toughness of the two types of non-finishers.

Peter Sorial

NJ - Kean University

Discipline: Mathematics and Computer Science

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Abstract Name: A Testing Framework for AI Linguistic Systems (testFAILS)

As artificial intelligence (AI) systems increasingly integrate into our daily lives, particularly in natural language processing (NLP), the need for comprehensive testing frameworks that ensure these systems

perform accurately and reasonably has become paramount. This paper introduces testFAILS (Framework for AI Linguistic Systems), a novel testing framework designed to evaluate AI linguistic systems on multiple performance dimensions, including accuracy, robustness, and bias detection. Developed by a multidisciplinary team of researchers, testFAILS aims to address the challenges of language-based AI systems, such as chatbots, virtual assistants, and translation services, by providing a structured methodology for systematic evaluation. The framework incorporates tests that simulate real-world scenarios, linguistic challenges, and diverse linguistic inputs to gauge the systems' responses and behaviors under varied conditions. We conducted comprehensive testing on several leading AI linguistic systems to demonstrate the efficacy of test fails. Our results revealed significant disparities in system performance, particularly in handling context-dependent queries, rare languages, and idiomatic expressions. We also discovered that some systems exhibited biases based on gender, ethnicity, and dialect, underscoring the need for bias mitigation strategies in AI development. The testFAILS framework is complemented by a set of metrics allowing quantifiable assessment and comparison of AI systems. These metrics facilitate the identification of specific areas where AI systems may require further refinement and development. Our research also offers insights into the ethical implications of deploying AI linguistic systems without adequate testing, highlighting the potential risks to inclusivity and fairness. In conclusion, testFAILS represents a significant step towards establishing standardized testing protocols for AI linguistic systems. Providing comprehensive testing methodology empowers developers, researchers, and policymakers to ensure these systems meet the high standards necessary for ethical and effective deployment. Our work encourages the AI community to prioritize transparency, accountability, and continuous improvement in developing linguistic AI technologies.

Emilio Soriano Chavez

AR - Arkansas State University

Discipline: Natural and Physical Sciences

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Abstract Name: Gut Microbiome Composition And Its Importance For Plastic-Degrading Process Of Waxworm Larvae

One of the primary challenges of modern society is plastic waste management. In particular, low-density polyethylene (LDPE) accounts for more than 30% of all plastic produced. Low quality of recycled products and associated energy costs make current plastic management strategies less feasible. There is an urgent need for fast, efficient, and energetically sustainable alternatives. Larvae of the waxworm Galleria mellonella have shown the ability to rapidly biodegrade LDPE at room temperature. Our laboratory has made similar observations in microgravity conditions on the International Space Station. Multiple studies suggest that microbes within the waxworm’s gut, together with its salivary enzymes, are responsible for biodegrading plastic. However, while some bacterial species have been identified, the literature lacks systematic assessment. We hypothesize that microbial composition and abundance in the waxworm’s gut will change according to diet, thus allowing us to identify key species important for plastic degradation. Before evaluating the microbiome from larvae exposed to microgravity stress, it is imperative to establish a microbial community under plastic diet conditions. Therefore, our current study evaluates the waxworm microbiome under a restricted beeswax diet (natural feed source) versus beeswax and plastic. Before the experiment, larvae were starved for 48 hours and exposed to these diets for 12 and 24 days. Sequencing was performed for a marker gene associated with bacteria (16S rRNA hypervariable region 4) to determine microbial community composition and differential abundance of bacterial species across different treatments. Initial results show that composition and species abundance are significantly different between pre and post-diet microbiomes, with no significant difference between dietary treatments. However, further research is

needed to confirm our findings. This study will help understand the microbial community in the waxworm's gut, which may give further insight into utilizing waxworms as a potential solution for managing plastic waste on Earth and in space.

Izabella Soto

NY - Nazareth University

Discipline: Visual and Performing Arts

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Abstract Name: The cause of oppression of indigenous culture through dance

An art form that has unexpectedly considered a threat to authority throughout history is dance. There is a power behind the ability to organize a group of people that can create a shared experience. This is the foundation of what challenged the conquistadors of the new world.The essay dives into Spanish colonization of North America, from the Aztec Empire to the Tainos of Puerto Rico. The essay looks at oppression of dance through the indigenous people by, suppressing gender, culture and religious expression.Dance was a religious ritual and a tool to tell the history of the indigenous peoples. The ability to tell one's history from the body instead of written language made it hard for Spain to conquer.The expression of movement through the body connected the people to their higher power which simultaneously connected to their historical roots. A culturally significant event that will be discussed in this essay is the Dance of Death. This festival is an example of how the Spaniards felt threatened by the aggressive dance form. The organization of the people formed fear of revolt ending in a massacre.The European mentality was set in strict gender roles that using dance for gendered expression challenged the way of life and values that were outside of there.The journals of the conquistadors gave insight to their perception of the indigenous peoples dance. This example expresses the cultural mentality of the Spaniards which led to the destruction of indigenous culture.To conclude the essay we will look at movement and the connection to cultural transmission. As long as the body can move, the history and cultural information can still be shared. Something so simple as a movement of the arm could translate to ritualistic sacrifices, wars, and stories of love and loss.

Emma Sousa

MA - Bridgewater State University

Discipline: Social Sciences

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Abstract Name: Limitations of Gender Privilege: Men's Masculine Ideologies and Mental Health

Despite experiencing male privilege, boys and men endure negative stereotypes and expectations, supporting the need for male health research (APA, 2018). Young men have been found to have higher rates of mental health disorders and lower rates of help-seeking behaviors (Slade et al., 2009). The present study investigates how self-identified men perceive societal constructs of masculinity and how well they feel they meet these standards. Masculine gender role discrepancy (GRD) results from the difference between men's individual ideas surrounding masculinity and how they perceive society's views of masculinity (McDonnell Mesler et al., 2022). At times, self-identified men feel they conform to traditional masculine norms, such as stereotypes emphasizing dominance, strength, and anti-femininity. The present study focuses on the adverse effects men

endure relating to gender role stereotypes. Self-identified men (N=227) were recruited via an online survey and asked to report their attitudes toward traditional masculinity. Participants were then instructed to identify the frequency of anxiety, depression, and avoidant coping mechanisms. Researchers found that participants experienced increased mental health concerns with increased gender role discrepancy. The results demonstrated a significant positive correlation between perceived social expectations and anxiety, depression, and avoidant coping mechanisms. In this sample, individual perceptions of masculinity were not significantly related to mental health, reinforcing that people's behaviors and emotions often reflect societal constructs. Little research demonstrates the correlation between individual and societal perceptions of masculinity and mental health, which speaks to the importance of the present study. More research must be conducted to understand these discrepancies since men's mental health is frequently overlooked. Additionally, destigmatizing men's mental health may aid in the overall objective of gender equality as people recognize that, regardless of identity, anyone is susceptible to cognitive discrepancies.

Madeline Southern

CA - Chapman University

Discipline: Social Sciences

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Abstract Name: Beyond Belief: Christian Nationalism and Xenophobia in U.S. Politics

As Christian nationalist beliefs have become increasingly mainstream, we have seen politicians blur the lines between church and state, as well as take positions reflecting the Christian nationalists' view of the United States. This paper explores how this worldview holds xenophobic beliefs, anti-immigrant sentiments, and an agreement with policies restricting immigration from Muslim countries, in addition to other factors outside of religion. Specifically, our hypotheses explore the relationship between Christian nationalist beliefs and xenophobia by examining whether those advocating government endorsement of Christian values are more likely to fear a shift in the majority demographic away from whites. We also investigate if individuals emphasizing the importance of Christianity to American identity are more inclined to support a cessation of immigration from Muslim countries, and finally, whether those advocating the declaration of the United States as a Christian nation are more prone to hold negative beliefs towards immigrants, such as the incorrect belief that immigration increases the crime rate. Relying on the Chapman Survey of American Fears, and the American National Election Survey (ANES), two representative national samples of U.S. adults, we found that holding Christian nationalist beliefs and simply identifying as a Christian makes an individual more likely to believe the falsity that immigration increases crime rates, hold xenophobic beliefs, anti-immigrant sentiments, and an agreement with restricting immigration from Muslim countries. These findings are important in a political system where the perpetuation of a Christian-nationalist, anti-immigrant agenda gains candidates votes. Seeing as this nation was founded on religious freedom and immigration, this research can be used to determine what has caused Americans to stray so far from the foundations of the United States.

Kolya Souvorin

AR - Hendrix College

Discipline: Social Sciences

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Abstract Name: Importance of Translators and Wikipedia in Digital Language Hierarchies within Europe

The Internet serves many functions that help citizens be informed and participate in democracy and the economy in the digital age—the right to access the Internet links to the right to use your native language. The EU's language policy translates all documents into its official languages, and the resulting corpus makes translation and research within these languages easier. The paper attempts to identify whether the languages of the EU have greater utility on the Internet by comparing a broad measure of total contents and services in the languages of Europe. Economic and linguistic differences between member countries are possible explanations for the digital divide in Europe. EU official languages dovetail with high general internet utility. The study concluded that within Europe, EU language policy developed strong wikipedias in the EU languages, which was associated with gains in content overall in those languages.

Lauren Sowards

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

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#2 Lauren Sowards

Abstract Name: The Matrix: Seen through with Optical Coherence Tomography to Study Dupuytren's Contracture

The fibroblast-populated collagen matrix (FPCM) serves as an optimal model system for investigating cells associated with contractive diseases, exemplified by Dupuytren's Contracture (DC). This collagen matrix affords a structural and mechanical context conducive to replicating the conditions surrounding contractive diseases, facilitating the observation of cellular behavior. The objective of this project is to use this model to characterize the mechanobiology of fibroblasts from DC patients. Utilizing optical coherence tomographic (OCT) imaging, we captured cross-sectional structures of the FPCM during development or treatment. This not only enhanced image clarity, but also facilitated the longitudinal assessment of cell behavior. Prognosticate outcomes as substantiated by assessing the daily compaction of the collagen matrix, contrasting control and DC cells that are embedded into the collagen matrix. Notably, this data enables the estimation of cell-dependent tension generation in FPCM, offering comparative insights into cell characteristics.The correlation between cellular contraction and tissue compaction induced by DC cells was discerned. Our preliminary data showed that compared with normal dermal fibroblasts, DC fibroblasts can lead to faster and further compaction of the collagen matrix, which in turn resulted in more differentiation into myofibroblasts. The accrued data not only sheds light on the biophysical mechanisms underlying DC, but also paves the way for more effective identification of required treatments. Beyond contractive diseases, this study extends its relevance to wound healing and other fibrotic disorders.

Ya Faatou Sowe

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Ya Faatou Sowe

Abstract Name: Effects of Leptin on Brown Adipose Tissue

Leptin is a hormone secreted by white adipose tissue that is extremely important in regulating metabolic processes. Expression of leptin in white adipose tissue is regulated by all-trans-retinoic acid (RA). However, we do not fully understand the connections between RA and leptin in brown adipose tissue (BAT). Brown adipose tissue (BAT); unlike white adipose tissue, is specialized in regulating body temperature through a process called thermogenesis, which is highly dependent on a protein proton carrier called uncoupling protein-1 (UCP1). Using brown adipose tissue cells in culture, we initially hypothesized that treatment with RA will decrease the level of leptin secretion into the media. To determine this, we performed enzyme-linked immunosorbent assay (ELISA) on media from cells treated with increasing concentrations of RA. However, upon analyzing our results, we observed a plateau, indicating an insignificant change in our samples. The results may be due to the lack of understanding of how leptin functions in BAT or there may be confounding variable affecting leptin and/or our analysis. To better understand this, we will determine the amount of leptin present in our cell samples and the cell media using Western blot. By using a different technique with the media, we will be able to determine how and if leptin secretion and expression are linked. In addition, we will evaluate leptin levels produced within the cells. We hypothesize that there will be a decrease in leptin expression in both the cells and cell media. Overall, this will begin to build a better understanding of leptin's function in BAT homeostasis which can be vital in developing possible treatments for obesity as cases are on the rise.

Madeline Soyer

NE - Creighton University

Discipline: Natural and Physical Sciences

Authors:
#1 Madeline Soyer
#2 Eric Haas

Abstract Name: Fatty Acid Composition of Spodoptera frugiperda to Investigate CPTII Deficiency

Fatty acid oxidation disorders are a complex set of metabolic deficiencies with a wide variety of causes. Carnitine palmitoyltransferase II deficiency is one such disorder which ranges in severity from a lethal neonatal form to a myopathic form. The CPT II protein is a transport protein located on the inner membrane of the mitochondria, so deficiency results in poor transport of fatty acids into the mitochondria for β-oxidation. Our lab is studying this deficiency in Spodoptera frugiperda by investigating how alterations in splicing and translation of the CPT II protein affects levels of various long chain fatty acids present in the whole organism. The Spodoptera frugiperda are homogenized then the lipids are saponified and converted to methyl esters using the method of Folch as modified by Bligh and Dyer. These samples are spiked with heptadecanoic acid methyl esters in order to determine absolute quantities of lipids. Gas chromatography-mass spectrometry (GC-MS) is used for separation and analysis of long chain fatty acids. Samples are compared by instar of the insect to investigate how fatty acid composition changes throughout the larval stages of the insects. Preliminary data suggests that relative abundance of the common lipids remains consistent throughout development. Continued work on this project will confirm or refute these initial findings in wild type Spodoptera frugiperda. We have also designed morpholinos to block splicing and translation of RNA for the CPT II protein. Future work will include introducing these morpholinos to the insects to discover how alterations in the CPT II protein effects metabolism of the fatty acids of interest.

Campbell Speakman

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

Authors:
#1 Campbell Speakman
#2 Jonna Morris
#3 Paul Scott

Abstract Name: Continuous Positive Airway Pressure (CPAP) Adherence in Women: Associations with Pre-Treatment Stigma

Rationale: CPAP, the most widely used treatment for obstructive sleep apnea (OSA), uses masks for treatment, which may be a source of shame for users. Little is known about the associations of preconceived stigma on CPAP adherence in women. The purpose of this study was to assess if pre-treatment CPAP stigma is associated with 90-day adherence in women.Methods: In this prospective study of 89 women who were primarily middle aged (mean age 51+/-14) with clinically diagnosed OSA (apnea-hypopnea index [AHI] ≥5 events/hour) before initiating CPAP treatment. Women were dichotomized using Medicare criteria into adherent (≥4 hrs/night, 70% of the time) and nonadherent (< 4 hrs/night, 70% of the time). Stigma was measured using the Patient Reported Outcomes Measurement Information System (PROMIS) Neuro-QoL questionnaire for Stigma, which asked participants 8 questions about feelings of stigma towards their illness. Scores range from 8-40, with higher scores indicating higher stigma. Data were analyzed using t-tests and logistic regression. Results: A total of 43 women (48%) met Medicare criteria for CPAP adherence. Adherence to CPAP over 90-days was significantly greater in older women than younger women (Mean ± SD; 54.9±14.8 years vs 47.1±13.0 years, p= .01). Women who experienced greater stigma prior to CPAP initiation were significantly less adherent than women who experienced less stigma, (mean stigma =16.6 +/-4.2 vs. 13.3+/-5.3, p = .03). The odds of adherence do not depend on stigma after controlling for age. Conclusion: Stigma may be a barrier for many women with OSA to successful CPAP adherence in the first 90-days after treatment initiation. Clinicians may want to familiarize themselves with common feelings associated with the stigma surrounding CPAP treatment to better serve their patients. Research/Grant Support: Breathe PA

Jaylen Spellman-Reliford

GA - University of Georgia

Discipline: Natural and Physical Sciences

Authors:
#1 Jaylen Spellman-Reliford
#2 Thomas Krunkosky

Abstract Name: Proliferating and Differentiation of Primary Airway Epithelial Cells in an Air Liquid Interface (ALI) Culture System

In respiratory diseases, epithelial cells that line airways are the first line of defense against bacteria, viral, and fungal infections. The airway epithelium is a pseudostratified columnar epithelium containing both ciliated in goblet cells. Studying this airway epithelium in vivo in these diseases is difficult to impossible. Utilizing an in vitro Air liquid interface (ALI) culture system in the laboratory, allows researchers to investigate the specific role of airway cells in their fully differentiated state into secretory and ciliated cells which reflect the mucociliary structure and function of differentiated epithelium as seen in vivo. The focus of this research project will be to successfully harvest, proliferate, and differentiate primary ferret and murine airway epithelial cells utilizing the ALI culture system. Specific aim #1 in this study will investigate the effects of passage of primary airway epithelial cells on transepithelial electrical resistance (TEER). Specific aim #2 will

investigate the effects of passage on cellular differentiation. Cellular differentiation will be determined histologically by the presence or absence of a pseudostratified columnar epithelium containing both goblet cells and cilia. In this study, primary cells harvested from laboratory animals will be expanded and passaged in T75 culture flasks for four passages (P2, P3, P4, P5). Each passage will be differentiated in transwell culture inserts utilizing the ALI culture system. TEER data will be collected using an EVOM3 Epithelial Volt/Ohm Meter (World Precision Instruments, Sarasota FL, USA) for each passage. To determine cellular differentiation, the passage sample will be fixed with 4% paraformaldehyde in phosphate-buffered saline (PBS). Immunofluorescence staining and confocal microscopy will determine the goblet and cilia cell populations.

Zoe Spencer

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Zoe Spencer

Abstract Name: Art as Public Mourning: Changes in Expressions of Grief in Contemporary Artwork From AIDS to COVID-19

Death is an unavoidable fact of life. Though this is true, mourning is often done in private due to a cultural discomfort with death. Mourning itself is a culturally constructed set of behaviors expected of the bereaved as they grieve. As mourning is culturally constructed, it is subject to change. Such changes are at times manifest art. This is true of the three artists discussed here. Felix Gonzalez-Torres explores both the shared grief of gay artists during the AIDS crisis and his personal mourning for his lover in Untitled (Perfect Lovers) and Untitled (Portrait of Ross in LA). In both form and naming, Gonzalez-Torres makes his work both universal and immensely personal. Andrea Bowers's works about the AIDS Memorial Quilt, namely The Weight of Relevance, Continual Maintenance and Mending, and Still Life of The AIDS Memorial Quilt in Storage (Blocks 4336-4340) explore the grief of a cause being forgotten and the continuous and active mourning of those lost to the AIDS virus, regardless of public care. Finally, Vasileia Anaxagorou's works The Shelter and It Was Never Really About Care explore the suffocating isolation that the artist experienced as she was forced to mourn not only an immense loss of life due to COVID-19 but also the loss of normalcy in complete solitude. By examining the ways grief manifests and makes these pieces into acts of mourning, this paper will explore how the cultural construction of mourning and cultural attitudes toward death have shifted over the past five decades.

Rick Sperling

TX - St. Mary's University

Discipline:

Authors:
#1 Fatima Gallardo Ibarra
#2 Melanie Martinez
#3 Rick Sperling

Abstract Name: Optimal t: Teaching R though Practical Demonstrations

Many students are reticent about taking their first introductory statistics course. Throw in requiring that they

learn R and they are downright terrified. This is unfortunate because mastery of statistics provides both a more complex way of thinking about research questions and a set of tools for testing hypotheses that emerge from those questions. It is thus imperative that we expose students to statistical analysis using R in order to position them to engage in meaningful undergraduate research.In this session, two undergraduate students and their research mentor introduce attendees to the concept of Optimal t, which is an R code that uses a multiple resampling strategy to determine the statistical power of the paired samples and independent samples t-tests in situations where data are collected from the same participants on two occasions. The code then applies the more powerful type of test (paired or independent) to the original data and provides the user with appropriate output.The presenters will then explain how simulaltion studies and accompanying graphical representations can be used to explain what makes each type of test appropriate in different conditions (e.g., degree of correlation between measurement points, proportion of missingess, etc.). The presentation will conclude with student narratives about how Optimal t has opened the door to using R for all types of analyses in introductory statistics, as well as motivated them to pursue research in quantitative methods. Examples of presentations at national conferences on education and psychology (e.g., Association for Psychological Science and the American Educational Research Association) will be provided to support their position that undergraduate students cannot only be brought into high-level discussion about statistics, but also produce research that is of sufficient quality as to earn acceptance by highly respected scholars.

Megan Spicer

MD - Salisbury University

Discipline: Natural and Physical Sciences

Authors:
#1 Megan Spicer
#2 Wren Adkins

Abstract Name: Synthesis and Characterization of Fe (II) Terpyridine Complexes that Show Temperature Dependent Spin Crossover

Gadolinium-based complexes are used to enhance the contrast in MRI imaging. However, once injected intravenously, gadolinium can be fatal if it accumulates too much within the body. Iron-based complexes are a possible alternative and exhibit an additional feature: temperature monitoring. Octahedral iron (II) spin crossover (SCO) complexes can exist in an ‘on’ or ‘off’ state within an MRI, depending on the local temperature of their physiological environment. This makes the complexes possible candidates for precision monitoring of high-temperature tumor ablation procedures. We aim to develop an iron (II) based contrast agent that undergoes SCO at temperatures between 60 – 80 °C (333 – 353 K), the range at which tissues begin to necrose, so it can become biologically applicable. In order to deliver these agents to specific cells and tissues, reducing their spread into non-relevant body parts, the goal is to bind the Fe (II) complexes to specific peptides through bioconjugation. Many Fe-based SCO complexes either undergo SCO at temperatures too high, too low, or do not achieve SCO at all in a biologically applicable range. Most terpyridine iron (II) complexes fall in the category of undergoing SCO at temperatures that are too high (>100 °C). However, placing strong electron donating groups on the terpyridine ligand can lower the temperature at which SCO occurs. Use of only dimethylamino group on each ring of the terpyridine results in terpyridine-iron complexes that are primarily high-spin at room temperature. Therefore, the donating groups on the terpyridine ligands have been modified to fine tune these iron complexes to achieve SCO at a biologically relevant temperature range. The synthesis and results of these endeavors will be presented.

Cyrus Spino-Harris

MT - Montana State University - Bozeman

Discipline: Humanities

Authors:
#1 Cyrus Spino-Harris

Abstract Name: Outlawed: An Indigenous Way of Life After Colonization

How has the Walla Walla Treaty of 1855 with the Confederated Tribes of the Umatilla Indian Reservation supplemented the rhetorical strategies used to promote racist stereotypes against Indigenous people? Scholars (Koban, Johnson, and Hester) have examined the rhetorical strategies used to resist colonial attitudes in the Ojibwe, Cree, and the Umatilla tribes respectively. For the Umatilla, researchers examined the formation of the Confederacy of the Pacific Northwest tribes and the government's lack of respect for upholding the rights included in the Walla Walla treaty. What lacks from the aforementioned research is a synthesis of rhetorical analyses as it relates to the Umatilla tribe. As a member of the CTUIR, the history and formation of this confederacy was unknown; neither has this information been rhetorically analyzed and assessed through the means of arguments; the universal legality of racism unto Indigenous residents in Oregon territory has not been rhetorically examined, and the rhetorical aspects of the pedagogical method for tribal enculturation in the 19th and 20th centuries is also absent.This poster examines the Walla Walla treaty and senate reports throughout the 1890s. We see that while treaty rights were seldom upheld in favor of the Indians, other laws such as the Dawes Act of 1887 upheld the government's practice in overstepping Indigenous sovereignty under the treaty. For other documents, like the Indian Citizenship Act of 1924, the Indian Voting Rights Act of 1968, or the Indian Religious Freedom Act of 1978 rights were given to Indigenous people, for what purpose? This poster reviews The Oregonian newspaper historical archives that offer opinion pieces on Indigenous topics, among other political topics the paper would publish throughout the 19th and 20th centuries to be analyzed rhetorically. The conclusion is the government remains contemptuous towards Indians.

Noelle Sporer

WI - University of Wisconsin-Parkside

Discipline: Interdisciplinary Studies

Authors:
#1 Noelle Sporer

Abstract Name: Socio-behavioral Implications of Medical Waste Incineration in the US

This research contains both a review of the current literature and original analyses of demographic and violent crime data for the surrounding geographic area of the nine medical waste incineration facilities (MWIFs) in the country. MWIFs contain heavy metals that permeate the earth and atmosphere once released via incineration. Many of these, including mercury, cadmium, and lead, pose a known neurobiological risk to human health and are released at emission quantities graded by the EPA as unacceptable. Existing research along with the correlational study conducted in this paper will suggest that one's residential proximity to a medical waste incinerator predicts lower median household income as well as lower rates of grade school completion. While this study did not find statistical significance between proximity and violent crime at a confidence level of 0.95, the small sample size (N=9) may have led to a type II error resulting from an invalid p-value. A statistically significant negative correlation was observed for MWIFs and median household income. Additional research is needed to further reduce extraneous and confounding variables through a correlational design in which locations of similar demographic and environmental characteristics are measured and results are compared to those of the nine locations in which MWIFs were present. Results that yield statistically significant positive correlations between the presence of MWIF and poverty/criminality may suggest a history of systemic placements which have been a source of poor health and safety in these surrounding residential communities.

Katie Spreitzer

AZ - Barrett, The Honors College at Arizona State University

Discipline: Natural and Physical Sciences

Authors:
#1 Katie Spreitzer
#2 Arthur Kneeland

Abstract Name: Local Consumers, Small Businesses, and Healthy Economies: Creating a Self-Sustaining Community in Rural Western Wisconsin

The adoption of environmental initiatives is crucial for rural communities to mitigate the economic impacts of climate change. By focusing on the creation of a circular economy, local producers and consumers will benefit from economic transactions within their communities, thus a more resilient economy is established. Local purchasing habits in a rural community like Menomonie, Wisconsin, can be influenced by many variables such as affordability, quality, and convenience. Motivating local consumers to purchase from their neighbors, rather than from corporate conglomerates, is challenging, but necessary for the health of the regional economy. For example, local agricultural producers might have more sustainable agriculture practices. Therefore, purchasing from those in the community can minimize local environmental issues. To determine if individuals would be willing to adjust their consumption practices, business owners and company managers were interviewed about their consumption habits professionally, and personally. Overall, the participants expressed a greater desire to purchase locally and tended to feel more closely connected to their community when doing so. These individuals were more willing to adopt environmental initiatives, however, expressed concern over implementation and widespread support. Regenerative economies are becoming more prevalent, as communities recognize the socio-economic connections that they depend on. This change must be led by local initiatives, businesses, and consumers as this will lead to a localized approach to implementing a circular economy.

Sanjna Srinivasan

PA - Drexel University

Discipline: Engineering and Architecture

Authors:
#1 Sanjna Srinivasan
#2 Virginia Orozco
#3 Smriti Nair
#4 Mitali Sahni
#5 Sriram Balasubramanian
#6 Anita Singh

Abstract Name: Extent of Vascular Damage at Varying Degrees of Stretch of Hypoxic Neonatal Brachial Plexus

Neonatal brachial plexus palsy (NBPP) is an injury to brachial plexus (BP) nerves due to over-stretching during complex birthing scenarios. NBPP has an incidence of 1-4 cases per 1000 live births. Neonatal hypoxia can also occur as a result of obstetric complications, such as disrupted blood supply due to umbilical cord compression. Characterizing the extent of vascular damage of hypoxic neonatal BP at varying degrees of stretch can further the understanding of the injury thresholds of NBPP. All procedures were approved by the Institutional Animal Care and Use Committee. 15 neonatal piglets (3-5 days old) were anesthetized and

exposed to FiO2 of 7% for 1 hour to induce hypoxia and re-perfused to FiO2 of 21%. Immediately post hypoxia, the BP was exposed and stretched at a rate of 500 mm/min to predetermined low- (<15%) and high- (>15%) strains. BP nerves were harvested and OCT-embedded. Ten-µm-thick serial longitudinal sections were stained with Hematoxylin-Eosin (H&E). Using the Olympus BX53 microscope, stitched stained H&E images (10x) of the entire nerve were obtained. Using a custom MATLAB script, regions of interest (ROI) were identified for each nerve and scored for vascular damage on a scale of 0-2 (0-no damage, 1-torn vessel, 2-scattered blood cells) by an independent-blinded observer. Based on our modified scoring system, preliminary results show that vascular damage increased with increasing stretch injury such that no (n=30), low (n=33), and high (n=30) stretch ROIs reported average scores of 0.6±0.3, 1.0±0.3, and 1.1±0.3 respectively. Similar degrees of damage were observed in the central and peripheral regions of the stretched nerve. This ongoing study is the first to characterize vascular damage of hypoxic neonatal BP nerves with respect to varying degrees of stretch and helps further our understanding of NBPP.

Sweta Srinivasan

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Sweta Srinivasan
#2 Sora Kang
#3 Xiaochuan Wang
Sora Kang

Abstract Name: Roles of Asian Values and Acculturation on Mental Health Service Utilization and Attitudes Amongst Asian American College Students

Asian Americans have long been considered the “model minority,” the cultural expectation to remain diligent and self-sufficient, minimizing hardships they may face in everyday life. Asian Americans generally hold a negative perception of and underutilize mental health services. The limited use of mental health services has not been widely studied among Asian American college students, a population at risk of experiencing mental illnesses.To address this gap, this study aims to understand the roles of Asian values and acculturation on the attitudes towards and the actual use of mental health services amongst Asian American college students. A cross-sectional design will be utilized to collect data from a sizable sample of Asian American students in a university located in U.S. East Coast. Eligible participants include those who self-identify as Asian Americans, are university students, and age 18 and older. A total of approximately 300 Asian American college students will be recruited. Data will be collected using an anonymous online survey via Qualtrics to assess: participants’ sociodemographics, identity with Asian American cultural values, levels of acculturation, depression, anxiety, and mental health help-seeking attitude and service use. Data analysis will consist of 3 steps: 1) descriptive analyses for an overview of sample characteristics, 2) bivariate analyses (e.g., Chi-square and ANOVA tests) to compare mental health help-seeking attitude and service use among participants holding varied levels of Asian American values and acculturation, respectively, and 3) multivariate models (e.g., logistic regression) to estimate the impacts of Asian American values and acculturation levels on participants’ mental health help-seeking attitude and service use, controlling for covariates.Results are expected to inform future research and provide critical information to guide the development and delivery of culturally sensitive and appropriate mental health services to Asian American population, particularly the college student population, to better meet their mental health needs.

Ranai Srivastav

IA - Iowa State University

Discipline: Mathematics and Computer Science

Authors:
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#2 Apurva Badithela
#3 Tichakorn Wongpiromsarn

Abstract Name: Experimental Validation of Perception Metrics

Safe behavior in autonomous robotic systems relies on the robot's ability to accurately perceive its surroundings. Robot controllers with correctness guarantees often rely on the unrealistic assumption that perception is perfect. Specifically, predictions from object detection models allow greater flexibility but are error prone, and come with fundamental tradeoffs in performance metrics such as precision-recall. These traditional metrics incorrectly model the effects of perception uncertainties on system behavior and treat all misdetections equally. Previous research proposes leveraging confusion matrices to compute system-level probabilities for safety requirements, pioneering metrics such as distance-parameterized confusion matrices, and proposition-labeled confusion matrices. However, hardware validation is necessary to study the accuracy of the proposed theory. This work validates these findings through simulation and hardware experimentation on Duckietown - a miniature city-like autonomous vehicle platform. First, we compute confusion matrices from state-of-the-art pre-trained models on the nuScenes dataset and custom YOLOv5 models on a custom Duckietown dataset to test the evaluations on hardware. Ongoing work is implementing a perception, planning and control pipeline to implement a simple car-pedestrian experiment on Duckietown using Robot Operating System (ROS). The experiment then utilizes the confusion matrix to determine the probability of satisfying system specifications. Future work aims to develop more dynamic scenarios with multiple agents to test the robustness of the theoretical framework. The results from hardware validation will help guide future research to make this framework more correct, and generalizable.

Ananya H. Srivatsan

CA - University of the Pacific

Discipline: Natural and Physical Sciences

Authors:
#1 Ananya H. Srivatsan
#2 Celeste A. Bui
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Abstract Name: HALOTOLERANCE: AN INDICATOR OF ANTIBIOTIC PRODUCTION?

Fungi have adapted to survive in various habitats including marine and freshwater environments. Marine fungi have even developed mechanisms to tolerate freshwater conditions (Jones, 2022). Accordingly, the fungi in the Carlson Lab collection were classified based on their tolerance or requirement for marine conditions. This lead us to wonder if there was a correlation between halotolerance/salt-obligation and antibiotic production. The library contains 29 salt-obligate fungal species and 8 halotolerant fungal species - additional screening is underway. To determine if a fungal strain isolated in the lab is salt obligate, marine derived fungi are plated on Potato Dextrose Agarase (PDA) made with DI water, to observe the growth. If the

fungi exhibits significant growth impairment or inhibition the fungi is classified as salt obligate. Conversely, freshwater fungi grown on salt PDA that have no growth in media with salt are known as halotolerant fungi. To test for antibiotic production, fungi were cultured in liquid media and grown on a rotary shaker 110 rpm to form a hyphae layer. Fungal extracts were tested for antimicrobial activity by the disc diffusion method (Khan, 2019). Each fungal extract was screened for initial antibiotic activity against 5 human pathogens: Bacillus subtilis, Staphylococcus aureus, Salmonella, Escherichia coli, and Enterobacter cloacae. Zone of inhibition of greater than 1 cm will be screened for dose response. Our goal is to understand if testing our organisms for salt tolerance is a useful indicator of antibiotic production. References: Jones, E.B.G.; Ramakrishna, S.; Vikineswary, S.; Das, D.; Bahkali, A.H.; Guo, S.-Y.; Pang, K.-L. How Do Fungi Survive in the Sea and Respond to Climate Change? J. Fungi 2022, 8, 291. https://doi.org/10.3390/jof8030291Khan, S. A.; Siddiqui, M. F.; Park, S. Current and Emerging Methods of Antibiotic Susceptibility Testing. Diagnosis of Bacterial Pathogens. 2019, 9(2), 49. DOI: 10.3390/diagnostics9020049.

Alexandra St. Laurent

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
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Abstract Name: The Relationship Between Physical Health Behaviors and Mental Health Among Female Hispanic College Students

Background: Mental illness is a global public health concern and is particularly prevalent among young adult college students in the United States. Depression, anxiety, and stress disorders are the most commonly reported diagnoses and significantly impact academic persistence and success. Evidence suggests that gender and ethnic disparities exist. Physical activity and diet quality are two physical health behaviors that may be associated with mental health outcomes. Limited research explores these associations among Hispanic female college students. Purpose Statement: The primary aim of this study is to examine the relationship between physical health behaviors (i.e., physical activity and diet quality) and mental health outcomes (i.e., depression, anxiety, and stress) among a sample of Hispanic female college students.Methods: Cross-sectional data from female college students (n = 250) attending a public Hispanic-serving institution in the southeast was collected. Physical activity was measured using the International Physical Activity Questionnaire – Short Form (IPAQ-SF). Diet quality was measured using the Diet Quality Questionnaire (DQQ). Mental health outcomes were measured using the Depression, Anxiety, and Stress Scale - 21 items (DASS-21). Multiple linear regression analysis will be used to examine the relationship between variables.Anticipated Results: Descriptive statistics and odds ratios will be reported. We hypothesize that students who have higher levels of physical activity and better diet quality will report lower mental illness (e.g., depression, anxiety, and stress). For example, we expect that moderate or vigorous physical activity will have an inverse relationship with ill mental health. The results of this study will provide unique knowledge of mental health in a gender and ethnic minority group. Findings will provide insight into potential points of intervention for healthcare providers to improve mental health outcomes in this population.

Vincent Stafford

FL - Florida Atlantic University

Discipline: Mathematics and Computer Science

Authors:
#1 Vincent Stafford

Abstract Name: The last Five Years in Quantum Computing: A Literature Review

Quantum Computing, a field that has captivated science and media, is rapidly advancing with the realization of larger Quantum Computers. As we create larger and more complex Quantum Computers, it has become increasingly important to map the literature that has gotten the field to its current state. We used Litmaps and Semantic Scholar to compile and analyze some of the most cited papers in the past five years who have keywords “Quantum Computing”, “QC”, “NISQ”, or “Quantum Algorithm(s)”. Our analysis of these influential works offers insights into the current state of Quantum Computing and provides a roadmap for further research in this rapidly evolving field. A significant area of potential future research lies in the adoption of standards as a transition between Noisy Intermediate-Scale Quantum Computers and larger scale machines. While some papers such as Kannan B’s 2022 paper demonstrate the use directional microwave photon emission to communicate between interconnects of qubits, this field of research could be substantiated with realizations on other types of Quantum computers, or in a commercial setting. Furthermore, another observed result among these heavily cited papers is that much of the theoretical work in Quantum Computing has now yielded to experimental realization of Quantum Algorithms and communication protocols. This demonstrates the shifting attitude of the field of Quantum Algorithms towards adapting existing algorithms to fit into NISQ Machines rather than the theoretical capabilities of large-scale machines.

Mia Stagner

NY - Colgate University

Discipline: Social Sciences

Authors:
#1 Mia Stagner

Abstract Name: The Power of the Pen: Understanding the Rise of Presidential Executive Actions on Immigration

Scholars have increasingly sounded the alarm on the expansion of presidential power in the United States. Yet, these arguments primarily focus on executive orders, failing to consider how the occurrence of executive actions varies across issue areas. In my honors thesis, I remedy this gap in the literature. First, I consider a wide variety of executive actions, not just executive orders—looking at proclamations and memorandums as well. Second, I examine the influence of executive power on immigration in the twenty-first century. As a case study, immigration illuminates how expansions of executive power influence the lives of millions of individuals, having enormous positive benefits or drastic dire consequences on their daily lives. It also carries consequences for broader questions of democratic governance. I argue that polarization in Congress on the issue of immigration, triggered by the terrorist attacks on September 11, 2001 and the differing conceptualizations of the threat and fear of immigration, has led to gridlock which has in turn incentivized presidents to exercise executive actions on immigration. To test my argument against competing hypotheses, I conduct historical research to compile and analyze an original dataset of all executive orders, proclamations, and memorandums from 1910 to 2022 across all issue areas, including immigration. I then compare trends in the use of executive action more broadly to those on immigration specifically. Here, I find that executive actions on immigration do indeed follow a unique pattern. Looking forward, my thesis will next test differing hypotheses as to why this expansion has occurred. I will look at conversations on the influence of presidential popularity, levels of support in Congress, divided government, time in term, presidential party, etc as factors for the use of presidential executive actions on immigration. Again, I will use original data to showcase these possible explanations.

Jayden Stahl

CA - University of the Pacific

Discipline: Natural and Physical Sciences

Authors:
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#2 Rabeya Bosri
#3 Qinliang Zhao

Abstract Name: Synthesis of Platinum Complexes with Histone Deacetylase Inhibitors for Bifunctional Anticancer Agents

Histone Deacetylase (HDAC), an enzyme involved in the regulation of gene expression via chromatin conformation, is overexpressed in many types of cancer and is a popular target for cancer drugs. Cisplatin, an FDA approved anticancer drug, is an alkylating agent that binds to the DNA of cancer cells to induce cell death. By combining HDAC inhibitors (HDACi) and platinum-based alkylating agents into a single drug, the platinum complex with HDACi could have increased efficacy as a bifunctional anticancer agent.Panobinostat and chidamide, two HDACi, are composed of three groups: a protein-recognition cap domain, a hydrocarbon linker, and a zinc binding group. The cap domain fits into a groove at the exterior of the pocket, the linker reaches into the pocket, and the zinc binding group binds to the zinc cofactor of HDAC active site. Derivatives of these molecules were designed by modifying the cap and the linker to alter both length and flexibility of the molecule. Both hydroxamic acid and 2-aminobenzamide zinc binding groups are used in the derivatives. By additionally modifying the cap to have a platinum coordination site, the HDACi derivative could form a complex with platinum. The complex is composed of two chloride leaving- group ligands, a non-leaving ammonia ligand, and the HDACi derivative, coordinated similarly to the ammonia ligand.The HDACi derivatives will be synthesized via nucleophilic substitution to the cap domain, protection of the coordination site with Boc anhydride, a second nucleophilic substitution, and a condensation reaction to add the zinc binding domain. The Boc protection will then be removed and the HDACi will be coordinated to the platinum complex. The synthesized molecules will be characterized via NMR spectroscopy, mass spectrometry, and X-ray crystallography. The relative binding efficacy of the HDACi derivatives will be estimated via computational docking studies.

Kiara Stamati

KS - University of Kansas

Discipline: Humanities

Authors:
#1 Kiara Stamati

Abstract Name: Unveiling Mexican Minds: A Deep Dive into Gender Roles in Mexico

Over the last decade, Mexican feminist movements have gained momentum with protests and marches against the presence of machismo in Mexico. This paper aims to investigate how gender roles within Mexican households, workplaces, and social settings influence individuals' perspectives regarding the ongoing feminist movement in the nation. Given the rise of femicide in Mexico, researchers have examined the country's laws concerning gender-based violence. Researchers have also explored the influence of machismo on Mexican gender roles in family, career, and political contexts. The project will utilize

qualitative interviews with both Mexican men and women to compare responses concerning current gender roles within Mexican society. Thematic coding will categorize the key terms pulled from the interview responses, such as “machismo,” “marianismo,” patriarchy,” and “feminism,” to reveal each gender’s opinions. Predicted results may show how differing viewpoints on gender roles in Mexico help create an environment where women are consistently targets of gender-based violence. Understanding the results could educate the public about femicide and could contribute to future research aimed at discovering methods to prevent gender-based violence.

Cary Staples

TN - University of Tennessee at Knoxville

Discipline:

Authors:
#1 Cary Staples
#2 Kimberly Mitchell
#3 Jessica Taylor
#4 Ella Hosse
Kimberly Mitchell
Jessica Taylor

Abstract Name: Fostering Interdisciplinary Exchange Through Game Design: A Collaborative Effort

The APP FARM takes on projects that explore what education could look like in the future; by providing an opportunity for students to analyze data, explore the “world of the problem” and propose interactive solutions, students become producers of understanding, as opposed to consumers of content. By working with faculty researchers and community partners, students learn to understand that ideas are all around, embedded in everything. The student experience is more than “collecting information.” Through experiential learning, design + collaboration, students are exploring multiple perspectives, analyzing data, and creating “transformative experiences.” We make proofs of concept (PoCs) and minimum viable products (MVPs) designed to compete for grants to support undergraduate research. How can we educate and challenge our perspective as global citizens? How can we encourage reluctant students to engage with content? Games can contribute greatly to student learning. Based on the “Quest to Learn” program, we are endeavoring to build an, “ecology of learning that extends beyond the four walls of an institution and engages [students] in ways that are exciting, empowering and culturally relevant”. The students are balancing limitations that include pedagogical issues, what does this data mean?; technical issues, what can we figure out how to code? and gaming issues, what makes this fun? Instead of computerizing old teaching practices, we are radically re-envisioning the design of the learning experience in general. This presentation showcases successful interdisciplinary efforts, fostering deeper understanding among students, creating valuable educational games, facilitating meaningful interactions, and bridging theory with practical application. This initiative transforms education, fostering a common language for problem-solving that transcends disciplines. We look forward to sharing our outcomes through game play and inspiring others to embrace interdisciplinary collaboration.

Katrina Steele

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

Authors:

#1 Katrina Steele
#2 Sarah Steele
#3 Nathan Gordon
Sarah Steele
Nathan Gordon

Abstract Name: Effects of Environmental Enrichment on Enhanced Nicotine-Seeking Behavior Following Exposure to Chronic Variable Stress

Preclinical and clinical research indicates that individuals exposed to stress are more vulnerable to drug addiction (Koob, 2008; Ouimette et al., 2007). Chronic unpredictable stress increases the response to nicotine-rewarding properties in the CPP test (Biala et al., 2018). Contrary to the effects observed following exposure to variable stress, both running and environmental enrichment (EE) reduce CPP for cocaine (Mustroph et al., 2016). Based on the interactions observed between EE and chronic stress on learning and memory (Wright & Conrad, 2008), it is reasonable to postulate similar interactions on the rewarding properties of nicotine. Only one study (Biala et al., 2018) has assessed the effects of chronic stress on the rewarding effects of nicotine in the CPP model and none have measured the potential of EE in attenuating this effect. Therefore, this study will investigate and determine whether EE can reverse, or abolish, the enhancement in the rewarding properties of nicotine following exposure to chronic variable stress. One group of animals will be exposed to 20 days of randomized stressors either during adolescence or early adulthood. Another group of animals will be exposed to four weeks of EE. An additional group will be exposed to 20 days of randomized stressors followed by four weeks of EE. Control animals will not receive any exposure treatment. Following exposure treatment animals will undergo place preference conditioning to nicotine. Preliminary data indicate that animals exposed to EE exhibit lower place preference compared to animals exposed to variable stress. Data collection is continuing and comparisons between sex and adolescence versus early adulthood stress exposure proposed. In addition to providing evidence of the contributions of stress and environmental conditions to successful cessation of drug-seeking, the results obtained can have important implications for the use of environmental stimulation together with pharmacological and behavioral therapies in addiction treatment.

Slane Steen

KY - University of Kentucky

Discipline: Social Sciences

Authors:
#1 Slane Steen

Abstract Name: Manipulation of Cocaine Preference on the Primrose Path of Addiction.

1.4 million people were diagnosed with cocaine use disorder (CUD) in 2021. CUD involves the use of cocaine at the expense of other alternatives, making it a decision-making pathology, driven by an increase in the relative value of the drug. Research focused on the underlying mechanisms behind decision-making and valuation processes are vital to develop effective treatment options for CUD. The goal of this study is to model CUD in rats via the primrose path–a model of decision-making that involves changes in the availability of reward based on previous choice behavior. The primrose path is said to follow the anecdotal experience of human CUD. As they continue to choose drug over alternatives, they begin to lose out on opportunities to engage with other alternatives, such as a job or other resources, leading to a continued preference for drugs and another “step” down the primrose path. This reduction in alternatives further drives the differences in relative value between the options, leading to a situation where the drug is chosen almost exclusively. To model this in rodents, the relative availability of drug and food will be contingent on previous choice hysteresis. For example, if the rats choose drug near exclusively, the next block of choices will be skewed such that more drug is available to earn. Thus simulating the feed forward loop seen in humans.

Secondly, we will alter the dose of cocaine (1 mg/kg to 0.1 mg/kg) to reduce the relative value of the drug. Given previous research, we expect rats to dose-dependently shift their preference from cocaine to food and that shift to be furthered by the alteration in reinforcer availability. The results from this study will help us better understand the path of addiction and how translational research can be conducted to better create effective CUD treatments.

Evan Steeno

WI - University of Wisconsin-Platteville

Discipline: Engineering and Architecture

Authors:
#1 Evan Steeno
#2 Wei Li
#3 Zachary Jensen

Abstract Name: Efficient Simulations of Semiconductor Quantum Dots with Arbitrary Shapes and Materials

A semiconductor quantum dot, featuring a nano-scale core surrounded by a distinct material known as the matrix, essentially mimics a man-made atom. In this unique structure, electrons and holes are confined within the nano-scale dot, exhibiting atom-like properties. Unlike natural atoms, quantum dot materials can be tailored to achieve specific material properties by manipulating the compositions of the dot and matrix, along with their geometric shapes and sizes. As a result, semiconductor quantum dot materials have found widespread applications in innovative optoelectronic devices such as laser diodes, solar cells, and quantum computers. The comprehension and manipulation of the bound state energies and wavefunctions of quantum dots with diverse compositions and geometrical shapes are critical for optimizing the optical and electrical properties of these materials. Traditionally, supercomputers were used to conduct these complex calculations. To facilitate the research and design of semiconductor quantum dot materials, there is a great demand for an efficient yet accurate computer-aided engineering tool among semiconductor quantum dot researchers and engineers. With advancements in the k.p perturbation theory of bulk semiconductor materials, this research extends the four-band k.p model to simulate quantum dot materials. Through the utilization of COMSOL Multiphysics software, we have developed a user-friendly computer-aided engineering tool capable of calculating bound state energies and wavefunctions for quantum dots with various material compositions and geometric shapes. This simulator stands out for its robustness, efficiency, and accuracy, making it accessible for computations on standard laptops and desktop computers. We anticipate that this simulator will have widespread applications in both academic semiconductor research and industrial design, contributing to significant advancements in this interesting and challenging field.

Chloe Stegner

TX - San Jacinto College

Discipline: Social Sciences

Authors:
#1 Chloe Stegner
#2 Michaela Todd
#3 Denise Toledo

Abstract Name: The Effect of Test-Optional Policies on Undergraduate Applications, Enrollment, and Student Composition

During the 2020 pandemic, many colleges decided to eliminate the requirement of standardized test results on college applications. Today, even after the end of the pandemic, many colleges still have this policy. According to research done in 2021, the vast majority of states required their public universities to become test-optional during the pandemic year of 2020, with the only exceptions being Idaho and Florida; most states have chosen to continue the policy into 2023 and beyond. These nationwide changes have led to numerous discussions of the ethics and actual importance of standardized testing in relation to college applications and enrollment. Standardized tests can create needless barriers to higher education because of test anxiety, learning disabilities, and socioeconomic disparities. We hypothesize that if colleges continue to eliminate entrance testing, then more students will be willing to apply. To test this, we conducted a literature review of past research. Then, we created a poll asking students if they would be more likely to apply to a college that did not require SAT or ACT scores and, if so, why they had that preference. We received answers from 54 students. The results revealed that 79.6% would be more willing to apply to a test-optional university, and most listed test anxiety as the reason. From these results and the literature review, we can conclude that more students would apply if universities did not require test scores. Additionally, the literature review revealed that the implementation of test-optional policies led to higher rates in the applications of underrepresented minority (URM) and first-time students. However, there is a discrepancy in numbers, seeing that while there is an increase in application rates, there has been a significant decrease in enrollment rates.

Brooke Stein

CA - Chapman University

Discipline: Health and Human Services

Authors:
#1 Brooke Stein
#2 Susan Duff

Abstract Name: Augmenting Hand and Arm Function for Persons with Hemiparesis

Background: Hand and arm dysfunction due to neural disorders significantly influences quality of life. Activity-based training has been found to improve function. These improvements could be augmented with transcutaneous spinal cord stimulation (tSCS) due to its modulatory effect on spinal and supraspinal networks. Objective: The primary aim is to determine if a 4-week training program will improve hand and arm function. The secondary aim is to determine if the addition of tSCS to a second 4-week training session will further enhance function. Design: This is a pre-posttest, controlled trial for persons 10-75 years of age, >6 months post-stroke, or with unilateral cerebral palsy. Methods: Participants will engage in two 4-week training periods, 3x/week for 2 hours/day. The first period will include unimanual and bimanual training alone. The second period will be augmented with low-frequency tSCS to the C5-T1 spinal region. Stimulation intensity will be based on individual muscle activation during three tasks: 1) grip dynamometry, 2) grip-lift, and 3) target pointing. Outcome measures are taken before, midway, and after training are Canadian Occupational Performance Measure (COPM), dexterity, daylong arm use, grip/pinch strength, sensibility, questionnaires, bilateral hand/arm surface electromyography, and Upper Extremity Fugl-Meyer (UEFM). Results: Six participants have completed the 1st 4-week training period without tSCS. Individual data reveals COPM, grip strength, dexterity, and UEFM improvements. Findings for other measures after the 1st period are mixed or in process. Conclusion: Preliminary results from this ongoing study reveal that participants improved most measures. The next phase of the study will determine if adding tSCS to training further augments hand and arm function.

Cynthia Stenger

AL - University of North Alabama

Discipline:

Authors:
#1 Cynthia Stenger

Abstract Name: Rewarding Bioinformatics Research Experiences with Undergraduates from across STEM Disciplines

Since there are limited research funds awarded to predominantly undergraduate institutions, the Characterizing our DNA Exceptions (CODE) program was designed to bring research experiences to students who might not otherwise have the opportunity. This bioinformatics program allows small regional universities to partner with HudsonAlpha Institute for Biotechnology (HAIB). Working with HAIB as a facilitator trainer since 2018, my colleagues and I have trained over 85 university faculty to be CODE facilitators. In my lab I have supervised over 70 original student projects in bioinformatics, characterizing variants in proteins that have been associated with a disease or disorder through a clinical submission but have not yet been classified as pathogenic or benign. This means they cannot be used in patient genetic counseling sessions. Each student works to characterize variants associated with a disease or disorder of personal interest to them. They also work as a supporting team member in the larger multi-disciplinary group. This team of undergraduates from computer science, biology, mathematics and other STEM disciplines meet each week at a regularly scheduled time. Each class meeting begins with a 3 minute update from each student where they present what they accomplished that week and then receive feedback from the team. Previous students often come back to share how the program has helped them gain internships, graduate school acceptance, and paper publications. The importance of learning to communicate research findings to a general audience is emphasized and opportunities to share the results with introductory science classes, clubs, and other “town and gown” groups serve to develop these skills and spread the word about the accomplishments of the student research.Lastly, I will talk about invaluable partnerships with the Honors college, CUR (STR or Scholars Transforming through Research), and with HudsonAlpha Institute for Biotechnology.

Nathan Stensaas

MN - Augsburg University

Discipline: Health and Human Services

Authors:
#1 Nathan Stensaas

Abstract Name: Medicaid Expansion and Lung Cancer Mortality in the US

Lung based cancers are historically and currently the most deadly cancers with predicted deaths in 2023, according to the American Cancer Society, being above 127,000 deaths with around 238,000 new cases estimated. Factors that damage lung tissues are significant as smoking tobacco is estimated to be responsible for 80 to 90 percent of lung cancer deaths. This study is centered around finding the impact of the medicaid expansion implemented in 2014 and its impact on access to prevent lung cancer deaths in the states that accepted the expansion versus those that declined. This state level policy study gathers data from federal sources to compile risk factors of lung cancer mortality rates across the states. The primary exposure variable that is focused on in this study is the states that expanded medicaid and those that did not expand it. The data is studied in a quasi experimental difference in difference format so the medicaid expansion policy exposure variable takes the form of an interaction term from the dummy variables for expansion states and policy periods. The results show that alongside risk factors like smoking and regions, the reduction of financial risks with the medicaid expansion by select states had no significant impact on reducing lung cancer mortality rates from the pre expansion period to the post expansion period. This implies that medicaid expansion policy

does not correlate to lower mortality rates suggesting that it failed in providing preventative measures to uninsured individuals. The significance of the smoking variable shows that perhaps policy should also target smoking prevention as this study provides further evidence to a correlation between smoking and cancer. The regional dummy variables shows that there may also be unequal healthcare availability in the southern states, further investigation should be taken to deliver equitable care in all regions.

Liliya Stepanyan

CA - Glendale Community College

Discipline: Natural and Physical Sciences

Authors:
#1 Liliya Stepanyan
#2 Katie Huguet Tuck
#3 Shelley Thai

Abstract Name: The Effect of spoT and badM Genes on EPS Expression and Motility in Paraburkholderia unamae

Paraburkholderia unamae is a plant-beneficial, non-pathogenic bacterium that lives in the rhiozosphere. It is a gram-negative diplobacilli with the ability to fix nitrogen to promote plant growth. Due to these characteristics, P. unamae could potentially reduce the need for synthetic fertilizers, which carry risks of eutrophication. The goal of this research is to identify genes in P. unamae that are involved in the development of the flagellum and the production of the exopolysaccharide (EPS) layer important for biofilm formation and root colonization. To determine the mutants, transposon mutagenesis was used with a highly efficient transposable element,Tn5-RL27. Mutants were screened for defects in motility and EPS production, and the disrupted region was identified using molecular techniques. In mutant LS13, motility was reduced by 67.1%, and the majority of the organisms slowly moved in a counterclockwise pattern. The transposon disrupted the badM gene, which codes for a transcriptional regulator. Mutant KT1.11 had a disruption in the spoT gene, which encodes a GTP pyrophosphokinase enzyme that facilitates bacteria to survive under stringent environmental conditions. Disruption of this gene resulted in a 55.4% reduction in motility and a visible overexpression of EPS. These genes are potentially responsible for diverse metabolic pathways in P. unamae. There is a lack of research on badM, and spoT's broad-ranging effects have yet to be fully mapped despite an abundance of research on the gene's function in E. coli. Further investigations into the mechanisms of these two genes are novel and of interest.

Thomas Stephens

GA - Kennesaw State University

Discipline: Humanities

Authors:
#1 Thomas Stephens

Abstract Name: Contemporary Rhetorical "Hype" in Clinical Trials for Psychedelic Medicine in Georgia

In a social media-driven society, "hype" or an exaggerated promotion surrounding drugs, specifically psychedelics, is ubiquitous, especially in the medical field. The anticipated findings of this research project will shed light on potential shifts in Georgia's clinical trial landscape concerning psychedelics. The analysis will consider the impact of ongoing hype, negative or positive, that surrounds decriminalization, and medical

applications on the formation of public opinion and policies. Contemporary “hype” will be drawn from multiple sources for analysis, to find multiple opinions. For insight into the medical field interviews with Dr. Emile Risby (Chief Medical Officer and Director, Division of Hospital Services of GA Departments of Behavioral Health), and Dr. Boadie Dunlop (Co-Director of the Emory Center for Psychedelics and Spirituality) will be cited. For historical, legal context information will be pulled from the Georgia Controlled Substances Act (Article 2. Regulation of Controlled Substances Part 1. Schedules, Offences, and penalties § 16-13-20- § 16-13-29.) The results of this analysis, given the historical and medical context, are to determine the current trajectory for hype surrounding clinical trials of psychedelics in Georgia, based on the contemporary hype.

Alexander Stern

IL - University of Chicago The College

Discipline: Social Sciences

Authors:
#1 Alexander Stern

Abstract Name: Mixed-Income, Mixed Motivations: Drivers of Socioeconomic Diversity in Rogers Park, Chicago & North Hollywood, Los Angeles

In Chicago and Los Angeles— and just about every pre-war American city— deep socioeconomic inequality often takes the form of residential income segregation. Yet, in these two deeply unequal cities, income-diverse areas exist reliably— large, contiguous, and stable neighborhoods where residents of all income brackets live amongst each other. Though their effects have been overstated in the past, research consistently shows that mixed-income neighborhoods offer consequential economic and social benefits for low-income residents. By comparing two long standing income-diverse neighborhoods— Chicago’s Rogers Park and Los Angeles’ North Hollywood— this paper seeks to better understand how neighborhood income diversity arises serendipitously. To make the comparison, I look at three potential spatial and demographic motivators of income diversity in the two neighborhoods (and their accompanying metropolises when possible): 1) housing diversity, 2) multi-ethnic enclavism, and 3) inner-ring connectivity to the central city. Using a mixed methods approach that includes data analysis, mapping, and questionnaire responses, this paper demonstrates that high housing diversity and inner-ring connectivity contribute to income diversity in North Hollywood and Rogers Park. Multi-ethnic enclavism positively influences income diversity in Chicago, but it shows no meaningful effect in Los Angeles. These results emphasize that while cities can lay bare striking inequality, they are also often optimal spaces for organic social cohesion. Chicago’s and Los Angeles’ distinct prescriptions for income diversity (see: multi-ethnic enclavism) suggest that policymakers need to go beyond a general understanding of fostering diverse neighborhoods in large cities and also consider the unique characteristics of the areas they are addressing.

Abby Stern

VA - The College of William & Mary

Discipline: Social Sciences

Authors:
#1 Abby Stern

Abstract Name: Welcome to the Club: How Georgian Democracy Reflects EU Candidacy Requirements

In November, the European Union (EU) recommended that the Republic of Georgia be granted candidate status after being denied less than two years earlier when they applied to join as part of the 27-nation bloc with Moldova and Ukraine. This was a monumental step in Georgia's path towards Euroatlantic integration, which is so ingrained into the country's ideology that it is included in their constitution and supported by 83 percent of the population. Despite this aspiration, EU candidate status rests on democratic reforms outlined in the nine conditions the EU set for Georgia in the November recommendation. The status of Georgian democracy has changed significantly over time and has recently been identified as potential democratic backsliding which poses a threat to successful integration. To understand the potential for democratic reforms and EU accession, this paper works to analyze the current state of Georgian democracy by assessing the existence of democratic backsliding and examining indicators of backsliding in mid-level democracies. Indicators this paper assess include suppression of media, perception of corruption, rise of populism, increased oligarchic influence, and lack of judicial independence. The insight from this paper is valuable because it is instructive of potential democratic backsliding of countries with aspirations of EU candidacy.

Kindra Stetzel

IN - Valparaiso University

Discipline: Humanities

Authors:
#1 Kindra Stetzel

Abstract Name: Ecofeminism Will Save Us: Women and Their Impacts on Environmental Philosophy in Margaret Atwood's "MaddAddam" Series

Margaret Atwood's MaddAddam trilogy is often read as a warning about genetic engineering, but it also asserts that climate change impacts exacerbate already-existing forms of social oppression. Atwood illustrates this through the commodification of nature and women, both of which are exploited for financial profit. Atwood examines the breakdown of human-nature connections caused by greedy corporations that leads to devastating earthly consequences, but, at the same time, she proposes solutions for change through environmentalist philosophies. My paper focuses on how Atwood challenges the exploitation and commodification of nature and women in the MaddAddam series through the lens of ecofeminism. Ecofeminism believes nature and women experience similar domination by patriarchal society, resulting in strong connections between the two. I explore parallels between the exploitation of natural resources and female characters to ultimately determine Atwood's message: that the climate crisis is real and so is the domination over and oppression of nature and women. Most evidence is drawn from The Year of the Flood because it is set in the Pleeblands, where the effects of climate change are most prevalent, and because its protagonists are women. Examples include women who are forced to sell their bodies to survive in the Pleeblands or abandon their careers in science to escape their guilt. Attention is also paid to the God's Gardeners, an environmentalist group that seeks to repair human-nature relationships via unorthodox methods. Through countless examples, Atwood provides commentary on social oppression and exploitation and encourages ecofeminist solutions. She declares it is time to embrace the interconnectedness of all humans and nature, because to hurt one is to hurt us all. While Atwood addresses a seriously grave issue that presently impacts our world, she does so through a story of connections, love, and most importantly, hope.

Nicole Stevens

FL - University of Central Florida

Discipline: Health and Human Services

Authors:

#1 Nicole Stevens
#2 Tanvi Patel
#3 Aledie Navas-Nazario

Abstract Name: Ease the Sneeze: A Pilot Study Identifying the Impact of Social Determinants of Health on Allergic Disease Severity

This study aims to identify the specific social determinants of health (SDoH) associated with severe cases of comorbid asthma and allergic rhinitis (AR). Asthma and AR affect 40% or more of the US pediatric population. In preschool children, the diagnosis rate is 64.3% and increasing, with SDoH factors to blame. While both diseases can be well-controlled with medication, 50% of patients have uncontrolled asthma. Diagnosis of asthma and AR are strongly associated with sleep disturbances, irritability, fatigue, anxiety, and school absenteeism, causing over 200 million lost school days annually. Additionally, children with comorbid asthma and AR are significantly more likely to exhibit poor social functioning along with an increased prevalence of hyperactivity and learning disorders. These conditions lead to nearly twice as many visits to providers and double health-care related expenses — a significant burden on both child and caregiver. Furthermore, asthma and AR are diagnosed 2 to 3x more often in the African American community, where asthma mortality is 5x higher than that of their white peers. While SDoH factors are largely responsible for the increasing prevalence of asthma and AR disease disparity among the African American community, the SDoH identities most strongly associated with increased disease disparities remain unknown. This study administered a detailed survey via RedCap to patients scheduled for outpatient visits at multiple Nemours Children's Health pulmonology and allergy clinics in the Orlando area. We identified several SDoH factors associated with increased disease morbidity, including lack of internet access, transit challenges, and domestic violence. Interestingly, the most frequently identified SDoH vulnerabilities could be addressed by current government initiatives that aim to provide access to reliable internet and medical transportation. As such, the results from this study can improve patient care by bridging the gap between existing resources and families in need.

John Stewart

KY - Western Kentucky University

Discipline: Social Sciences

Authors:
#1 John Stewart
#2 Xiaowen Chen

Abstract Name: Multiple-Choice Question Generator for an Equal Employment Opportunity Law Learning App

Question generators are an increasingly prevalent research interest in Artificial Intelligence, especially with the advent of large language models such as ChatGPT. A question generator is a model that, when given an answer and a context (usually a couple sentences of text surrounding the answer), generates a question. A fully-contained multiple-choice question generator, taking an article and generating questions and answers, has three main steps in the pipeline: keyword resolution, question generation, and alternative answer choice generation. Keyword resolution is a method to find informative words or phrases in a text that could be answers to multiple-choice questions. Key issues exist in prevalent question generator models, such as non-sensical questions, hallucinations creating misinformation, and questions lacking depth and quality. This research focuses on keyword resolution. We have been testing different methods in order to increase the quality of questions and answers. We have also been testing a novel method of training the generator model on subject-specific corpora. The subject is equal employment opportunity laws. The corpora are a raw text corpus and a question-and-answer corpus that have been developed in our previous research. The use of topic-specific corpora specifically is novel for generative models and may increase the model accuracy. Our

research may provide insightful information for utilizing and integrating topic-specific corpora in developing question generators. The research is conducted in Python, using Transformers for the question generator model.

Rebecca Stewart

WI - University of Wisconsin-Green Bay

Discipline: Humanities

Authors:
#1 Rebecca Stewart

Abstract Name: The Satanic Rebel, Byronic Hero, and Vampires: Romanticism in The Black Vampyre and Carmilla

While British Romantic John William Polidori's The Vampire is well known, how circum-Atlantic Romantic vampire literature has been influenced by Romanticism is often overlooked. My research explores the way the Romantic ideas of the Satanic rebel and Byronic hero influence American Uriah Derick d'Arcy's abolitionist vampire tale The Black Vampyre and Irish writer Joseph Sheridan Le Fanu's vampire novel Carmilla.

Marissa Stewart

WI - University of Wisconsin-Milwaukee

Discipline: Education

Authors:
#1 Marissa Stewart
#2 Faith Adebogun
#3 Elizabeth Drame
#4 Tamara McKinney
#5 Derrick Langston
Faith Adebogun

Abstract Name: Evaluating Black Student Success at a Predominantly White University

In Spring 2023, the University of Wisconsin-Milwaukee (UWM) had a total of 16,091 students enrolled. Among this total population, only 1,238 students, 7.69% of the student population, identified as Black. There is a need to understand the curricular, programmatic, interpersonal, individual, and institutional factors that either support or impede their success to develop strategies that promote academic success and equal educational outcomes. Through this study, we gathered and analyzed faculty and student perspectives at UWM by analyzing a combination of past and current peer-reviewed studies on several factors, experiences and environments that impact the success of Black students. The aim is to gather a comprehensive understanding of the topic by drawing upon both historical contexts and current literature. According to UWM’s Office of Assessment and Institutional Research, the six-year graduation rate for Black students during the Fall 2023 semester is 31.6%. This project employs an exploratory sequential mixed methods design. Semi-structured interviews were used as a method of collecting data. A total of twenty interviews were conducted with current students, faculty members, and alumni of UWM. The coding process involve categorizing the responses and identifying recurring themes and suggestions for supporting the success of Black students at UWM. Based on the preliminary results, the study may uncover policies or practices that

inadvertently create barriers or perpetuate inequalities for Black students such as perceptions and stereotypes, White faculty discomfort, and peer rejection. These findings can inform discussions and recommendations for policy changes within the university. The anticipated outcomes of this research include providing students and faculty with academic strategies and resources that will promote success and foster better student-faculty relationships. Additionally, the research can lead to the creation of interactive workshops or training programs for faculty to increase their awareness and understanding of the experiences and needs of Black students.

Jade Stewart

NC - High Point University

Discipline: Social Sciences

Authors:
#1 Jade Stewart

Abstract Name: Exploring Pathways: Freshmen Perspectives on College Decisions & Readiness

Each year thousands of high school students make important post-graduation pathway decisions about attending college. While post-high school pathway decisions, specifically whether to attend college or not, are well-researched in education literature, individual student motivations remain elusive, even though several structural influences have been well-identified (Bransberger, 2020; EdChoice, 2022; National Student Clearinghouse, 2022; Tirado, 2022, and Yamamoto, 2023). It has been shown that those in low-income or rural communities lack the basic needs of educational opportunities through teaching methods, coursework offerings, and just basic "college knowledge" - knowing how to apply to college, etc (Morton et al., 2018; Oakes et al., 2021; Poynton et al., 2021; Romberger, 2021; Steiger et al., 2023, and Xing et al., 2019). Additionally, it has been that limited resources such as "college prep" courses adversely affect students' drive to attend college (Morton et al., 2018). Another factor is the common method of ability grouping and tracking students based on end-of-the-year exams, perceived abilities, and/or IQ. Research indicates this practice overwhelmingly negatively impacts students of color and has a downward effect on student, parent, and teacher expectations (Giersch, 2016). Therefore, this paper examines the factors involved in current college freshmen and their decision to attend college. Respondents will complete a self-administered instrument that focuses on their high school experience, relationship with their counselor, and their prior knowledge of college. A cluster sample will be used by selecting only freshman students at High Point University who are above the age of eighteen. This study has the potential to provide researchers and educators with data that could help reduce the college attendance gap between low-income and high-income students. By identifying "why" students make their post-high school decisions, it could find ways to bring "college readiness" to more students.

August Stine-Woods

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 August Stine-Woods
#2 Andrea Rodriguez
#3 Mohamad Saab
#4 Amber Johnson

Abstract Name: Examining the Association Between Perceived Stress, Early Maladaptive Schemas, and Blood Pressure among Black Women

Background: Past studies have shown that perceived stress is associated with an increased risk of developing elevated blood pressure. However, few studies have examined how Early Maladaptive Schemas (EMS) can influence perceived stress and blood pressure among Black women. This study's purpose is to examine the relationship between EMS, perceived stress, and blood pressure in Black women.Method: Fifty self-identified Black women (Mage= 38 years) completed the Young Schema Questionnaire (YSQ) and the Perceived Stress Scale (PSS). The YSQ assesses EMS, providing insights into cognitive and emotional patterns that may contribute to psychological symptoms. The PSS measures individuals' stress levels by evaluating their perspectives. Additionally, two blood pressure readings for systolic (SBP) and diastolic (DBP) blood pressure were recorded and averaged for each participant. Linear regression models were used to determine whether participants' YSQ and PSS scores were significant predictors of blood pressure. EMS was used as a moderator to examine the relationship between perceived stress and blood pressure. Results: PSS did not predict blood pressure. A significant negative association between EMS and diastolic blood pressure was observed, explaining approximately 15% of the model variance as well as a negative association between EMS and systolic blood pressure explaining approximately 7% of the model variance. No significant moderation effect was observed.Conclusion: EMS significantly predicted blood pressure. This study provides preliminary evidence that Early Maladaptive Schemas may contribute to cardiovascular risk among Black women. This information can aid in the development of interventions addressing unique sociocognitive processes that Black women face.

Leah Stirrup

NE - University of Nebraska-Lincoln

Discipline: Social Sciences

Authors:
#1 Leah Stirrup

Abstract Name: The Gretna State Fish Hatchery Digital Museum

This thesis describes the construction of a digital museum Story Map of the oldest fish hatchery in Nebraska and also presents this Story Map. This hatchery was established in 1879 within the community of Gretna, about 30 miles west from Omaha. I am currently distilling important elements of the history of the Gretna State Fish Hatchery to create an ArcGIS Story Maps website for the Nebraska Game and Parks Commission by digitizing the history of Schramm State Recreation Area. Analysis of over 90 reports of the Nebraska Reports of the Commission revealed the history for this facility and detailed the reasoning behind trying to keep the waters of Nebraska sufficiently stocked with game fish in the most economical way possible. I will also include the geologic history of the area to include the geologic outcrop at Schramm State Recreation Area which was donated by Eck Frank Schramm. I will draw a cross section, examine fossils, and create a stratigraphic column. I will include Native history to share traditional fish cultivation practices and land use by interviewing Omaha tribal members and use peer reviewed articles. The Gretna State Fish Hatchery seems to have cultivated mainly trout, German carp, and channel catfish. Geologic evidence presents that the area was covered by a shallow sea due to the presence of crinoids, brachiopods, and bivalves. Interviews with Omaha tribal members have not taken place as of 12/07/2023. The goal of this Story Map is to make this history publicly available to all Nebraska residents.

Jasmine Stlouis

MN - University of Minnesota - Duluth

Discipline: Social Sciences

Authors:
#1 Robert Llyod

Abstract Name: The Effects of Chronic Self-Administration of Nicotine on Concentration and Attention

Nicotine, a highly addictive stimulant, negatively impacts the heart, blood vessels, respiratory system, and digestive system. It increases dopamine levels, affecting emotions of pleasure and satisfaction. Research shows that nicotine affects dopamine and attention, but the data on attention is contradictory, and studies are undertaken on nicotine subjects. This study aims to understand the impact of persistent nicotine use on attentiveness. The study aims to compare the neurological responses of smokers and non-smokers to auditory stimuli. Participants will be exposed to 300 brief tones, at an interval of 1.25 seconds, and their responses measured at 9 EEG recording sites (frontal, temporal, parietal, and occipital sites in the left and right hemispheres, along with area CZ). The reduction in neurological responses (as measured by auditory evoked potentials in the EEG) reflects habituation at the neurological level, resulting in a loss of attention. Three sets of data will be collected: (1) nicotine naïve individuals, (2) nicotine users while abstinent, and (3) nicotine users while using (2 & 3 are the same participants). The study will involve 20 participants half will be non-smokers and the other half regular smokers. The rate and degree of attenuation in the auditory evoked potentials (amplitude of the P300 and N400 waves) from these 9 cortical sites will be compared among these three sets of data. Smoking nicotine frequently may negatively impact neurological processes like attention. Students' academic performance in high school, college, and higher academic levels may be impacted by this. The results might also reveal additional information that could prompt further research.

Brittney Stockholm

UT - Utah Valley University

Discipline: Social Sciences

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Abstract Name: Can Practice Alter the Stress Response to a Stressor?

The human nervous system responds to stress through the fight or flight reaction, triggering changes in body temperature, heart rate, blood pressure, and sweating. Chronic stress has been linked to mental health issues and alterations in the brain's structure, affecting the hypothalamic pituitary adrenal axis, which regulates stress hormones and emotions (Sriram et al., 2012; Ramirez et al., 2013). Given the stress in college, adopting healthy coping strategies could benefit academic performance and overall well-being (Skowronek, 2014).Research indicates that music has therapeutic qualities, easing nervousness and positively impacting mental health, particularly among students (Chi, 2020). Music interventions have shown promise in reducing stress at physiological levels (de Witte et al., 2020). However, a preliminary study found no discernible impact on physiological responses (heart rate, skin response, body temperature) during a math task when different background music types were played (Kirschbaum et al., 1993). The current study aims to explore

how different music genres affect stress responses.The study will use a between-subject measures design, exposing participants to either relaxation/meditation music or fast-beat music after establishing baseline physiological measures without music. The goal is to compare the impact of calm meditation music versus techno music on stress response. Researchers hypothesize that calmer music might decrease stress, while faster music might increase it. By examining how music affects the human nervous system, the study seeks to provide additional stress management tools.

Anna Stockstill

KY - University of Kentucky

Discipline: Social Sciences

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Abstract Name: Natural Disasters and State Cooperation

The importance of natural disasters and their impact on affected governments and neighboring states cannot be understated. Recognizing patterns between natural disasters and cooperation is necessary to determine how governments can best react and pre-empt the negative effects. Natural disasters cause some level of distress and panic within states due to the sudden decrease in available resources, the damage that the disaster caused, and other alternative factors. To combat this, states often expedite relief efforts and release public statements containing sympathetic messages and loose action plans to appease citizens. Our research aims to define the relationship between natural disasters and an increase in cooperation between states. We would like states to have the ability to predict how natural disasters will affect them because it would allow leaders and lawmakers to take preventative action against the potential negative effects

Cassidy Stoddart

AL - University of Alabama at Birmingham

Discipline: Social Sciences

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#4 Kenneth Ferraro

Abstract Name: The Impact of Life Course Community Belonging on Later-Life Cognitive Health Across Racial-Ethnic Groups

Prior studies reveal an association between elements of social relationships and cognitive health, but we examine whether the sense of community belonging at different ages is related to cognitive health during later life, guided by the life course perspective. This study also examines whether community belonging influences cognitive health among Black, White, and Hispanic adults. We used data from the 2016-2018 waves of the Health and Retirement Study, including unique data from the 2017 Life History Mail Survey, to analyze how feelings of local community belonging at multiple life stages may influence cognition scores and how this may vary across White, Black, and Hispanic respondents. In the full sample, respondents who experienced greater community belonging during early life and later life had better cognitive health. A

similar pattern emerged among Black respondents in analyses stratified by race-ethnicity. Among Hispanic respondents, community belonging was not significantly related to cognition. Among White respondents, community belonging in later life was associated with better cognitive health. The findings suggest community belonging over the life course is beneficial for later-life cognitive health, especially for Black adults. This study demonstrates the importance of incorporating the life course perspective to examine how the feeling of community belonging at various stages in life impacts later in life cognition.

Erin Stolgitis

MA - Bridgewater State University

Discipline: Social Sciences

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Sophie Gaucher

Abstract Name: Not All Men: How Toxic Masculinity Varies by Sexual Orientation, Race, and Mental Illness Diagnosis

Societal standards encourage men to be rigid, show no emotion, behave aggressively, and not ask for help, along with many other avoidant coping strategies. However, this toxic masculinity is associated with poorer mental health and difficulty in relationships. Adhering closely to these societal standards has been shown to cause increased stress, while not feeling as though you meet these societal standards can also cause stress by way of feeling like an outcast. Because previous research has mostly focused on White, heterosexual men, it is unclear how social identities like race and sexual orientation correlate with perceived masculinity, so this study aimed to fill that gap in the literature. Participants (N=227) took an online survey on Prolific Academic. We examined gender role discrepancy (GRD), defined as a male's perception of themselves in comparison to traditional masculinity norms set by societal standards. Survey measures included participants' perceptions of their own individual masculinity and their perceptions of societal expectations of their masculinity, and then we calculated GRD by subtracting individual perceptions from societal expectations. The findings showed that both sexual minorities and heterosexuals have similar perceptions of societal perceptions of masculinity, but individually men who identify as heterosexuals felt more masculine than men who identify as a sexual minority, resulting in more GRD for sexual minorities. When investigating race, no significant relationship was shown between race and GRD. Confirming previous research, men with a diagnosis of mental illness had significantly higher GRD compared to men not diagnosed with a mental illness. This study takes a deeper dive into men and their masculinity by investigating how various demographics relate to how masculinity is perceived both individually and socially. Doing so helps us further understand how to tailor future aid and compassion towards men and their mental health.

Olivia Stortz

FL - Eckerd College

Discipline: Natural and Physical Sciences

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#2 Jeannine M Lessmann

Abstract Name: Determining Patterns of Mangrove Species Dominance in Different Life Stages Across

Differently-Aged Sites Post-Creation in Tampa Bay, FL

Despite mangrove's economic and ecological importance, successional patterns of mangrove forests are poorly studied. There is little support for white mangroves acting as pioneer species following habitat creation, with slower recruitment of black and red mangroves across the entire intertidal elevation. We assessed site development in three differently-aged-created mangrove habitats in Cockroach Bay Aquatic Preserve, Florida, USA, to meet this objective. Mangrove forests are a vital ecological system found along subtropical to tropical coastlines. They are essential blue carbon ecosystems and amongst the highest productivity of global ecosystems, including rainforests. Development threatens these forests, leaving coastlines vulnerable to storm surges and rising sea levels while reducing habitat for other organisms and facilitating biodiversity loss. Creating mangrove forests is essential in countering the loss of these forests, allowing mangroves to recruit facilitated by planting a sympatric salt marsh grass species.In our study, we determined mangrove density of different life stages for three species: white (Laguncularia racemosa), red (Rhizophora mangle), and black (Avicennia germinans). Three differently-aged (3-24 years old post-creation) created sites were sampled annually between 2015-2023. White mangrove seedlings recruitment consistently demonstrated a high dominance over red and black mangrove seedlings at sites across all ages and elevations. For juveniles, there is an increased representation of red and black, though white juveniles continue to dominate this life stage. Red and black continue to be better represented in the adult life stage but are not dominant after nearly a quarter of a century post-creation. This strongly indicates that white mangrove is the pioneer species and red and black recruit slowly in created mangrove sites. We show additional patterns of succession for mangrove life stages as well as critical comparisons of different created sites of the same age. This contributes to further knowledge in restoration ecology, supporting assessment policy for habitat creation.

Brittany Stovall

CA - California State University - Northridge

Discipline: Social Sciences

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Ilene Cruz
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Abstract Name: Unraveling Substance Use and Depression in Young Adults

Using data from the 2021 National Survey on Drug Use and Health, this study explored the role of substance use in exacerbating role impairment among young adults who experienced major depressive episodes. Role impairment refers to the difficulty in daily life functioning within domains of home management, work obligations, maintaining close relationships, and social interaction. Our analysis encompassed 2,366 individuals ages 18-25, examining the prevalence of alcohol, tobacco, and illicit drug use and their subsequent impact on daily functioning in the preceding year. Analyses of Variances (ANOVA) were conducted comparing impairment sum scores – a metric of role impairment severity – across groups differentiated by substance use, revealing pronounced differences in impairment related to tobacco [F(1, 2364)=7.53, p=.006, ηp2=.003] and illicit drug use [F(1, 2364)=11.32, p<.001, ηp2=.005], with users exhibiting significantly higher impairment scores than non-users. Conversely, alcohol consumption did not significantly impair participants [F(1, 2364)=.210, p=.647, ηp2<.001], highlighting the distinct pathways through which various substances may affect young adults with depressive symptoms. Notably, gender (p=.001 for tobacco, p=.004 for alcohol, p=.003 for illicit drugs) and family income (p=.002 for tobacco, p<.001 for alcohol, p=.001 for illicit drugs) consistently emerged as significant factors across all substances, emphasizing its influences on the relationship between substance use and impairment. The

observed effect sizes were modest, suggesting that substance use is one of several factors contributing to role impairment. This highlights the need for personalized interventions and further research into how substance use interacts with mental health challenges. The conclusions drawn from this study offer valuable insights for the development of targeted policies and educational programs aiming to mitigate the effects of substance use on mental health among young adults.

Sophia Stowell

TX - Lone Star College

Discipline: Social Sciences

Authors:
#1 Sophia Stowell

Abstract Name: The Magic of Mushrooms: Investigating the Effects of Psilocybin on the Depressed Amygdala

Building upon three key studies pertaining to Psilocybin's attenuation of top-down modulation from amygdala to visual cortex pathways, this project seeks to propose a Psilocybin-centric functional neuroimaging study over individuals suffering from major depressive disorder. First, the Kraehenmann et al. AMG to V1 processing model was selected to serve as the basis for the study proposal. According to this model, Psilocybin may reduce negative affect by altering emotional processing through relevant MDD pathways. Second, Barret et al. global connectivity maps implicate this shift in processing to result from a short-term spike in functional connectivity one-week following Psilocybin administration. This neuroplasticity may promote long-term reduction in negative affect through a bottom-up to top-down processing shift in AMG to V1 pathways. Third, a therapeutic study conducted by Gukasyan et al. on depressed individuals demonstrate the longevity of this processing shift through continual symptom reduction over the course of a year. Using these three studies, this project proposes that if individuals receive a single high 25mg dose of Psilocybin, then fMRI imaging will reveal increased amygdala attenuation for up to a year, because post-dose neuroplasticity will lower functional connectivity of amygdala to occipital pathways; Therefore, depression symptoms will be reduced through an AMG to V1 processing model. A preliminary double-blind placebo-controlled study will be conducted on screened-participants ranging from 25 to 65 years old. Participants will undergo fMRI emotional discrimination testing one-day, one-week, and one-month after receiving a high 25mg dose of Psilocybin, while follow-ups will be conducted at three-month intervals over the course of a year. Conducting fMRI emotional discrimination tasks along with mapping relevant pathways may clarify the length of varying functional connectivity levels after a single high dose of Psilocybin. Further research could explore Psilocybin's effect on the occipital lobe as a possible line of treatment for other mood disorders.

Casey Stratton

PA - Keystone College

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Inhibiting the growth of Cutibacterium acnes with the Streptococcus salivarius M18 Probiotic

Acne Vulgaris (AV), typically referred to simply as acne, is a complex chronic skin disorder that affects millions of people in the U.S. One contributing factor of AV is the over-proliferation of a bacterium known as Cutibacterium acnes (C. acnes). Studies have shown that the commonly prescribed combination therapy for AV using anti-inflammatory drugs in conjunction with antibiotics has decreased the susceptibility of C. acnes to antibiotics and increased antibiotic resistance of C. acnes strains. Previous research has also demonstrated that C. acnes can transfer this resistance to other skin and gut microbiota. The study of alternative methods for AV treatment has shed light on the potential of probiotics like Streptococcus salivarius (S. salivarius) to combat the overgrowth of C. acnes through the production of bacteriocin-like inhibitory substances (BLIS) known as lantibiotics. Using the BLIS-producing S. salivarius M18 strain of probiotics, an in vitro deferred antagonism assay will be used to determine if the lantibiotics produced can inhibit the growth of C. acnes as well as other microbes, including Pseudomonas aeruginosa and Streptococcus mutans. Growth inhibition of C. acnes and other skin microbiota by S. salivarius M18 will provide valuable insight into alternative AV treatments that could increase compliance to topical therapies for AV patients worldwide.

John Straub

WI - University of Wisconsin-Eau Claire

Discipline: Education

Authors:
#1 John Straub

Abstract Name: Limitations of Traditional Rhetoric Textbooks; An EDI Perspective

Rhetoric, as an applied disciplinary study, does not stray far from its own canon. Rhetoric textbooks, being the very foundation of how rhetoric is taught in academia, are indicative of this, as can be seen in the collegiate textbook: The Rhetorical Tradition: Readings from Classical Times to the Present. This text includes a wide array of classical works, such as that of Ancient Greek rhetoricians like Plato and Aristotle. While valuable in their own right, the textbook's readings from the present do not retain the same amount of depth as those from the canon do. Rhetoric is often overlooked as it applies to a contemporary society, being non-inclusive of relevant politics and identities of a vast percentage of people who aren't white, straight, and able-bodied. My research looks to further identify the limitations of rhetoric textbooks like The Rhetorical Tradition, and present solutions to how the rhetorical canon can be reconstructed around an Equitable, Diverse, and Inclusive (EDI) framework. The Rhetorical Tradition has already mapped out how the canon may be modified for a contemporary audience by including the works of rhetoricians Henry Louis Gates Jr. and Gloria Anzaldúa, leading me to further explore how the identities of marginalized groups are put in a constant state of rhetorical flux, such work only beginning to surface in texts like Critical Rhetorics of Race and Identity: A Reader For Writers, this work needing to be pushed further. My work explores the idea of what a contemporary rhetoric textbook would look like, retaining the values of canon rhetoricians, while also exploring how rhetoric plays into the daily lives of people of color, queer people, and disabled people. I aim to redefine rhetoric as an equitable, diverse discipline, being inclusive of people outside of a white, able-bodied, and cisheterosexual structure.

Carol Street

KY - University of Kentucky

Discipline:

Authors:
#1 Carol Street

Abstract Name: Developing Cultural Competency and Empathy Through Archival Pedagogy

Archival pedagogy is the key to developing greater personal connections to history than can be found in a secondary source textbook. In the Learning Lab internship program at the University of Kentucky Libraries Special Collections Research Center, undergraduate student interns recently experienced a project that brought them in direct contact with records that heightened their awareness of historical injustices and created connections that spanned centuries. The director of the program coordinated with the archivist of the historic Lexington African American Cemetery #2 located near to the university. Students were each given two names of people buried at the cemetery, and they had a month to research everything they could find connected to the lives of the people they were given. Students learned primary source competency skills, such as how to scour local archival repositories, digitized newspaper platforms, and genealogy resources. They also quickly found records that were challenging to modern viewers, but that gave them a glimpse into the everyday difficulties of being Black in the American South in the early 20th century. Each student came to care deeply about the people they researched. The assignment culminated in a visit to the cemetery to talk about the findings with the cemetery's archivist, celebrate the lives of those researched, and physically clean and tend to the graves. The project created individual connections to history that are impossible to replicate from a book or lecture. Confronting everyday historic injustices deepened student empathy and raised their cultural competencies.

Katie Streit

IN - Franklin College

Discipline:

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#2 Lourdes Hurtado
Lourdes Hurtado

Abstract Name: “Scholarship as Conversation”: Successful Experiences of Mentor-Led Research at Franklin College

A common assumption is that academic historians conduct their scholarship in relative isolation. They research and write independently until they are ready to share their work at a professional conference or submit a manuscript to a journal. This idea of independent study is often replicated in capstone courses at the undergraduate level. Seniors work independently on their projects with dialogue limited to their research advisor until the time comes to present their scholarship at the end of the semester – likely to a small audience limited to the department and invited guests. While individual student research can be a solitary process, there are advantages to having undergraduates recognize how conversations throughout the process can make their work more meaningful.The History Department at Franklin College has implemented a new research initiative that aligns with current scholarship in teaching and learning that recognizes undergraduate research as a “high-impact practice.” The History Department’s framework of “Scholarship as Conversation” emerged from a department curricular redesign that focused on scaffolding as a way to develop skills and abilities. The framework begins with our majors recognizing that their scholarship is in conversation with fellow historians and that they are part of a larger academic community that cares about their research. The framework also builds upon the college’s existing Honors Symposium, where student panels present their findings to the entire campus community. All graduating history majors are required to participate in a new history symposium. The experience offers a sense of accomplishment and purpose to the seniors, while reinforcing the notion that historians are continually in conversation. This oral presentation celebrates the

spirit on undergraduate research and academic collaboration within a department and provides insights that could potentially help other humanities or social sciences departments that are navigating the challenges and joys of undergraduate research.

Danielle Stroinski

WI - University of Wisconsin-River Falls

Discipline: Natural and Physical Sciences

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Abstract Name: Optimization of Casein Micelle Nanoparticle Formation using High-Pressure Homogenization

The casein micelle is highly stable against typical food processing procedures such as pasteurization, homogenization and drying. This stability along with the propensity to orient itself with a hydrophobic core makes casein an ideal compound to be used in the encapsulation of compounds (e.g., vitamins, polyphenols). Various techniques such as high-pressure homogenization (HPH), and the addition of emulsifying salts have been used to enhance casein dissociation and nanoparticle formation, but they have not been evaluated in combination. This research aims to evaluate the physical properties of dissociated casein proteins following emulsifying salt-based dissociation coupled with high pressure homogenization. Two emulsifying salts, sodium hexametaphosphate (SHMP) and sodium citrate (SC), were evaluated at different concentrations without high pressure homogenization and at varying high pressure homogenization treatments. The turbidity and hydrophobicity of the samples were then assessed using a spectrophometer and spectrofluorometer. Upon evaluation sodium hexametaphosphate, at the highest concentration without HPH, exhibited an absorbance of 0.111 ±0.010 and a fluorescence of 770.71 ±42 while sodium citrate exhibited 0.115 ±0.033 and 910.04 ±55.3. At the highest level of high-pressure homogenization (300 MPa) sodium hexametaphosphate produced an absorbance value of 0.069 ±0.006 and fluorescence of 768.03 ±43 and sodium citrate produced 0.075 ± 0.015 and 917.16 ±38. Encapsulation potential of the SHMP and 300 MPa HPH treated sample was evaluated by comparing fluorescence data between samples with and without caffeine. Samples including caffeine exhibited a lower fluorescence than those without caffeine, indicating an interaction with the protein. The impact on the physical properties exhibits that while higher concentrations of emulsifying salts are efficient at dissociating the casein micelle, dissociation can be further optimized using high pressure homogenization.

Sofie Strompf

VA - George Mason University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Reversing Neuronal Cell Damage through Mitophagy Induction

Familial Dysautonomia (FD) is caused by the single point mutation of the major signaling scaffolding elongator protein IKAP/ELP1. This disease disrupts the autonomic nervous system leading to decreased sensory perception, poor reflexes, inhibition of vascular and cardiac functions, orthostatic hypotension, and recurrent severe autonomic crises. Patients with FD experience increased incidence of severe adverse reaction and increased neuropathy after anesthesia. Neuropathy is associated with mitochondrial damage and increased cellular reactive oxidative species (ROS). Mitophagy is a cellular process that recycles damaged or dysfunctional mitochondria. We hypothesize that increasing mitophagy or reducing ROS levels will lead to greater neuronal cell viability. We will employ the dopaminergic LUHMES cell line and apply a mitophagy stimulator known as CCCP. We expect the cellular viability to be increased because CCCP will cull the defective mitochondrial pool as measured by MTT assay and Western blot for mitophagy markers (PINK1) and apoptosis markers (Caspase-3). Future directions of this experimental plan will include the addition of the anesthetic Ketamine. We hypothesize that a greater level of neuronal cell death will occur after Ketamine application. To counter this death, pre-treatment with CCCP or a ROS inhibitor will delay or prevent Ketamine induced cellular apoptosis. We envision patient pre-treatment with a ROS inhibitor or mitophagy stimulator may counteract anesthetic neuronal damage. Implications of this study could elucidate new methods in preventing anesthesia-associated nerve damage in FD patients as well as diabetic- and cancer-induced neuropathic conditions.

Mackenzie Strong

IL - Illinois College

Discipline: Humanities

Authors:
#1 Mackenzie Strong

Abstract Name: The Institutionalization Of Disabilities- Why WIllowbrook Made A Difference

Before the Americans with Disabilities Act (ADA) was passed, Americans with disabilities were rarely allowed to work, access public places, or even be included in public schools. Instead, institutionalization was the way the American Government decided to “deal with” those who had disabilities. These institutions were supposed to offer individuals with disabilities a safe place where they could get their needs met without the judgment of the outside world. When looking at cases of institutions, specifically Willowbrook, it isn’t hard to argue that institutionalizing individuals with disabilities was not the solution. Many disability institutions can be very closely comparable to American Prisons. It is argued by many historians that with the treatment of those with disabilities being so similar to prisoners, there was a heavy disregard for individuals with disabilities, especially in Willowbrook. Willowbrook State institution in Staten Island first opened in October 1947, with only 20 students, who were transferred from mental institutions. The original goal was to give these patients a 1 on 1 opportunity to gain skills, but because of the success of these 20 students, admission for the school greatly increased to over capacity with 4,000 students by 1955. This institution was incredibly understaffed, overcrowded and underfunded. This case set important precedents for the humane and ethical treatment of people with developmental disabilities living in institutions. The findings of Willowbrook, was a turning point for individuals with disabilities, and a large reason behind the inclusion of those with developmental disabilities, the expansion of community services, and the establishment of the rights for children with disabilities to receive a public education.

Kalen Strunk

OK - Oklahoma State University

Discipline: Natural and Physical Sciences

Authors:
#1 Kalen Strunk

Abstract Name: "Revealing Microbiome-Driven Indicators for Assessing Kelp Health through Extracellular Enzyme Analysis and Nutrient Profiling"

Giant sea kelp (Macrocystis pyrifera) plays a vital ecological role, yet the impact of changing environmental conditions on its physiology remains poorly understood. This study investigates the correlation between kelp's microbiome, nutritional value, and chemical composition. Recent experiments have revealed a declining organic matter gradient from distal to proximal locations on the frond, accompanied by an inverse relationship in enzyme activity. Therefore, we hypothesize that the associated microbiome influences variations in enzyme activity and nutrient profiles across the frond and different ages. Using extracellular enzyme analysis and nutrient profiling techniques, we analyze nutrient and enzyme concentrations in various kelp frond samples. We aim to uncover phenotypic expressions influenced by the kelp's microbiome and understand how enzyme activity and nutrient concentrations vary based on age, location, and collection sample. Anticipated results include identifying the declining organic matter gradient along the frond, accompanied by an inverse relationship in enzyme activity. These findings will offer valuable insights into the influence of microbial activity on giant kelp physiology and reveal the complex dynamics between the kelp and its associated microbiome. This research has practical implications, including optimizing kelp collection strategies, understanding kelp-microbe dynamics, and supporting the sustainable management of kelp ecosystems. By identifying microbiome-driven indicators, we can mitigate the impacts of changing environmental conditions on kelp health. Ultimately, this study contributes to preserving and managing kelp forests, benefiting ecological systems and other economic uses.

Chloe Stuart

NC - Elon University

Discipline: Natural and Physical Sciences

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#1 Chloe Stuart

Abstract Name: Dual Analysis of Biomass and Carbon Sequestration in Secondary Successional Forests in the Piedmont of North Carolina Utilizing Geographic Information Systems and Field Truthing Methods

As levels of atmospheric carbon continue to rise, so does public concern about climate change; however, not enough is being done to prevent further damage to our planet. While the scientific community turns its attention toward high-tech solutions, many local conservation options are being overlooked, such as the carbon mitigation opportunities offered by local parks. This research looks at carbon sequestration, the process of trees absorbing and holding onto atmospheric carbon, in Cedarock Park in Alamance County, North Carolina to help better understand the capabilities of county parks to mitigate climate change. During the summer of 2023, prism cruising was employed to collect diameter data from trees <10 cm diameter at breast height (DBH) from 87 randomly selected plots. Precise geographic coordinates were recorded using Google Maps. Subsequent analysis involved calculating tree density, species richness, and Shannon's H' diversity index for each plot. Geographic information systems technology was used to obtain elevation (in meters), slope (in degrees), and aspect (in degrees). Our results demonstrate that Cedarock Park stores between 163-181.1 MG/ha CO2e, a significant contribution to local carbon sequestration efforts. This figure aligns favorably with other forests in Alamance County, such as Elon University Forest (88.6-98.5 Mg/ha), Cane Creek Mountains Natural Area (190.7-211.9 Mg/ha), and US Forest Service estimates of carbon storage in Piedmont forests. No significant correlations were found between carbon storage and elevation, slope, aspect, tree species richness, or diversity. Cedarock Park, due to its classification as a secondary successional

forest, is likely to possess even greater carbon sequestration potential than currently estimated. This study underscores the overlooked role of local parks, exemplified by Cedarock Park, in mitigating climate change.

Connor Stuart

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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Abstract Name: Effect of High-Low Training on Well-Being after Chronic Spinal Cord Injury

Introduction: Athletes utilize high-low training (H-L) to maximize performance by exercising under normoxic conditions paired with hypoxic exposure when resting. Exercise and hypoxia are beneficial in treating spinal cord injury (SCI) in rodent models. Exercise after SCI increases neurotrophins whose decreased levels are associated with anxiety-like behavior. In humans with SCI, decreased well-being is attributed to increased rates of mental disorders and suicide. Post-SCI inflammation is common and linked to anxiety-like behavior. One aspect of this project was to test the hypothesis that H-L training doesn't induce anxiety when implemented chronically after SCI. H-L training was executed in rats with chronic SCI by combining voluntary overnight exercise with repetitive, sustained hypoxia 5 days a week for 8 weeks. Methods: Starting with n=62, and final n=49, Sprague Dawley female rats underwent baseline training before receiving a left C2 hemisection (LC2Hx). Subjects were randomly assigned to 4 groups: sedentary control, H-L, exercise-only, or hypoxia-only. At 6-7 weeks post-injury (WPI) treatment was initiated. Voluntary exercise was performed via exercise wheel access and sustained repetitive hypoxia was administered in 4-hour bouts of 11% oxygen. Activity Boxes were used to measure anxiety-like behavior. Results: Monitored exercise wheels showed that H-L subjects tend to increase voluntary exercise distance and speed over time. Activity Box data showed that after 4 weeks of treatment, H-L rats had increased ($p = 0.0126$) rearing activity compared to sedentary rats. Sedentary rats increased time spent in the perimeter (open field assay) at each timepoint ($p=0.0024$), while H-L rats experienced an insignificant negative trend in time spent in perimeter. Weekly weight checks showed an expected decrease in all subjects, but both groups gained weight as the experiment progressed.Conclusions: H-L was tolerated by rats with chronic SCI and shows potential as a treatment for humans with SCI without unnecessarily increasing post-SCI anxiety.

Nathaniel Stucki

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Nathaniel Stucki

Abstract Name: Pixels to Pillars: AI's Role in Architectural Design

In the field of architectural design, the invention of artificial Intelligence or (AI) has sparked incredible

amounts of curiosity and debate in regard to its potential impact on classical design principles. For this Project I will dive into the relationship between AI and classical Architecture and aim to determine whether AI can Measure up to the educated experts of classical architecture and how we can use AI as a tool for design. The project will unravel in three separate phases (1-3). Phase 1 will explore the interior and exterior images provided by AI when describing a building akin to the Pantheon because it is considered to be the pinnacle of beauty. The incremental process of refining the text prompt is essential to obtain quality images to continue into the subsequent phases. In phase 2, the VAS by 3M, will be used to assess which of the AI images are the most captivating for both the exterior images and the interior images. The winning interior image and the winning exterior image will then move on to phase 3. Phase 3 will take these AI images and compare them to photographs of the Pantheon VAS 3M. This phase will evaluate the extent that AI can pull attention and will offer insights into the potential utility for architects or designers to use in the design process during the conceptual phase. In conclusion, I expect findings will show VAS attention percentages are slightly skewed in favor of human design and, while AI can enhance the efficiency in the design process, it cannot replace years of classical training. Architects would be wise to, instead of resisting change, fully embrace AI as a tool for design enhancement. This study emphasizes the importance of collaboration between “man and machine” in shaping the future for architecture.

Elriana Styles

CA - Medanos College

Discipline: Natural and Physical Sciences

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#5 Brandon Graham

Abstract Name: The Remediation of Ocean Acidification Using the Bio-adsorbent: Ludwigia Peploides

Carbon emissions do not just drive climate change; CO2, when absorbed by the ocean, forms carbonic acid, which ultimately results in reduced pH, a phenomenon known as ocean acidification. A lower pH disrupts development of calcifying organisms and degrades overall aquatic health. Our research aims to investigate the potential of Ludwigia peploides, an invasive and resilient plant, to mitigate CO2. We collected water and Ludwigia peploides samples from the San Joaquin River at Big Break Regional Shoreline. One plant sample was dried and mixed in a sample of water from Big Break and another in a solution made from a combination of hydrochloric acid and the same water. We then measured the pH of each solution every 10 minutes for 1 hour. In our experimentation, we found a pH dependent trend on L. peploides acidity adsorption. A pH of 3 demonstrated strong adsorption, averaging 94%. As we decreased the pH, the average percent of adsorption also decreased. With a pH of 2, adsorption was at 80%, while a pH of 1 displayed a noticeable decline with only 15% acidity adsorption. Though results vary based on the pH, Ludwigia peploides has shown to be a viable tool in the process of reducing the acidity of water. We plan to perform additional trials for data collection, aiming to enhance our gathered evidence and reinforce the significance shown through our current analysis . Our research holds significance being that it explores the potential of an invasive species to mitigate the effects of carbon emissions.

Anna Su

TX - Southern Methodist University

Discipline: Education

Authors:
#1 Anna Su
#2 Richard Duschl

Abstract Name: Early Interventions in STEM Education: Examining Spectrums of Youth Interest in Engineering

This research proposal seeks to investigate the impact of early engagement opportunities in engineering concepts on computational and systems thinking, as well as the subsequent influence on interest in STEM majors and careers among underserved and underrepresented youth. Utilizing the innovative approach of Project-Based Learning (PBL) and Design-Based Learning (DBL) within the context of the CIEE Summer Engineering Camps, this study aims to provide insights into effective strategies for promoting inclusivity and sustained interest in STEM. The curriculum design focuses on situating learning in culturally relevant contexts to enhance the development of computational thinking and systems understanding. By immersing K-12 students from Dallas and Fort Worth area schools in hands-on, real-world problem-solving experiences, we aim to bridge the gap between abstract concepts and practical applications. Diverse cultural perspectives will be incorporated to create an inclusive learning environment that engages students from underrepresented backgrounds.A key component of this research is the development of a qualitative research tool in the form of a rubric for coding academic discourse in STEM contexts. This rubric will facilitate the analysis of student notebooks, differentiating between high, medium, and low-quality work. Conformational factor analysis will complement this qualitative approach by evaluating relationships between student demographics and markers of scientific learning.The research findings will contribute valuable insights into the success of early interventions in STEM education and the factors influencing academic and career interests among students of different demographics. The presentation and paper resulting from this study will not only inform the academic community but also provide actionable recommendations for educators, policymakers, and program developers aiming to enhance STEM engagement and inclusivity. Ultimately, this research strives to foster a diverse and enthusiastic pipeline of future leaders in STEM fields.

Varsha Subramanyam

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Varsha Subramanyam
#2 Gilles Rademaker
#3 Rushika Perera

Abstract Name: Analyzing the Role of PCSK9 in Cholesterol Uptake in Pancreatic Ductal Adenocarcinoma

Pancreatic Ductal Adenocarcinoma (PDAC) is a highly aggressive form of cancer known for its tumor heterogeneity and resistance to traditional chemotherapy. It poses a significant threat worldwide, with a 5-year survival rate of approximately 12% following diagnosis, primarily due to its invasive nature and propensity to metastasize to the liver and lungs. Past research has shown that PDAC can be classified into two distinct subtypes termed basal and classical based on their differential gene expression. Basal PDAC cells tend to have higher levels of LDL (low density lipoprotein) uptake and lower levels of cholesterol

biosynthesis while classical PDAC cells tend to have the opposite. Interestingly, patients with basal PDAC tended to have a lower life expectancy than those with classical PDAC. In this study, we investigated the metabolic differences between basal and classical PDAC cells. We find that a protein known as proprotein convertase subtilisin/kexin type 9 (PCSK9), an LDL-receptor inhibitor that inhibits LDL-uptake by the cell is highly expressed in classical PDAC and absent in basal PDAC. Thus, we aimed to knock out PCSK9 in a classical PDAC cell line to see if a more basal phenotype could be observed. By employing CRISPR gene editing, we have successfully knocked out the PCSK9 gene in two classical PDAC cell lines. Through immunofluorescence imaging, we were able to observe increased uptake of LDL, reminiscent of a basal-like phenotype in the classical cell lines. Reintroducing the PCSK9 gene in the classical PDAC cells through viral transfection was able to rescue the classical phenotype, characterized by decreased LDL uptake and increased cholesterol biosynthesis. These findings highlight a potential important role of differential cholesterol uptake as a determinant distinguishing classical and basal PDAC cells. This sheds light on the underlying mechanisms driving PDAC progression in patients and provides potential targets for therapeutic interventions.

Layal Suliaman

NY - Brooklyn College

Discipline: Humanities

Authors:
#1 Rhea Rahman

Abstract Name: The Egyptian Identity: The Disillusionment of Pan-Arabism

In the 1950’s Gamal Abel Nasser created a national identity that would redefine Egypt and its people. With the cementation of Egypt’s Pharaonic past as a national identity, Egypt fore fronted the Pan-Arab and Arab nationalist movements that many Egyptians who have lived through the 70s and the 80s look back with fondness. The unified struggle of Arab states from Western imperial power and a promise of a prosperous future were the core factors that drove the Pan-Arabist movement. But since the early 2000’s a decline in the belief in united Arab struggle was seen across many Arab countries. Egyptians on social media refuse to identify with “Arab-ness” and instead identify as African or Egyptian. I focus on the disillusionment of the Pan-Arab identity in younger Egyptians who have only lived through Hosni Mubarak’s reign. I examine the Egyptian identity through time from the 1950's to the present to understand the shifts away from Nasser’s Pan- Arab political identity. I examine social media, historical events primary and secondary as a means to explain why the national identity of Egypt is shifting into what it is today.

Darya Sulkouskaya

FL - University of Central Florida

Discipline: Social Sciences

Authors:
#1 Darya Sulkouskaya
#2 Fernando Rivera

Abstract Name: Distribution of Healthcare in Puerto Rico: Supply and Demand of Physician Specialties

In the past several decades, Puerto Rico has undergone numerous cycles of healthcare change, as well as continuous challenges in providing adequate medical care for the number of people on the island. There have

been major trends of physician migration from Puerto Rico, worsening healthcare disparities through a lack of physicians remaining on the island to care for the population. These disparities disproportionately affect rural and suburban areas most, with the majority of physicians located in more densely populated urban areas. In order to quantify this issue, the supply of physicians of 25 different specialties was compared to their projected demand by municipality, region, and as a whole for Puerto Rico. Data regarding the availability of physicians across the island was obtained through a partnership with the Health Industry Information Platform of Puerto Rico, the largest database of physicians on the island. The resulting data has shown that only 36% of the investigated specialties have an adequate supply of physicians in Puerto Rico. However, these physicians are predominantly located in the Metro region of the island, leaving the majority of Puerto Rico without proper healthcare to rely on. Moreover, when accounting for rural and suburban populations as a whole, not a single specialty has an adequate supply of doctors. The specialties analyzed include some of the fields that require the most attention in Puerto Rico based on the prevalence of certain chronic diseases and medical causes of death, such as cardiology, endocrinology, and oncology. The supply and demand projections emphasize the need for healthcare reform as the system in place is unable to ensure the medical safety of its people. The resulting data can be used to aid in the training and placement of physicians in the most pressing areas of need to help address this problem.

Justine Sullivan

MA - Bridgewater State University

Discipline: Humanities

Authors:
#1 Justine Sullivan

Abstract Name: Feeling Our Way Through the Climate Crisis: Reading Dark Affects in Thoreau's "Cape Cod"

Henry David Thoreau’s Walden is often a starting point for environmentalism, but compared to the natural world in the Anthropocene, Walden’s depiction of the natural world suggests an unattainable relationship with pastoral nature. The purpose of this project was to find a Thoreau text that is accessible to readers existing during the climate crisis. In 1849, Thoreau made his first visit to Cape Cod. During his visits he observed horrific shipwrecks that had no visible emotional impact on the inhabitants. Not only did he witness physical wrecks, he also saw wrecks within the landscape as he came face to face with a deforested Cape Cod. The emotions Thoreau experienced during his visits mirror the unsettling existential feelings occurring during the climate crisis. Beyond the mutilated landscapes, Thoreau found that the natural world was still controlling Cape Cod through the force of the Atlantic ocean. Some scholars either misread the book as promoting an unsettling view of nature, or just as a “cheery” travelogue. Through the lens of affective ecocriticism and the ecogothic, Cape Cod may be seen as an environmental narrative that suggests a way of accepting an “unsettling” natural world. This paper aims to explore Thoreau’s anti-sentimental and dark affects in Cape Cod. Thoreau’s observations ultimately provide readers with ways to navigate the existential dread they face in the climate crisis.

Molly Sullivan

AL - University of Alabama

Discipline: Social Sciences

Authors:
#1 Molly Sullivan
#2 Courtney Helfrecht

#3 Eden Blackwell

Abstract Name: Models of health and disease among Sidama agropastoralists

Cross-cultural differences in perception around disease transmission, disease treatments, and models of health have direct relevance to efforts intended to prevent spread of infections. This study investigates models of health and disease via semi-structured group (n=5) and individual interviews (n=20) among Sidama agropastoralists living in Loqqe, a peri-urban village near Hawassa, Ethiopia. Adult and adolescent participants were asked:1) to define a healthy person; 2) the factors that positively or negatively affect health; 3) to identify which diseases are present in the area; and 4) how these illnesses are spread. On average, participants mentioned 5.7 diseases present in the area (range 2-16). Results indicate that there is salience among diseases of concern and their routes of transmission. Biomedical explanations were frequently (but not always) provided for malaria and the common cold whereas greater variation (e.g., hunger, malnutrition, and weather) was associated with transmission routes for diseases such as typhoid and typhus. Absence of disease and cleanliness were associated with healthy individuals as was living a comfortable life; poverty is explicitly linked with ill health. The associations noted between poverty, malnutrition, and disease suggest that our participants have identified a locally relevant syndemic which, in turn, provides insight into possible areas for address by public health specialists.

Taya Sullivan

WV - West Virginia University

Discipline: Humanities

Authors:
#1 Taya Sullivan
#2 Ella Broadhurst
Ella Broadhurst

Abstract Name: Mejo[r] o mejo[ɹ]: Variación entre los acentos de hispanohablantes dependiendo del trasfondo lingüístico

The sounds of the Spanish language vary incredibly, from the “th” of Spain to the infamous “sh” sounds of Argentina. Given the linguistic diversity present in the United States, an “American Spanish” accent is especially variable, being simultaneously influenced by immigration from an array of Spanish-speaking countries as well as the dominant English language. Thus, the present study seeks to quantify said variation, connecting various sociolinguistic factors (time spent in the United States vs. time spent in Spanish-dominant countries, the age at which Spanish was acquired, contact with Spanish at and after that age, and self-rated proficiency in Spanish speaking) to the varied phonetic realizations of different phonological sound classes (/s/, /r/, /p/, etc.). To do so, groups of Spanish speakers with varying linguistic backgrounds (native speakers, bilinguals, heritage speakers, and L2/Spanish-as-second-language speakers) were asked to complete a survey examining said sociolinguistic factors. Each participant was recorded speaking freely in Spanish as well as reading off 5 investigator-constructed Spanish sentences, to assess accent under both informal and formal conditions. Each realization of a phoneme (e.g., /s/) was then scored, being categorized into its most appropriate allophone (e.g., [s] as in “super” or [z] as in “zipper”). Patterns of realizations were then assessed under the various sociolinguistic factors. Expected results are that native speakers will have allophonic realizations most in-line with Spanish and with their native dialect (being most influenced by time spent in the United States), bilingual and heritage speakers will have great variation in pronunciation (most influenced by age at which they started learning Spanish as well as level of contact with Spanish at younger ages/during the “critical period”), and L2 speakers will have realizations most in-line with English (highly influenced by self-rated level of proficiency and time spent in Spanish-dominant countries). Note that this presentation will be given in Spanish.

robert summerhays

UT - Utah State University

Discipline: Humanities

Authors:
#1 Robert Summerhays
#2 Tate Jensen
Tate Jensen

Abstract Name: False appearances a modern epidemic

La Casa de Bernarda Alba is a representation of the dilemma that has impacted the lives of many. Today technology has given us the ability to connect on an even grander scale than ever before. However, instead of using it to share our lives with others, it tends to be used in a way to distort and paint a different picture of our lives. Many mediums for communication, content creation, and news outlets intentionally focus their content to promote the views that they want others to follow. La Casa de Bernarda Alba shows this through the control that the mother has over the daughters and her house. To put on the image of a family unified and put together when that couldn't be farther from the truth. This video put together by Tate Jensen, Grace Gunn, and Robert Summerhays uses the family of Bernarda Alba and their intrafamily struggle to highlight the importance of being true to who you are and confronting the difficulties that we experience.

Yize Sun

WI - University of Wisconsin-Eau Claire

Discipline: Business and Entrepreneurship

Authors:
#1 Yize Sun
Yue Li

Abstract Name: Developing countries attract foreign direct investment in a politically unstable environment

Our study explores the challenges and strategies used by developing countries like Brazil, Palestine, and Egypt to secure foreign direct investment (FDI) during periods of political turmoil. Drawing on five years of data drawn from the World Bank, the International Monetary Fund, and the International Country Risk Guide (ICRG), we found some strategies developing countries can use to enhance their appeal to foreign investors, even during a time of political instability.Specifically, our research highlights the importance of maintaining stable economic policies, offering incentives for investment, and actively engaging in diplomatic efforts to mitigate the perceived risks associated with political instability. We also delve into the role of international organizations in providing support and assurance to potential investors. Our findings suggest that a combination of these approaches can significantly improve the attractiveness of developing countries to foreign investors. This study contributes to the existing literature by providing empirical evidence on the effectiveness of these strategies in diverse geopolitical contexts. Furthermore, it offers practical insights for policymakers in developing nations seeking to attract and retain foreign direct investment during challenging political periods

Yiyao Sun

IL - University of Chicago The College

Discipline: Humanities

Authors:
#1 Yiyao Sun

Abstract Name: Identities, Intercession, and Resistance: Comparative Perspectives on Still Life and A City of Sadness

This research delves into the connections between East Asian filmmakers Jia Zhangke and Hou Hsiao-Hsien. Despite Jia's involvement in the Sixth Generation of contemporary mainland Chinese Cinema and Hou's active engagement in Taiwanese New Wave Cinema, their films Still Life (centered around the construction of the Three Gorges Dam in the 1980s) and A City of Sadness (depicting the February 28 incident in Taiwan) respectively, both directors share a common cinematic approach characterized by restraint and intermediation. Despite their distinct historical and cultural contexts, Jia and Hou employ similar cinematic techniques to highlight the struggles of marginalized individuals and emphasize the power of individualized, displaced, and fragmented identities and experiences. Jia navigates the border between history and memory, documentary and fiction in Still Life, while Hou utilizes long takes with deliberate interruptions to evoke insecurity and bewilderment, transforming vulnerability into a departure from the pace of one's own fate in A City of Sadness. In Still Life, symbols of destruction and ruins serve as alarms against both governmental propaganda and the fanatical pursuit of progress and prosperity, and a moral nihilism concealed beneath the veneer of compromise and transcendence of reality. Similarly, A City of Sadness subverts the dominant discourse of bureaucrats by introducing fragmented, individualized experiences akin to collages. Both Jia and Hou start from a reflection of collective memory, display a conscientious approach to the marginalized and underrepresented individuals affected by traumatic politics. Their filmic gestures navigate and supports individual lives by resisting a distinct choice and intercessing between truth and belief, achieved through a dialectical, non-linear representation of history that juxtaposes past and present.

Sanjana Sundararajan

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Sanjana Sundararajan
#2 Rohit Reddy
#3 Harsha Meduru
Rohit Reddy
Harsha Meduru

Abstract Name: Health Disparities Among Rural Indian Women: Colonial Legacy, Current Realities, and Resilient Practices

This presentation explores the enduring healthcare challenges faced by rural Indian women, delving into the historical and contemporary contexts that shape these disparities. Colonialism's legacy of disruption to indigenous health practices is examined alongside the present-day struggles of limited access to quality healthcare services, information, and reliable medical professionals. This lack of accessibility further exacerbates existing health disparities and fosters mistrust in formal healthcare systems. However, rural communities exhibit remarkable resilience, utilizing traditional healthcare systems like Ayurveda and homeopathy to address their health needs. While these practices offer invaluable support, they often fall short

in addressing complex medical issues. Recognizing this limitation, the presentation proposes solutions that focus on empowering communities through education, including health literacy initiatives and increased awareness of available resources. Additionally, strengthening the supply chain of essential medications and medical products in rural areas is crucial to ensure equitable access to vital healthcare components. Technology presents another promising avenue for bridging the gap in healthcare access. By leveraging advancements in telemedicine and information dissemination platforms, rural communities can receive health-related information and connect with medical professionals remotely. This integrated approach, encompassing education, resource accessibility, and technological advancement, underscores the need for a multi-pronged strategy towards achieving healthcare equity for rural Indian women. The journey towards equity, however, extends beyond simply acknowledging disparities. It necessitates implementing solutions that respect the rich cultural fabric of these communities, recognizing the value of traditional practices while simultaneously bridging the gap with modern healthcare advancements. By embracing this holistic perspective, the presentation aims to inspire action towards creating a more just and equitable healthcare landscape for all rural Indian women.

Praneel Sunkavalli

MA - Northeastern University

Discipline: Natural and Physical Sciences

Authors:
#1 Praneel Sunkavalli
#2 Stephen Zhang
#3 Joseph Madara
#4 Lauren Christenson
#5 Mark Andermann

Abstract Name: Dopaminergic organization of mating motivation over days

Changes in the dopaminergic circuitry underlying mating drive and motivational states can be long lasting. We investigated how the brain organizes these long time scales over days in the context of the male mating drive. These findings may help explain the mechanisms that control the transition between motivational states. Brief investigation of females elevates a male mouse's interest in mating for several minutes. However, a successful mating leads to satiety and decrease of mating behaviors that gradually recover over days. The anteroventral and preoptic periventricular(AVPV/PVpo) dopamine neurons in the hypothalamus regulate the male mating drive and are responsible for endogenous dopamine release in the medial preoptic area(MPOA) - a critical region involved in mating behaviors. We hypothesized an increase in absolute dopamine levels that parallels the return of mating behaviors. Using 2-photon fluorescence lifetime imaging (2p-FLIM) to track absolute dopamine levels, we show that recovery of absolute dopamine levels is correlated with the recovery of mating behaviors post-satiation. Through patch clamp recordings, we found that changes in the firing rate of AVPV/PVpo neurons post-satiation alone does not explain the time course of recovery. There is an initial drop in firing rate, but returns to baseline on a faster time scale than dopamine levels and mating behaviors. With Tyrosine hydroxylase(TH) being the rate-limiting enzyme of the dopamine synthesis pathway and observing a decrease in TH cells in the AVPV/PVpo region post-satiation, we predict neurotransmitter switching to play a role in mating behavior recovery. To causally show this, we overexpressed TH and observed an accelerated recovery of mating behaviors post-satiation. Therefore, the decrease in spontaneous firing rate of these hypothalamic dopamine neurons and neurotransmitter switching both underlie the time course of motivational recovery and, hence, may explain how the brain is able to organize mating behavior recovery across days.

Atri Surapaneni

MD - Johns Hopkins University

Discipline: Social Sciences

Authors:
#1 ATRI SURAPANENI
#2 Renan Castillo
#3 Scott Ravyts

Abstract Name: Exploring the use of the Hierarchical Taxonomy of Psychopathology (HiTOP) to understand Temporality of Psychological Distress in Lower Extremity Trauma Surgery Patients

Orthopedic and lower extremity trauma injuries are a significant health burden and accounted for more than 7 million diagnoses and 1,100,000 emergency surgical procedures between 2013 and 2014. Interventions for serious traumatic injuries also can include amputation, resulting in limb loss, which is projected to affect 3.6 million people by 2050. There remains a lack of research about how emotional distress manifests in trauma patients following intervention. An understanding of how psychological outcomes and timelines of recovery or development of trauma-induced psychological disorders are integral to designing and providing optimal mental health care for trauma patients. This study investigates the progression and temporality of emotional distress over 24 months among a cohort of orthopedic trauma surgery patients (N= 601) participating in the Lower Extremity Assessment Project (LEAP). The Brief Symptom Inventory 53 (BSI-53) was used to measure emotional distress. The paper investigates the psychometric properties of the original BSI-53 compared to a factor structure that follows the Hierarchical Taxonomy of Psychopathology (HiTOP) which uses a broader theory organizational structure compared to the BSI. Items were organized into new domains following HiTOP and each model was evaluated using confirmatory factor analysis (CFA). Results show that the HiTOP model fit is comparable, if not slightly better, than the BSI model fit, and can be used as a model for emotional distress following acute orthopedic trauma. Both models reinforce the idea that distress organizes itself within 3 months following trauma and generally remains consistent in its organization over two years following trauma.

Anvi Surapaneni

CA - University of Southern California

Discipline: Natural and Physical Sciences

Authors:
#1 Anvi Surapaneni
#2 Ethan Hamid
#3 Zoe Nussbaum
#4 Oliver Ramirez
#5 Andy Chang
#6 Jesse Yen
#7 Travis Williams
Ethan Hamid

Abstract Name: Acoustically modulated bond activation for vesicoureteral reflux imaging

Vesicoureteral reflux (VUR) is a disorder affecting young children in which urine flows backwards from the bladder to the kidneys. This can have serious health consequences, such as causing urinary tract infections, and thus it is important to diagnose VUR reliably. Current diagnostic tests involve physically and emotionally traumatizing catheterization of children to inject radiographically detectable contrast agents. We propose an ultrasound-based technique in which a CO2-loaded polymer, polyethyleneimine, is injected intravenously and targeted by ultrasound in the bladder to produce CO2 microbubbles. These bubbles can then be visualized

with ultrasound imaging to determine flow direction, and thus detect VUR. Visualization was successful with a 37 mm thick layer of pork belly interposed between the ultrasound and balloon containing polymer. Following this proof-of-concept, current testing attempts to optimize CO2 loading by varying CO2 gas pressure, buffering using sodium phosphate as a proton acceptor, and testing polymers of different sizes. Ultrasound videos are analyzed using a MATLAB code that binarizes the brightness of the produced bubbles to generate a quantifiable comparator. We find that smaller polymers, ca. 1.8 kDa, enable superior effervescence than larger polymers through a swine tripe layer. In both swine and humans, the polymer is expected to be excreted by the kidneys. If successful, this strategy is remarkable in that it would eliminate the need for catheterization and radiation exposure; this technique can also be adapted to various other clinical needs, to potentially take bladder pressure measurements in older adults. This is the first documented decarboxylation of a polymer using ultrasound and a novel use for acoustical chemical modulation in vivo.

Shreya Suresh

WA - University of Washington - Seattle

Discipline: Natural and Physical Sciences

Authors:
#1 Shreya Suresh
#2 Rosana Risques

Abstract Name: Ultra-sensitive characterization of TP53 mutations in non-cancerous tissue of individuals at high risk of ovarian cancer.

High-grade serous carcinoma (HGSC), the most common subtype of ovarian cancer, originates in the fallopian tube epithelium from precursor lesions carrying somatic TP53 mutations. Individuals with germline mutations in DNA repair genes are at high risk of HGSC but the reason is unknown. We hypothesize that individuals at high risk of HGSC carry an excess of pathogenic TP53 mutations in fallopian tube epithelium, which predisposes them to cancer. Preliminary data suggests that individuals with germline mutations in BRCA1 and BRCA2 (lifetime risk of HGSC 45% and 21%, respectively) have more TP53 mutations in fallopian tube than individuals without germline mutations, supporting our hypothesis. However, TP53 mutations have not yet been characterized in individuals with germline mutations in RAD51C/RAD51D, BRIP1 and PALB (lifetime risks of HGSC 10%, 6% and 5%, respectively). Our goal is to conduct an ultra-sensitive characterization of TP53 mutations in patients with germline mutations in RAD51C/RAD51D, BRIP1, and PALB2, and compare their mutational profile with those of individuals without germline mutations in HGSC risk genes and those with BRCA1/2 germline mutations. Fallopian tube was collected, frozen, and macrodissected using a 1mm biopsy punch. DNA was extracted and sequenced for TP53 using ultra-deep (15,000x) duplex sequencing. We have sequenced 6 patients and observed varying degrees of pathogenic mutations in individuals with germline mutations. BRIP1 and PALB2 patients showed low and moderate levels of TP53 pathogenic mutations (11% and 41%, respectively), while RAD51C patients showed the highest percentage of pathogenic mutations (67%), matching their higher HGSC risk. We plan to sequence 6 additional patients to get more comprehensive data. By showing the differences in TP53 mutation patterns among these distinct populations, our research seeks to enhance our understanding of the underlying mechanisms of ovarian cancer development and design better tools for early cancer detection, prediction, and risk assessment.

Elias Suskind

MA - Babson College

Discipline: Interdisciplinary Studies

Authors:
#1 Elias Suskind

Abstract Name: Aging Gracefully: Exploring the Impact of Aging on the Quantitative and Qualitative Characteristics of Pu'erh Tea

While tea has had extensive quantitative chemical analysis under a myriad of conditions within both living and processed tea leaves, these same researchers often neglect to incorporate qualitative analyses which would allow them to effectively investigate tea quality. This is especially problematic considering the vast cultural and economic importance of tea that is heavily affected by its quality. Additionally, an aspect of certain teas that has been overlooked by the scholarship is the substantial aging (>10 years) that post-fermented teas, notably pu’erh teas, often undergo. Consequently, my research paper will seek to determine if and how long-term aging significantly changes the quantitative chemotypes as well as the qualitative flavor profile in pu’erh tea. I will seek to determine the relationship between these quantitative and qualitative profiles and discuss the potential applications these findings have on the methods used to create, process, and value pu’erh tea. Two data streams will be collected on a sample set of five pu’erh teas of variable age and standard terroirs, cultivars, and fermentation processes. For the quantitative data surrounding the tea chemotype, an assay of total polyphenols will be carried out via the Folin-Ciocalteu method with three replicates per sample. For the qualitative data surrounding tea flavor profile, a group of subjects in the tea industry will be surveyed in a blind tasting of the sample set teas and asked to judge the teas on their taste, aroma, astringency, mouthfeel, and overall quality. In order to achieve this, I will be using survey questions crafted by myself in tandem with insights from tea industry veteran Philip Parda and using the tasting standards of the International Tea Masters Association.

Zoe Swaim

CA - Pepperdine University

Discipline: Social Sciences

Authors:
#1 Zoe Swaim

Abstract Name: Assessing the Impact of Women’s Educational Attainment on Political Empowerment in Latin America and the Caribbean

This project aims to explore the relationship between women’s educational attainment and political empowerment in Latin America and the Caribbean (LAC). A large body of literature supports the idea that increasing women’s education can facilitate political empowerment. However, few studies have been done to determine the mechanisms at work behind this dynamic. Using Lieberman’s Nested Analysis (LNA), this project employs mixed methods to uncover the contextual nuances between the two variables. The quantitative analysis draws data from the “Educational Attainment” and “Political Empowerment” subindices of the World Economic Forum’s Global Gender Gap Index (GGGI) across the thirty-three countries of LAC over a period of ten years. The combination of regression analysis with a qualitative inductive process-tracing method works to determine country-specific factors that influence the effectiveness of women’s empowerment efforts. This study seeks to reveal the complex nature of combating the gender gap, especially within the diverse context of LAC.

Zoey Swalley

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Zoey Swalley
#2 Lyse Norian
#3 Jianqing Zhang

Abstract Name: Renal Cell Carcinoma patients with obesity exhibit gene expression changes in the tumor microenvironment

Obesity has been associated with worse immunotherapy outcomes and a decreased survival rate in renal cell carcinoma (RCC) patients, as compared to those without obesity. The reason for this observation is unknown. Determining the reason for this difference could enhance survival for patients with obesity by improving the efficacy of immunotherapies. To investigate if immune cell populations in the blood are affected by obesity, peripheral blood leukocyte composition was compared between RCC patients who were lean (n=27; Body Mass Index “BMI” 18-24.9 kg/m2) or who had obesity (n=40; BMI >30kg/m2). Because RCC is more common in men, samples were also evaluated for sex-related differences. We found no significant differences between males and females for any leukocyte population examined, indicating that biological sex of the patient does not have to be considered when assessing results. To evaluate possible differences in tumor microenvironment (TME) gene expression, 24 RCC tumor biospecimens (n = 12 with obesity [BMI >35 kg/m2] and 12 lean [BMI 18-24.9 kg/m2]) were analyzed using nanoString with the Rosalind platform. In total, 36 genes of the 730 analyzed were differentially expressed in the obesity cohort. The five most upregulated genes were found, when upregulated, to be a negative prognosis marker in RCC patients (The Human Protein Atlas). There were three genes that were seriously down regulated, all of which are positively associated with the function of T cells. Notably, tumors in RCC patients with obesity were found to downregulate CCL21, a gene that encodes a chemokine involved in the chemotaxis of activated T cells. If the chemotaxis of T cells is impaired, their ability to infiltrate tumors and neutralize malignant cancer cells decreases. Immunotherapy treatments that overcome this weakened chemotaxis response may be beneficial to RCC patients with obesity.

Divya Swaminathan

MD - University of Maryland College Park

Discipline: Natural and Physical Sciences

Authors:
#1 Divya Swaminathan
#2 Margaret Scull

Abstract Name: Engineering HeLa Cells to Better Support Rhinovirus C Infection In Vitro

Human rhinoviruses (RVs) are non-enveloped, positive-sense, single-stranded RNA viruses that target the respiratory tract for infection, leading to common cold-like symptoms, bronchiolitis, or, in some cases, pneumonia. RVs are classified into three phylogenetically distinct groups: RV-A, RV-B, and RV-C, with RV-C being identified most recently, in 2006. However, while RV-A and RV-B viruses have been studied for decades in HeLa cells, RV-C does not naturally infect conventional cell lines and thus, it has been difficult to propagate and study in the lab. Further, no assay currently exists to quantify infectious RV-C particles, such as a plaque assay or limiting dilution assay. It has been demonstrated that cadherin-related family member 3 (CDHR3) is a critical cellular entry receptor for RV-C, and further, that RV-C may depend on the stimulator of interferon genes (STING) for viral genome replication. To investigate the roles of these proteins in RV-C infectivity, inducible human STING (hSTING) was transfected into HeLa cells that stably express CDHR3. Elevated STING expression was then confirmed in these cells after induction with Doxycycline (Dox).

Ongoing studies seek to further explore how the expression of additional ciliated cell-specific host factors - such as Prominin-1 (PROM1) - in HeLa cells impact virus infection in this cell line. We hypothesize that combined expression of CDHR3, PROM1, and STING in HeLa cells will enhance viral entry and replication, facilitating amplification of RV-C in the laboratory and aiding detection of infection via antibody-mediated staining or enhanced cytopathic effects. These engineered HeLa cells would thereby constitute a novel cell line that is more amenable to the establishment of a plaque assay or limiting dilution assay to quantify infectious virus.

Drayeson Swanegan

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 J Melby

Abstract Name: Graphic Slave Artisans

The history of African-American design is extensive, with its roots immersed in America's intensive story. Narratives of the origins of black design are consistently being researched in the discussions in BIPOC design communities. Graphic communications permanently intend to correspond to audiences through visual forms. The definitive history of African Americans begins in Africa, with the beginning of the Trans-Atlantic slave trade. Through the establishment of slavery, millions of enslaved Africans involuntarily objected to forced labor, cruel and unjustified punishments, and mental and systematic oppression, with some historical accounts being undiscovered and unknown. The acquisition of slaves reflects a new economic society being constructed on the backs of disadvantaged enslaved people for enforced labor. Through these horrors, some slaves were able to achieve success through multiple skill sets in artistry and craftsmanship. This is where graphic design history and black history combine, perhaps the beginning of black visual arts history. Here lies the stories graphic communications history books skip and overlook. This is the history of the first graphic designers in this country who were black and how their skills were neglected. It shows their significance not only to this country but also to visual design pedagogy.

Sonia Swann

NY - SUNY Buffalo State College

Discipline: Health and Human Services

Authors:
#1 Sonia Swann

Abstract Name: Exploring the Unknown Information About Preparing for Death and Dying

Holistic planning for end of life regardless of age, expectancy, health and agency is lacking across the United States. Covid, along with the aging of the largest generation have shown that preparation is needed. The purpose of this study is to gather baseline information to broadly determine existing knowledge of end-of-life planning, to create a framework for a foundational structure to address the information and knowledge gaps that exist across the board. Utilizing an online survey, over 2,000 responses were collected. The survey consisted of multiple-choice and long and short answer questions focusing on financial, emotional, legal, and planning. This is the beginning step in the process of building the full scope of the model that will be a free

source of information available to anyone in need. Early results indicate a broad lack of knowledge, and general misconceptions regarding what is and is not available. Initial findings will be presented.

Ian Swann

GA - Fort Valley State University

Discipline: Business and Entrepreneurship

Authors:
#1 Josephine Dibie

Abstract Name: Marketing Strategies To Increase Sales & Revenue For Small Business In Middle Georgia

This project explores the marketing strategies employed by small businesses around Middle Georgia to maximize sales revenue. Since the incidence of Covid 19 in 2020 and the subsequent economic downturn and reduction in face-to-face activities, consumers and businesses have adopted new ways of buying and selling. Small businesses need to attract customers to increase sales and profit. This research uses a survey of retail businesses in middle Georgia to determine the strategies used to market their business and to examine if the use of social media is dependent on the sex of a manager. Secondary data is obtained from relevant academic literature and online sources. The survey result indicates that 90% of the businesses surveyed use social media for marketing while the use of social media does not depend on the gender of a manager. 80% of companies increase sales and revenue by selling and re-targeting to existing customers within the business, 90% of companies keep up with market research, and 70% of small companies give incentives to former customers who refer new customers to the business.

Caroline Swanson

CA - California Polytechnic State University - San Luis Obispo

Discipline: Social Sciences

Authors:
#1 Caroline Swanson

Abstract Name: Understanding College Students' Perceptions of Alzheimer's Disease

The purpose of the study is to gain insight into younger adults' worries surrounding Alzheimer's disease and other dementias to create a support group curriculum and/or educational presentation to aid young adults with education about the disease and coping mechanisms to live life to the fullest before possibly acquiring the disease in the future. There isn't much research looking into how Alzheimer's disease affects this age cohort, as most of the research is geared towards caregivers and Alzheimer's patients. Yet, dementia affects the whole family unit. Currently, 6.7 million Americans are living with Alzheimer's (Alzheimer's Association, 2023). With the population rate of people 65+ years of age growing, this number is expected to increase significantly in the next few decades. This research study is interviewing college students who have had Alzheimer's or dementia experience in their families. Then, the qualitative interview transcripts will be analyzed with thematic analysis. Interviews conducted in January through March 2024 will examine the mental health effects of the disease and the participants' understanding of the disease. This will grasp both a psychological and public health lens by asking questions regarding participants' mental health surrounding their experience with the disease and attempt to understand their medical knowledge of dementia. It is expected that younger adults will desire more resources to cope with their Alzheimer's experiences. The

studies findings will be presented back to the Alzheimer's Association so they can better understand how to help the younger population of family members affected by Alzheimer's disease.

Starr Swanson

CA - Los Angeles City College

Discipline: Interdisciplinary Studies

Authors:
#1 Starr Swanson

Abstract Name: Women's Writing is Risky! Risk and Forecasting Dangers in A Room of One's Own

This is an analysis that uses contemporary risk theory and the concept of safe spaces to lend a greater close reading of Virginia Woolf's essay, A Room of One's Own. The traditional reading of Woolf's essay is that a room of one's own produces great literature. However, when you add the lenses of safe spaces and risk theory it reveals this feminist gesture of needing a room of one's own is not just a space of creativity, but of security and safety. Using Maslow's Hierarchy of Needs and Kathleen Woodwards Statistical Panic creates a model of potential risks to consider that was unavailable to Woolf during her era. Applying this model to Woolf's writing reveals that this literature is speculating about her own safety. This speech will focus on Woolf's thematic depiction of the speculative risk and prevention of harm women writers must consider when delving the world of authorship. It is difficult to be a creator of academic or artistic writing when an author is worried for their personal safety and survival. She speculates the possible outcomes women writers have when they choose the risky path with a juxtaposition of William Shakespeare to his fictional sister Judith. She also speculates based on fact and fiction the liberation women writers could experience when the risk is removed through economic means. Overall, viewing A Room of One's Own through the lens of risk theory and safe spaces reveals that women writers must calculate risk to have the security needed for writing.

Chloe Sweet

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Chloe Sweet

Abstract Name: Using Contrast, Shape, And Texture to Create a Comfortable Home That Is Easy to Navigate for A Client with Diabetic Retinopathy

This project aims to design a residence for a middle-aged couple where the wife has grade 1 diabetic retinopathy. The wife has her own pottery business, and the husband is a radiologist. Their needs for the space are individual offices, space for a home gym, and a sunroom for relaxing and creating pottery. Diabetic retinopathy is a disease where new blood vessels aren't growing. Some symptoms are spots or strings floating in vision, arterial narrowing, limited peripheral vision, and dark or empty areas in vision. Since the client currently has grade 1, the condition is not severe, so colors were incorporated into the design for her to enjoy. A case study called the home for the blind by So & So Studio was referenced to provide an evidence-based design. This case study inspired a design that incorporates subtle elements to assist the clients with their daily tasks. Other studies indicated that highly contrasting colors, different textured flooring for each room transition, obvious walking paths, and warm-colored furniture are essential for inclusive house design. These are all important design features for the user because as her disease progresses, she will have

difficulties distinguishing different surfaces and rooms in her home. Warm colors like shades of brown, red, and gold create an inviting ambience to the home and throughout all the spaces. The different flooring textures include wood for the living room and hallway, various tile patterns in many rooms, and different textures of carpet in the bedrooms. Walking paths are created using furniture placement as well as the floor plan layout. Contrast is applied to surfaces the user will need to distinguish such as door handles and the door. Overall, this residence implements contrasting colors, textures, and various space planning tactics to accommodate for the development of this client's visual impairment.

Chloe Sweet

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Chloe Sweet

Abstract Name: Adaptadesk: The Automated Desk Design for Someone Living with Multiple Sclerosis

Multiple Sclerosis (MS) is a disease where communication issues happen between the brain and the body, which can cause permanent damage or deterioration of the nerve fibers. This research aimed to define the specific needs of individuals with MS and apply functional solutions to a workspace desk design to allow individuals to continue to work comfortably for as long as possible. Research methods included studying articles about MS and interviewing a target user to determine design directions. Some people with MS may lose the ability to walk independently, as well as the loss of mobility in their arms. "Adaptadesk" is designed for individuals with MS who are losing mobility or require a wheelchair. The desk assists the user as their MS progresses. Powered with voice controls and a remote, work surface height and knee space adjustments are seamless. Cupholders for drinks, pencils, and paintbrushes remain upright as the desk tilts to accommodate the user's needs. Interviews conducted with a target user help capture specific design functions and features that reflect the client's interests. A Mid-century modern style is incorporated into the design of the desk, utilizing elegant lines and warm wood tones. The desk's form is inspired by the shape of a painter's palette, including incorporating a cutout to mimic the thumb hole, creating a space for a planter. There is a silicon strip where a laptop or canvas can sit to prevent it from slipping downward when tilting the desk. There is a smaller silicon strip on the lower right side of the desk to provide a place for a notepad. While function is a top priority, the research behind the development of Adaptadesk creates a design that fits elegantly into residential settings while enabling individuals with MS to remain active and productive.

Scarlett Swinea

AL - University of North Alabama

Discipline: Natural and Physical Sciences

Authors:
#1 Scarlett Swinea
#2 Cynthia Stenger
#3 Luke Terwilliger

Abstract Name: Exploration of DNA Variants Associated with Chronic Lymphocytic Leukemia

Chronic Lymphocytic Leukemia (CLL) is the most common form of leukemia in adults with more than 18,000 new cases every year. DNA variants that occur in the body overtime contribute to CLL as well as

other forms of cancer. One of the top ten genes associated with CLL is the FBXW7 gene. FBXW7 is a critical tumor suppressor gene that codes for an F-Box protein. Variants of FBXW7 are known to contribute to CLL as well as other forms of cancer by causing the build up of oncoproteins. This research focuses on a missense variant of uncertain significance (VUS) of FBXW7 at amino acid position 505 in which arginine is swapped with histidine.The goal of this research aims to contribute to the classification of this variant as benign or pathogenic and determine the likelihood that this variant will contribute to the development of CLL. Using data from DNA databases such as ClinVar, Uniprot, PolyPhen, Meta LR, and Mutation Assessor, a variant impact chart was designed that shows the relative CADD score of R505H compared to known pathogenic variants of FBXW7. YASARA was used to model the structure of the protein that is encoded by FBXW7 and visualize the differences between the wild type and the variant of this protein. Molecular dynamics simulations (mds) and evolutionary analysis were used to determine the impact of the R505H variant on the FBXW7 wild type protein. MDS revealed that R505H had significant deviation from the wild-type and another pathogenic variant. This along with evolutionary analysis concludes that R505H is likely to be pathogenic and could contribute to the development of CLL as well as other forms of cancer.

Ryn Swinson

OK - Cameron University

Discipline: Humanities

Authors:
#1 Ryn Swinson

Abstract Name: Gender Performance and Heteronormativity in Fried Green Tomatoes

Jon Avnet's 1991 film Fried Green Tomatoes follows the sexually ambiguous relationship between characters Idgie Threadgoode and Ruth Jamison, who find themselves unknowingly navigating gender performativity and heteronormativity in the Depression-era South. Viewed through a 21st-century lens, Fried Green Tomatoes tells a love story, labeled "special friendship," between two women who fall victim to heterosexual normativity through marriage and expected ideas of what it means to "settle down." Through their strong characters, Ruth and Idgie share a complex relationship that breaks from "the norm," pushing the boundaries of their upbringing, breaking away from society's standards, and subverting expectations regarding gender expression, partnership, and learned behaviors, creating identities separate from what is expected in 1930s Alabama. Referencing scenes and dialogue from the film, this paper applies secondary sources to illustrate how the film depicts heterosexual normativity and gender performance. This includes Judith Butler's Gender Trouble, where Butler coined the term "gender performativity" in 1990, and "Performativity" by Tavia Nyong'o, from Keywords for Gender and Sexuality Studies, which describes how gender is defined not by sex but by learned behavior, illustrating how Idgie Threadgoode creates a strong sense of self-identity, constantly subverting gender expectations in refusing to "do" her gender correctly. I also cite Brenda Cooper's work on female masculinity and heteronormativity, which helps explain heterosexuality as a privilege and define heteronormativity. Viewed through these lenses, Fried Green Tomatoes illustrates expectations of women in the 20th century and creates a strong sense of rebellion against gender norms that resonates with third-wave feminism's views of heterosexual normativity and gender performance, influencing representations of women in film in the decades that follow.

Nawal Syed

PA - Drexel University

Discipline: Natural and Physical Sciences

Authors:

#1 Jessica Barson

Abstract Name: Sex-Related Differences In PACAP Expression In The PVT Of Rats

Both the paraventricular nucleus of the thalamus (PVT) and the neuropeptide, pituitary adenylate cyclase activating polypeptide (PACAP), are associated with motivated and affective behaviors, including alcohol drinking and binge eating, and sex-related differences in neuronal activity have been identified in the PVT. While PACAP has been found to be densely expressed in the PVT of male rodents, with the isoform PACAP-27 being more prevalent than PACAP-38, this remains to be characterized in females. The purpose of this research was to examine PACAP in the PVT of female rats and to determine if there are sex-related differences in this expression. We performed fluorescent immunohistochemistry for PACAP-27 and PACAP-38 on tissue containing the PVT from adult, male and female Sprague-Dawley rats (n = 5/sex), followed by confocal microscopy and ImageJ analysis. The percentage of DAPI cells that co-labeled with PACAP-27 was greater in female rats than in male rats (52% vs. 44%) and increased from anterior to middle to posterior PVT, displaying a significant main effect of sex [$F(1, 8) = 13.867$, $p = 0.006$] and subregion [$F(1.23, 9.84) = 7.758$, $p = 0.016$]. Analysis of the percentage of DAPI cells co-labeling with PACAP-38 also revealed a significant main effect of sex [$F(1, 8) = 19.866$, $p= 0.002$], but showed no significant effect of subregion [$F(2, 16) = 2.465$, ns], and female rats exhibited a higher percentage of DAPI cells co-labeling with PACAP-38 than male rats (17% vs. 11%). These results indicate that both PACAP isoforms were more highly expressed in the PVT of female rats, and that PACAP-27 is expressed in greater quantities in the more posterior regions of the PVT. These findings highlight sex-related differences in PVT PACAP and suggest that PACAP may underlie some established sex-related differences in motivated and affective behavior.

Thalyana Sykes

VA - Norfolk State University

Discipline: Health and Human Services

Authors:
#1 Thalyana Sykes

Abstract Name: A Mathematical and Statistical Approach for the Obesity Epidemic

The global obesity epidemic poses a significant public health challenge, that overall demands innovative strategies for effective intervention. Due to the growth of social media in our society, processed food companies use online sites to successfully market their products, such products are portrayed to be healthier than they are and seem to be a cheaper and safer alternative to natural products. Many Americans bear the false assumption that they are saving money by buying processed food when the cost of medical attention for obesity, is extremely more expensive. Research has shown that if American families do not change their food habits and exercise patterns, between 50%-60% of the population will be obese in the year 2030. This presentation explores a mathematical approach to comprehensively address this crisis while also highlighting the magnitude of the obesity problem, emphasizing its adverse health and economic consequences. In correlation to obesity, there are other factors that need to be looked at being that obesity can lead to other chronic diseases. Many of these chronic illnesses pose a bigger problem to society being that individuals will be stuck with the obesity issue as well as other health issues.

Sophia Symalla

WI - University of Wisconsin-River Falls

Discipline: Social Sciences

Authors:
#1 Sophia Symalla
#2 Kelli Maleska
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#4 Abigail Jackson
Kelli Maleska

Abstract Name: False Memories: The Fear Factor

Purpose How does mood affect susceptibility to false memories? People are less likely to form false memories when sad, ostensibly because sadness encourages memory encoding of item-level information, while neutral moods encourage holistic processing, in favor of the gist (Storbeck, 2013). Though the protective benefit of sadness in avoiding false memories has been demonstrated, we investigate how both sadness and fear–another important negative emotion– affect susceptibility to false memories. This is significant to investigate because when a negative event is experienced, people often remember vivid and specific details of the incident. In these traumatic scenarios, fear is likely the strongest emotion. From our work, we will be able to demonstrate whether fear, like sadness, protects against false memories.Procedure Participants view movie clips validated to reliably elicit the desired emotions: neutral, sadness, fear (Gross & Levenson, 1995; Hewig et al., 2005) and rate their mood using the positive and negative affective schedule (PANAS). False memory susceptibility is evaluated with the Deese–Roediger–McDermott (DRM) paradigm in which participants study lists of words that are each related to a critical, unpresented lure, then take memory tests on the words. If a participant misremembers a critical lure as being presented, a false memory has occurred (Roediger & McDermott, 1995). The mean number of falsely recognized critical lures across the three mood conditions will be analyzed using ANOVA. This project has received IRB approval and data collection has begun. Expected Results and Implications If fear, like sadness, confers a protective benefit against forming false memories as we hypothesize, participants in neutral moods will have significantly more false memories than sad or fearful participants. Of theoretical significance, we will determine if fear, like sadness, encourages detail over gist processing. Of applied significance, this study may add to our understanding of memory formation in traumatic situations.

Kayla Szafraniec

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
#1 Chad Wittkop

Abstract Name: A Geochemical Investigation of the Chemical Weathering Characteristics of Old Glacial Tills

Glaciers periodically advance over North America from 2.58 million years ago to 11,000 years ago during the Pleistocene epoch. An enigmatic increase in the length of glacial cycles and coincident increase in ice volumes occurred in the middle of this time interval and is known as the middle Pleistocene transition (MPT). This transition remains poorly understood and is motivation for further studies. Samples for this study were sourced from two different locations (Missouri and Indiana). Missouri tills are sourced from the western sector of the Pleistocene Laurentide Ice Sheet (LIS), while tills from Indiana are influenced by the eastern (Labrador) sector of the LIS. The geochemical characteristics of these samples were determined by X-ray Fluorescence (XRF) on the <63 um of the tills. A comparison of the chemical index of alternation (CIA) and major element geochemistry of tills derived from these sources confirmed the geochemical characteristics from both sample locations are different. The CIA is calculated from major element concentrations determined by XRF, and an independent measure of the carbonate content of the sample. The geochemical characteristics of early- and middle-Pleistocene tills were influenced by both changes in

evolving rock weathering characteristics, and changes in glacier flow direction which incorporate contrasting rock sources.

Kennedy Taber

UT - Utah Valley University

Discipline: Humanities

Authors:
#1 Kennedy Taber

Abstract Name: “I Simply Am Not There”: Post-Truth Politics and Gentrification in Mary Harron’s American Psycho

Mary Harron’s American Psycho has been lauded as a commentary on American identity and how it’s been stripped and replaced with empty representations through the materialistic values of capitalism. Beyond this common analysis is a more significant interpretation of how this emptiness doesn’t merely affect individuals, but also American politics. The film toys with ideas of Baudrillard’s explorations of simulacra and how they intertwine with identity, television as a reproducer of reality, and representations of gentrification and the effects of the upper class on the poor. This paper opens with a crucial scene of Patrick Bateman’s introspective monologue about his missing individuality: “There is an idea of a Patrick Bateman; some kind of abstraction. I simply am not there.” Using Jean Baudrillard’s exploration of simulation and the hyperreal, and Marshall McLuhan’s analyses of the power of media (or television), I argue that Bateman moves beyond his superficial representation of vacant identity. Indeed, Bateman is a robust illustration of how the hyperreal expands past an individual level and into a widespread political sphere. This paper concludes gentrification and contemporary U.S. representatives are a symptom of American society’s progression into the hyperreal. In the modern epoch, Donald Trump, who reflects Patrick Bateman, is a representative of the hyperreal because of his employed post-truth political strategies in his presidency. In addition, Trump is a model of 80s capitalist values. He has always been concerned with monetary gain and established himself as an apotheosis of greed; he’s constructed a hollow image of a successful businessman that promotes the nostalgic ideologies of the 80s. Trump has introduced his alluring image of the capitalistic hero into US politics, profiting from post-truth strategies. Like Patrick Bateman, Trump basks in the hyperreal to manipulate others and the film can influence audiences to recognize it for the betterment of society.

Franccesca Tabertus

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
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#2 Charles Koduru
#3 Shrey Patel

Abstract Name: Enhancing Spatial Awareness of Robotic Dog: Integration of LiDAR and Depth Data

The development of robotic systems has expanded across various sectors, including industry, security, and user assistance. For these systems to be effective, they must possess the capability to be aware of their surroundings. This awareness is typically achieved through the use of sensors. Enhancing these primary sensors with supplementary sensing methods and fusion, such as RGB-D via stereoscopic or other

techniques, increases accuracy and yields more detailed results. To address the inherent limitations of 2D LiDAR (Light Detection and Ranging) and RGB-D cameras, a complementary approach is adopted. LiDAR sensors allow a robot to scan and map its environment enabling it to plan a path and accurately avoid obstacles. However, thin or metallic objects can cause noise in the LiDAR scan that appear as irregularities on the map. By cross-referencing data from a depth camera (RGB-D) a three-dimensional perspective is introduced, equipping the robot with a holistic field of view by giving context to the mapping irregularities. Using ROS simulation tools such as Gazebo and RVIZ, LIDAR, and RGB-D data will be collected and tested to understand how it can subsequently be fused into a single dataset. Previous studies for LiDAR and RGB-D cameras have been used for indoor applications, in contrast, our research focuses on both indoors and outdoors resulting in a more optimized algorithm for environment scanning and navigation. Utilizing the GoAir 1 robot dog, testing and data capture can be generated in uneven outdoor terrains where trees, roots, and bushes can limit the navigation of traditional wheeled mobile robots. By using generative mapping techniques such as Simultaneous Localization and Mapping (SLAM) and Generative Adversarial Networks, autonomous path planning, and obstacle avoidance in various environments can become more efficient.

Matwos Tadesse

PA - Lafayette College

Discipline: Social Sciences

Authors:
#1 Matwos Tadesse

Abstract Name: “The Nation and Sub-Nation: Ethnic Federalism, Nation Building, and Ethnic Political Economy in Ethiopia.”

The early emergence of the Tigray People's Liberation Front (TPLF), which dominated the Ethiopian People's Revolutionary Democratic Front (EPRDF), brought with it relative stability, which helped promote Ethiopia as a peacekeeper and a model to look up to for the Horn of Africa, as it had a phenomenal record of economic growth and, compared to neighboring nations such as Somalia, Sudan, and Eritrea, was relatively stable and more democratic. However, the political system that it operates under has made its growth and stability vulnerable to several shocks. Ethiopia is identified as a multi-ethnic federalist democracy where political power is distributed among self-governing regions that are home to homogenous ethnic groups or coalitions of minority ethnic groups. The ethnic federalist approach was used to combat, on paper, the historically ethnically marginalized and fractionalized Ethiopian communities in hopes that it would promote political representation, further fostering a stable democracy. This has created a challenging political environment, as reflected by the surge of “ethnic attacks,” division, and conflict over the past decade. As such, this system has sparked several debates among several scholars who examine its pros and cons. This paper explores the short- and long-run effects of the ethnic federalist model in Ethiopia, where Ethiopia went wrong, and why it was successful in the early years of the ethno-federalist model in sustaining some level of stability and development.

Rikka Tagayuna

CA - California State University - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Rikka Tagayuna
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Abstract Name: Effects of Blue Light on Various Vaginal Microbiota

Candida albicans is a fungus that serves as the major cause of vulvovaginal candidiasis (VVC), affecting 75% of women at least once in life. Conventional antifungal treatments, including oral or topical medications, can be inadequate for treatment and cause detrimental effects including high recurrence episodes. Antimicrobial blue light (ABL), ranging between 400-470 nm, is an alternative approach to combat microbial infections, as ABL inhibits microbial growth by causing oxidative stress and DNA damage to the affected microorganisms. So far, limited research has investigated its potency against fungal infections. This study aimed to evaluate ABL's effectiveness in inhibiting C. albicans growth and establishes ideal parameters for VVC treatment. In this study we compared the viability of blue light-treated C. albicans with Gardnerella vaginalis, a common bacterial pathogen that induces bacterial vaginosis, and Lactobacillus crispatus, a vital bacterium for maintaining vaginal homeostasis. Microorganisms in log-phase growth were exposed to 400-450 nm blue light at various durations and energy levels. This study displayed 405 nm blue light as efficacious for inhibiting C. albicans growth and revealed C. albicans exhibits higher resistance to ABL than G. vaginalis. A ninety percent reduction in C. albicans viability required 400 J/cm2 of blue light, compared to 200 J/cm2 for G. vaginalis. Additionally, the energy level used for C. albicans did not influence Lactobacillus viability, suggesting ABL can serve as a selective treatment targeting vaginal pathogens while preserving advantageous microbes. This study showcases the promise of ABL as a safe and effective treatment for vaginal infections that prevents vaginal dysbiosis.

Shamsi Taghiyev

MN - Minnesota State University - Mankato

Discipline: Visual and Performing Arts

Authors:
#1 Shamsi Taghiyev

Abstract Name: Local Refugees

Local Refugees The US-Dakota War in 1862 was one of the most catastrophic events for both the Dakota people and European settlers in Minnesota. The war resulted in condemnation and death sentences for 303 Dakota warriors. Eventually, 38 were executed by order of President Abraham Lincoln. For more than 50 years, there have been efforts to bridge the knowledge gap and build reconciliation between descendants of the Dakota Nation and European settlers. The Mahkato Wacipi (Mankato Pow Wow) is one of the more significant opportunities for reconciliation. This project researched and documented the stories of some of the Native American individuals and descendants of European settlers in Greater Mankato and Southern Minnesota. The investigation results will be presented in the form of a documentary video. This film presents storytelling about reconciliation among individuals and communities. This is a partial response to the dilemma: 'now what' do we learn from history so we can move together into our common future? The production may be valuable in terms of community storytelling, which impacts the social presence of Native American history and raises the understanding of the whole context of the US-Dakota War and Southern Minnesota's history. The project also generates new reflections and understandings about the history of the US-Dakota War and the relationships between descendants of Dakota people and European settlers.

Kaho Taguchi

JPN - Musashino University

Discipline: Social Sciences

Authors:
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#2 Hiroya Takamatsu

Abstract Name: Clarify the Relationship between Japanese TV Dramas and Social Conditions: Focusing on Entrepreneurs

While "entrepreneurship" is gaining attention as a future option, the image of the "entrepreneur" in society is not well established. In this context, I have focused on changes in the way entrepreneurs are represented in TV dramas compared to TV dramas in my field of interest. Since I was able to conclude from my previous research that the image of "entrepreneurs" has changed from a negative to a positive image over a period of 10 years, I decided to deepen this study. The purpose of this study is to clarify how Japanese social conditions are related to and quoted in TV dramas. The uniqueness and significance of this study lies in the novelty of the subject matter. By limiting the representation and purpose of entrepreneurs in TV dramas, a clear comparison can be made even when the subjects of analysis are represented in different ways. In addition, to our knowledge, no study has attempted to analyze media representations as a starting point. This study will take dramas in which entrepreneurs are the main characters and analyze them individually to deepen detailed research from a broad perspective. This study not only reveals changes in entrepreneurs as seen by society, but also changes in the way TV dramas are structured, making it meaningful as a study of the media field.

Yohei Takata

JPN - Musashino University

Discipline: Business and Entrepreneurship

Authors:
#1 Yohei Takata
#2 Hiroya Takamatsu

Abstract Name: Empowering Innovation: Analyzing the Impact of Entrepreneurship Education on Student Growth at Musashino University

This paper presents a study conducted at Musashino University's Entrepreneurship Department, Japan's first academic institution specializing in entrepreneurship. The department's innovative curriculum, focusing on 'Mindset,' 'Business Advancement,' and 'Practice,' aims to cultivate students' creative thinking, PDCA skills, and management abilities, empowering them to generate new societal values. The growth trajectory of Musashino EMC students, who have been applying their learning in diverse social contexts, is particularly noteworthy. This study seeks to elucidate the factors underlying this growth, which remains challenging to articulate concretely.We conducted a comprehensive survey targeting all students in the department, followed by semi-structured interviews. The study specifically zeroes in on the shifts in mindset, a fundamental aspect of entrepreneurship education. By analyzing the responses, we aim to uncover insights into how the educational framework influences student development and practical application in real-world scenarios.The findings of this research are significant for understanding the impact of entrepreneurship education on student growth, particularly in fostering a mindset conducive to innovation and practical implementation. This study contributes to the broader discourse on educational methodologies in entrepreneurship and their effectiveness in preparing students for real-world challenges, offering valuable insights for educators and policymakers in shaping future curricula.

Haruki Takeuchi

GA - University of Georgia

Discipline: Natural and Physical Sciences

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Abstract Name: Bioengineering Heparan Sulfate to Create a Safe and Effective Heparin Alternative

Heparin is one of the most widely utilized drugs in the world and is a potent anticoagulant that is routinely prescribed for treating deep vein thrombosis and pulmonary embolism during surgery and in the acute care setting. Currently, therapeutic heparin is a fractionated form of heparan sulfate derived from animal sources, predominantly from connective tissue mast cells in pig mucosa sourced from China. Heparin's anticoagulant activity is based on its ability to bind to and enhance the inhibitory activity of the plasma protein antithrombin III (AT) in the coagulation cascade. Unfortunately, 2-5% of patients on heparin therapy develop a life-threatening side effect known as heparin-induced thrombocytopenia (HIT), which results from the formation of heparin-platelet factor 4 (PF4) immunoreactive complexes. Thus, there is an urgent need for safer, alternative sources of heparin. Since PF4 binding to heparin depends on distinct binding sites compared to AT, we hypothesized that cells could be engineered to produce anticoagulant heparan sulfate with decreased PF4 affinity. In this project, we utilized genome-wide CRISPR/Cas9 screens to search for regulatory factors that could be harnessed to bioengineer an anticoagulant form of HS with enhanced affinity to AT and lower PF4 binding. From these screens, we uncovered novel regulatory factors and distinct HS proteoglycan proteins as modulators of both HS expression and AT binding. Future studies include validation of top hits using flow cytometry, mass spectrometry, and bio-layer interferometry to investigate site-specific glycosylation of proteoglycans and identify novel regulatory mechanisms of heparin biosynthesis in cells.

Alexandra Talarico

PA - Drexel University

Discipline: Natural and Physical Sciences

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Abstract Name: Testing Novel Brain-Permeable ACSS2 Inhibitors to Block Breast Cancer Brain Metastatic Growth In Vivo

Triple negative breast cancer is the most aggressive subtype of breast cancer commonly resulting in metastasis to the brain. This diagnosis is terminal with a median survival of 6 months and no forms of targeted therapies, thus there is an urgent need to develop novel treatments against breast cancer brain metastasis (BCBM). BCBM have been shown to adapt their metabolic needs in the stressful low lipid environment of the brain becoming heavily dependent on acetate as a fuel to generate lipids. Acetate can be converted to acetyl-CoA, the backbone of de novo lipid synthesis, via the enzyme Acetyl-CoA synthase 2 (ACSS2). ACSS2 is elevated and required for breast cancer growth in the brain and not in the mammary

gland making ACSS2 a BCBM-specific target. Using a computational pharmacophore-based shape screen, we identified novel compounds that bind to ACSS2 at high affinity and are predicted to be stable and cross the blood brain barrier (BBB). Here, we show that novel ACSS2 inhibitors 5584 and 8007 can block BCBM cell lipid stores and growth in vitro. Importantly, we show that these inhibitors cross the blood brain barrier and reduce tumor burden in vivo with no observable toxicities. Taken together, these results identify novel brain permeable ACSS2 inhibitors that show promise as therapeutics to block breast cancer brain metastatic growth in vivo and may serve as candidates for further drug development as agents for treating patients with breast cancer brain metastasis.

Spencer Talbot

PA - Thomas Jefferson University

Discipline: Humanities

Authors:
#1 Spencer Talbot

Abstract Name: Transcription and Digital Accessability in Primary Source Documents

The Lyell Project, in association with the University of Cambridge, Edinburgh University, and the American Philosophical Society compiles primary source documents to be published digitally alongside transcriptions. This project is a case study of 100 letters from Charles Lyell, with transcriptions and high-resolution images uploaded to the host domains of these organizations. This case study shows both the increase in engagement, ease of use, and potential for scale of digital archives and the lowering of multiple barriers through digital archiving. Digital archiving of this kind allows researchers internationally to access these documents, without the fiscal barrier of traveling to the host library. In the same regard, it enables information sharing between institutions, alongside promoting collaboration. Additionally, the project allows international researchers to access the primary source documents through transcriptions, as the use of digital translators opens information to those who cannot read English in its primary source form, instead allowing for accessible translations.

JuliAnn (Simon) Talcott

FL - University of West Florida

Discipline: Natural and Physical Sciences

Authors:
#1 Simon Talcott
#2 Youngil Lee

Abstract Name: THE EFFECT OF KETONE BODIES AND AICAR ON HUMAN NEURONAL CELLS WITH MPP+ INDUCED PARKINSON'S PATHOLOGY

Parkinson’s Disease (PD) is the second most common form of neurodegenerative disease, resulting from the death of neuronal cells in the substantia nigra. Evidence suggests both genetic and environmental factors play a role in PD development. This study focuses on determining the effects of two potential environmental factors, diet and exercise, in order to develop future therapeutic methods for treating PD. Specifically, this study tested how the ketone body **β**-hydroxybutyrate (BHB) and the exercise mimetic AICAR affect the protein expression of MPP+ treated cells. Oxidative stress provoked by a surge of reactive oxygen species (ROS) due to mitochondrial injuries is a significant hallmark of PD. Given that BHB and exercise improve

antioxidative capacity and mitochondrial biogenesis, this experiment investigated the cellular and molecular protective mechanisms of BHB and a combination of BHB and AICAR. The concentrations of antioxidants and protein markers of mitochondrial biogenesis, autophagy, and proliferation were compared between groups using the Western Blot procedure. Only one protein, mTOR, showed a significant difference between the control and MPP+ treated cells. However, the proteins p-mTOR, p-AMPK, and PGC-1 showed some differences between AICAR and non-AICAR treated cells. While there were few significant differences between groups, there were many nonsignificant trends, indicating the potential for differences between groups given a larger sample size.

Sohan Talluri

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Sohan Talluri
#2 Josquin Moraly
#3 Christopher Chien
#4 Naomi Taylor

Abstract Name: Characterizing Metabolic Remodeling Induced by Tonic Signaling of Chimeric Antigen Receptors

T cells expressing tumor-targeting chimeric antigen receptors (CARs) have shown remarkable response rates in treating patients with hematologic malignancies. Prior work has demonstrated that modulation of the costimulatory domain and scFv linker can confer enhanced CAR-T cell cytotoxicity, persistence, and stem cell-memory phenotype, but the impacts on CAR-T cell metabolism remain unclear. In particular, prior clinical trials of short-linker and long-linker CD22-targeting CAR constructs demonstrated that only the short-linker CAR exhibited high antigen-independent tonic signaling, resulting in a significant level of complete remission. In this study, we performed metabolic and functional assays to characterize the metabolic profiles conferred by various CD19 and CD22 CAR constructs. Tonic signaling levels of the CAR-T cells were quantified via immunoblot analysis of the phosphorylated CD3ζ chain, with metabolic profiling conducted via Seahorse Extracellular Flux Analyzer and flow cytometry-based translation inhibition profiling (SCENITH). To interrogate cytotoxicity, the CAR-T cells were cocultured with NALM6 leukemia cells at 1:1, 1:2, and 1:5 effector:target ratios, with multiple tumor restimulations. We observed that the glycolytic activity of all CAR-T cells was higher than that of the mock-transduced T cells, and that despite similar levels of glycolytic and mitochondrial metabolic activity, the CD22 long-linker CAR exhibited greater cytotoxicity than the short-linker CAR at low effector:target ratios. These results suggest that tonic signaling by both CD19- and CD22-targeting CARs induces metabolic remodeling of the T cell, promoting the engineering of metabolically distinct CARs for greater efficacy in treating patients with relapsed/refractory cancers.

Kellie Tamimi

FL - University of West Florida

Discipline: Health and Human Services

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#2 Shusen Pu

Abstract Name: Understanding Salivary pH vs Life Satisfaction Through Perceived Stress and Sleep Quality

Life satisfaction significantly influences various life aspects, such as motivation, purpose, resilience, and overall well-being. Defined by Anataramian (2017) as a cognitive assessment of life quality, it forms an integral part of subjective well-being. Notably, Halkos and Bousingakis (2010) identified a positive relationship between life satisfaction and academic performance. Complementing this, Palmore and Luikart (1972) discovered a correlation between life satisfaction, organizational activity, internal control orientation, and perceived health. Recognizing the critical role of life satisfaction, this research further investigates its association with sleep quality and perceived stress. Lee et al. (2016) uncovered an indirect correlation between perceived stress and life satisfaction, while Shin and Kim (2018) affirmed a direct connection between sleep quality and life satisfaction. Moreover, existing literature, including findings by Dickman et al. (2007) and Cohen and Kaliha, indicates a correlation between salivary pH, sleep quality, and perceived stress. Given these insights, the study aims to examine salivary pH as a viable, economical biomarker for life satisfaction, particularly considering the potential influences of sleep quality and perceived stress. The study focused on the student population to establish a foundational correlation between salivary pH and life satisfaction. Participants answered screening questions, completed the Perceived Stress Scale-10 and Pittsburgh Sleep Quality Index, and provided saliva samples as per researcher guidelines. Data analysis will encompass various statistical methods, including correlation analysis, regression models, and t-tests, supplemented by descriptive statistics to characterize the sample. The anticipated results are hypothesised to substantiate the indirect correlation between salivary pH and life satisfaction. This finding could pave the way for utilizing salivary pH as an accessible and cost-effective means to evaluate life satisfaction. If confirmed, this correlation suggests the potential of salivary pH as an indicative biomarker for life satisfaction, offering valuable insights into student health and well-being.

Lilli Tamm

NY - University of Rochester

Discipline: Natural and Physical Sciences

Authors:
#1 Lilli Tamm
#2 Jeffrey Hayes
#3 Ashok Kumar

Abstract Name: Building bridged nucleosomes to evaluate sterically-hindered linker histone folding

This project aims to examine H1 CTD condensation across varying linker DNA distances through the use of DNA origami. Nucleosome cores are connected by 20-70bp of linker DNA, allowing for the formation of higher-order chromatin structures. Upon binding to the nucleosome, the linker histone (H1) CTD is thought to “collapse” into an undefined structure, while the two linker DNAs are brought closer together. Fang et al. showed that CTD condensation appears impacted by steric interactions with adjacent complexes. To examine the effects of steric hindrance on H1 folding, a base of 167bp was synthesized from plamsid DNA using tailed PCR. THe base was then digested to yield sticky ends at which assymmetric 60bp oligonucleotide duplexes could ligate. A ssDNA linking "bridge" could then be inserted between the duplexes, transforming linker DNA into a steric boundary. Bridges of different length allowed for the study of the effects of varying degrees steric hindrance on H1 folding, which will be evaluated with FRET spectroscopy.

Amlake Tamrat

MN - Minnesota State University - Mankato

Discipline: Mathematics and Computer Science

Authors:
#1 Amlake Tamrat

Abstract Name: Human Activity Recognition

Human Activity recognition (HAR) is the interpretation of human motion using machine and computer vision. Human activity recognition refers to physical detection of various human activity. Human activity is different from one to another due to their purpose, for example, behavioral analysis, health monitoring, fitness tracking and others. Before going out to the real world this device learns about what they have to detect and consider. The detection of these activities is made possible through the integration of video cameras, wearable physiology and motion sensors. For detection of meaningful information sensors use machine learning and data mining to provide information, even though it faces its own difficulties. An illustrative example is especially figuring out the transition of when the activity is started and ended to the actions that have similar natures for instance distinguishing when a person starts jogging after they have been walking. We could work on that problem to find a better solution. Regardless of solving problems like sensor motion, sensor placement, cluttered background, and inherent variability in HAR, they are commonly employed sensing technologies in HAR system with their computational models. Computational models powered by machine learning and data mining continue to be at the forefront, offering valuable insights into human activities while paving the way for more refined and accurate HAR solutions. The ongoing exploration of innovative methodologies is essential to overcome the problems we have encountered.

Primrose Tanachaiwiwat

FL - University of Florida

Discipline: Natural and Physical Sciences

Authors:
#1 Primrose Tanachaiwiwat
#2 Alden Estep

Abstract Name: Development of an Assay to Assess Target Site Resistance in Organophosphates in Culex quinquefasciatus

Insecticide resistance in Culex quinquefasciatus may be a major factor in the continued transmission of vector-borne diseases such as West Nile Virus, other encephalitides, and filariasis. In Miami-Dade County, where 20% of vector-borne diseases are transmitted by Culex mosquitoes, effective vector control is a primary concern and recent surveillance efforts have shown widespread insecticide resistance to the pyrethroids. Notably, these same studies found that insecticide resistance to organophosphates, like malathion, was much more variable from population to population, thus inviting the need for a tool to rapidly assess OP resistance. To determine possible mechanisms that may explain these differences in organophosphate resistance, we colonized five populations and determined resistance intensity by topical application of malathion. Following the bioassay, we then conducted acetylcholinesterase long-read transcript sequencing via Nanopore from susceptible and organophosphate resistant Miami-Dade Culex quinquefasciatus populations, which revealed the presence of a single nucleotide polymorphism in the most resistant strains -- this may confer target site resistance to organophosphates. This mutation, which results in a glycine to serine change (G --> S) in the acetylcholinesterase protein, may have significant operational implications. We subsequently developed a competitive melt curve assay, using unpurified mosquito homogenate, to rapidly identify this mutation. We found a strong correlation between the frequency of this single nucleotide polymorphism and malathion resistance intensity. This study provides a toxicogenomic marker of organophosphate resistance in Florida Culex quinquefasciatus and provides an additional

integrated vector management tool that can be used to rapidly identify populations likely to be poorly controlled by organophosphates.

Akira Tanaka

WI - University of Wisconsin-Superior

Discipline: Business and Entrepreneurship

Authors:
#1 Akira Tanaka

Abstract Name: Global Food Insecurity and Agricultural Sustainability: A Comparative Analysis of Selected Developed and Developing Countries

Amid escalating global food insecurity, the SURF Development Award 2022 facilitated an in-depth exploration of the interplay between declining agricultural labor and advancements in precision agriculture, focusing on the United States, Wisconsin, and its neighboring states. While technological progress has augmented farm efficiency, it has concurrently reduced the need for human labor in farming. An alarming 65.7% decline in farms was noted from 1920 to 2019. Data spanning 1995-2018, sourced from federal and state levels, confirmed these findings. Building on this, the intended application for the SURF Fellowship Award 2023 aims to enhance the study by incorporating key socioeconomic variables, such as access to broadband internet and financial loans for advanced agricultural tools, in both high and low-middle-income countries. This endeavor will not only provide a comparative analysis between nations but will also delve deeper into the scenario in Northwest Wisconsin counties. The objective remains to discern if initial observations persist when juxtaposed with broader, diverse datasets.This study employs data analysis utilizing Stata, and the data was collected from the World Bank Data. Results from the regressions indicate that fertilizer applied, and agricultural land positively influence the food production index. While the Hausman Test suggests fixed effect model works better with the project, both fixed effect and random effect models suggested a similar result. The result of the project suggests that investment in technologies is likely to increase the country's food security.

Jasmine Tang

NY - SUNY Geneseo

Discipline:

Authors:
#1 Mary Daw
#2 Jasmine Kong-Yan Tang

Abstract Name: The Most Common Challenges of Teaching Literatures in Myanmar

This study explores the challenges encountered by English literature teachers in Myanmar universities during the first semester of the academic year 2022-2023. The research, conducted through a questionnaire and semi-structured interview distributed to 10 female and 12 male instructors, identifies key impediments to teaching literature. Results indicate that instructors perceive students' language proficiency, the linguistic and stylistic complexity of texts, and the degree of cultural familiarity as pivotal factors affecting the teaching-learning process. Noteworthy strategies employed by instructors to address these challenges include bridging the gap between students and literary texts by relating themes and characters to personal experiences and promoting independent reading. The findings contribute to a better understanding of the obstacles faced by

English literature teachers in Myanmar, offering insights for the improvement of teaching practices in this context. Keywords: challenges, teaching literature, English literature teachers, Myanmar

Masa Tantawy

EGY - The American University in Cairo

Discipline: Social Sciences

Authors:
#1 Masa Tantawy

Abstract Name: Gender and Social Media: Delving into Young Adults' Daily Participation on Facebook How Does the Social Construction of Gender Affect and is Affected by Social Media?

With the prevalence of social networking platforms, it is crucial to study the role that gender plays in its use, for gender, which is continuously shaped by society, plays a critical role in our identities and daily lives. This paper explores how the social construction of gender affects and is affected by social media through discussing the usage of Facebook by young adults, especially Middle Eastern males and females, and women's limited freedom on this social networking site in the Arab countries. It is argued that social media gives space for one to choose who they want to be and represent themselves away from the social constructs, acting as a tool for beautification, while at the same time maintaining the restrictions women face by the society on their online behaviour. The main focus of this paper is on young adults since they are the dominant age group of users and on the use of Facebook due to its popularity and multi-functionality that allows an offering of tailored user experience. It is concluded that gender differences play a significant role in how social media is used since women tend to use social media for emotional interpersonal purposes while men use them in task-oriented individual manners alongside multiple other dissimilarities. Additionally, users tend to present an edited version of themselves online due to societal pressures and norms, and particularly women in the middle-east struggle to have complete liberty in their online behaviour.

A. Tanvir

CO - University of Colorado at Boulder

Discipline: Natural and Physical Sciences

Authors:
#1 A. Tanvir

Abstract Name: Analysis tool for Mapping and characterization of Climate, Chemistry, and Clouds of Exoplanets (including promising Terrestrial planets) using MIRI (Mid-Infrared Instrument) Phase Curve Program of James Webb Space Telescope(JWST).

In this project we are utilizing data gathered by the JWST(James Webb Space Telescope) to understand the atmosphere of transiting exoplanets. The purpose is to create a framework to analyze atmosphere of exoplanets by using datasets derived from the observations of exoplanets' atmosphere from recently launched JWST(James Webb Space Telescope). I will also present findings based on the investigations of the star spots of transiting exoplanets with the ground based telescopes. I will be using simulated data to attain the necessary skills and techniques over the course of an academic year . These techniques are utilizing data from JWST. Data are in the process of being more and more available.MIRI (Mid Infrared Instrument) onboard JWST helps to study very high redshifted entities for example galaxies in the distant universe. MIRI can pierce through dust to study and take images to study chemistry of the planet formation regions and take images of planets' atmosphere including our own Earth.In addition, on a larger grand scheme of scientific applications, it is important to study the high redshifted objects, because the signature of metals in the the universe moves to the wavelength of the Infrared which MIRI will be able to study. MIRI is operating over a wavelength range of 5 to 28 microns. This instrument onboard JWST has a camera as well as a mid-infrared

spectrograph. A spectrograph is an instrument for dispersing radiation (electromagnetic radiation or sound waves) into a spectrum and recording the detected light into a multichannel detector Main goal is to showcase scientific findings by proposing processes of an open source software framework which will leverage interdisciplinary segments of astrophysics that consist of physics of optics, data analysis, instrumentation (MIRI) onboard JWST, infrared spectrography, planetary atmosphere of a transiting exoplanet, and software development in open source python-jupyter notebook.

Katie Taran

NC - North Carolina State University

Discipline: Engineering and Architecture

Authors:
#1 Katie Taran
#2 Kyla Bosh
#3 Katherine Saul
#4 Jacqueline Cole

Abstract Name: Changes in Bone Growth and Mineralization Rates following Brachial Plexus Birth Injury

Brachial plexus birth injury (BPBI), a neuromuscular injury occurring during a difficult birth when the neck is excessively stretched, damages the brachial plexus nerve bundle leading to shoulder and elbow impairment. Resulting musculoskeletal deformity occurs around the glenohumeral joint, which facilitates functional shoulder range of motion and movement. While previous studies assessed specific impairments including mineralization rates and bone deformities caused by BPBI, they only examined one time point post-injury when deformity was already established. Our objective is to create a timeline over which these deformities develop and understand their impact on shoulder growth and function.Sprague Dawley rats (n=9-60 per timepoint) were divided into 4 surgical groups (postganglionic or preganglionic neurectomy, forelimb disarticulation, or sham) and received surgery on one forelimb at postnatal days 3-6, followed by sacrifice at 2, 3, 4, 8, or 16 weeks after surgery. Calcein and alizarin fluorochrome labels for bone were injected in the rats prior to sacrifice. The humeri were dissected, sectioned into transverse and longitudinal sections with a cryotome, imaged, and analyzed using standard dynamic histomorphometry. Metrics were compared across groups with ANOVA and Tukey posthoc tests (GraphPad Prism, α<0.05).Preliminary results for the postganglionic group indicate that bone volume per total volume ratio was greater at 8 weeks than at 4 weeks, while bone tissue cross-sectional area and cortical bone area were lower at 8 weeks than at 4 weeks (p<0.05). Endosteal and periosteal mineral apposition rate and bone formation in the postganglionic group were also greater at 4 weeks than at 8 weeks for both injured and uninjured limbs. These results suggest that BPBI reduces bone growth and mineralization over time during early postnatal development. Understanding when bone trabecular architecture is altered following BPBI is critical for developing more targeted and timelier treatment strategies.

Maira Tariq

NY - Brooklyn College

Discipline: Health and Human Services

Authors:
#1 Maira Tariq

Abstract Name: How do cultural ideologies affect children with special needs and how they are raised?

Our lives are greatly influenced by culture since it shapes so many aspects of our lives. For instance, the way we approach and interpret life's circumstances. My topic focuses on The impact of culture on children with special needs. Especially their mental health. I chose this topic because parents find it challenging to accept this and provide their children with the best care possible, and this topic is not discussed enough. A lot of parents have children with special needs, but they don't know how to take care of them and are not educated on their condition. While some parents can accept reality and make an effort to educate themselves on their child's condition, the majority of parents refuse to acknowledge that their child has special needs and will live in denial for a very long time. Raising a child with special needs is undoubtedly challenging; some families become closer as a result, while other families grow apart and experience many conflicts. It's critical to understand that children with special needs will gain a lot by receiving the assistance they require and that parents who downplay their child's special needs are not benefiting their child. Due to the stigma associated with having a child with special needs in most countries, parents often choose to hide their child’s condition, even when it is apparent to others. This is not right, and by refusing to accept that their child has special needs, parents are making the situation worse. Children with special needs require more love, care, and support from their families. I hope that this research will help parents understand the value of supporting their children and how to find resources to do so.

Lauren Tarter

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Lauren Tarter

Abstract Name: Hero, Villain, Victim, or Fool: The Evolution of Disability Representation in Children's Visual Media

It is every human being's right to seek understanding and seek to be understood. Under the American government, this protected freedom of expression is never more prevalent than in American contemporary media. However, assuring this right is upheld for all facets of human diversity in American media is a complex and ongoing process. This research examines the representation of disability in children's media to demonstrate how archetypal representation leads to a generalized and incomplete understanding of disability. In response to this examination, this research proposes the concept of Productive Representation: representation that seeks to culturally integrate abled and disabled individuals through humanizing, naturalizing, and giving voice and equal participation in culture to disabled people. This new criterion for the representation of disability encourages expression that is purposeful and goal-oriented. Through examining archetypes currently existing in media through the lens of the medical, social, and cultural models of disability, this research will demonstrate the stereotyped perception of disabled people as a minority culture in America. Second, the comparison of both nonproductive and productive character examples will be provided to advance the notion of Productive Representations. Third, this examination will briefly discuss how Productive Representation can be used by educators to further the goal of cultural integration within the classroom setting.

Madison Tate

DC - Howard University

Discipline: Natural and Physical Sciences

Authors:

#1 Madison Tate
#2 Anne Osano

Abstract Name: Effects of Different Drying Methods on the Nutritional Properties of Powdered Beetroot (Beta vulgaris)

Beetroot is a biennial highly perishable root crop whose cultivation has gained popularity among farmers in Kenya. It’s abundant health properties is a fundamental reason why it is included in specialty diets. Obtaining a dried product from beetroot would be a solution addressing the perishability of the crop and extending its shelf life. The objective of this project is to investigate the the effects of different drying methods (ie. oven, sun, and solar) on the nutritional properties of the dry powder of the crop. The use of biochemical and spectrometry analytical techniques specifically, the study employed the titrimetric method, and the atomic absorption spectrophotometric method to determine the levels of vitamin C, total phenolic content, and mineral (iron, zinc, potassium), respectively. The obtained results showed that oven drying retained the highest amount of vitamin C, whereas, sun drying retained the least. Additionally, solar drying retained the highest total phenolic content, while oven drying retained the lowest total phenolic content. Lastly, solar and oven drying retained the highest average mineral concentration.

Ethan Tate

KY - University of Kentucky

Discipline: Mathematics and Computer Science

Authors:
#1 Ethan Tate
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Nikhil Akula

Abstract Name: Herculaneum Spectral Enhancement

In the pursuit of deciphering the text concealed within opened Herculaneum scrolls, the inherent challenge lies in the often imperceptible contrast between ink and papyrus. This research project aims to enhance the readability of such ink through spectral imaging using infrared photography. The approach involves capturing 16 raw images of each Herculaneum tray under unique wavelengths (420-1050 nm), revealing a wide dynamic range that lacks inherent contrast. To address material variations across trays, four different enhancements are applied. The primary goal is to develop a method for generating a singular "best contrast" image for each tray, deviating from the traditional practice of providing multiple enhancements to scholars. The proposed solution integrates a convolutional autoencoder with a clustering algorithm, clustering scrolls into groups to determine the most effective image enhancement for each cluster. Through this innovative approach, we aim to optimize the selection and application of enhancements, offering a promising solution to the challenge of interpreting opened Herculaneum scrolls.

Chloe Taylor

GA - Fort Valley State University

Discipline: Natural and Physical Sciences

Authors:
#1 Chloe Taylor
#2 Mark Cheng

Abstract Name: Flexible Energy Sources Using Embedded PVDF Films

Power is required for wearable devices. In this research, we have focused on self-powered energy sources that can harvest both mechanical from motion as well as magnetic field. Due to high piezoelectric coefficient, outstanding stability, and excellent flexibility. b-phase polyvinylidene fluoride (PVDF) is the most well investigated piezoelectric polymer material. Because PVDF lacks magnetic characteristics we use Iron (III) Oxide magnetic nanoparticles to introduce magnetic properties. This summer I investigated the embedding of Iron (III) Oxide nanoparticles (magnetic) in PVDF films with two distinct Iron (III) Oxide mass fractions, (1) 20%,(2) 40% and one without any magnetic property (added 40% Iron (III) Oxide , alphas phase) as a control, as well as their applications.

Cree Taylor

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 McRee Taylor

Abstract Name: Anthropogenic Ocean Acidification Mitigation: Potential for the Expansion of an Interactive Multi-Tropic Bioremediation System in the Chesapeake Bay

Zostera marina is a species of marine macrophyte that has been largely prioritized in past submerged aquatic vegetation (SAV) restoration initiatives within the Chesapeake Bay because of its 1) previous abundance, 2) demonstrated carbon burial abilities, and 3) observed ability for meadows of Z. marina to ameliorate low pH conditions. Due to the temperature variability and poor water quality associated with anthropogenic disturbances in the Chesapeake Bay, Z. Marina beds have experienced several die-off events with limited capacity for regrowth. This meta-analysis explored the possible benefits of focusing future SAV recovery initiatives on ensuring a diverse variety of SAV species with varying environmental stressors so that SAV coverage may be maintained. Ruppia maritima, an opportunistic species with a tolerance to environmental shifts within the bay, may have the potential to maintain SAV coverage in areas experiencing Z. marina die-off. The potential benefits of calcium carbonate production via calcifying organisms such as Thalassia testudinum and Crassostrea virginica are also investigated. If the location of SAV and bivalve restoration efforts take the environmental needs of each organism into account, each species may be able to observe an increase in productivity and an increased ability to carry out biological functions, such as photosynthesis and calcification, with the support of the other organisms present in the Bay's ecosystem. Given the recent shifts in environmental qualities of the bay, this meta-analysis may have implications that could assist the formation of a more effective ocean acidification management strategy with a potential for increased longevity. Evidence from this study suggested that future SAV research initiatives in the Chesapeake Bay could investigate how biodiverse and traditional Z. marina beds compare in terms of pH modulation abilities, as well as how the strategic placement of calcifying organisms nearby restored SAV beds may impact the beds ecosystem services.

Brandi Taylor

GA - Spelman College

Discipline: Natural and Physical Sciences

Authors:

#1 Margaret Farrow
#2 Merina Dhakal
Merina Dhakal
Margaret Farrow

Abstract Name: Testing for Spelman College Students

Testing for Spelman College Students

Jessica Taylor

TN - University of Tennessee at Knoxville

Discipline: Interdisciplinary Studies

Authors:
#1 Jessica Taylor
#2 Cary Staples
#3 Dr. Kimberly Gwinn

Abstract Name: From Pods to Profit: Designing a Game across Disciplines

Drawing on interdisciplinary expertise from farmers, biologists, computer scientists, and economists, “From Pods to Profit” addresses the pivotal question: Can sustainable agriculture be profitable? By navigating the complexities of farming decisions, the game serves not only as a valuable educational tool but also fosters collaboration in game development across diverse fields, highlighting the importance of effective communication in translating information into a cohesive gaming experience. This project emerged from the transformation of the card game "Can You Farm?" initially conceived by agriculture students under Dr. Kimberly Gwinn. Evolving into a web-based experience, the game immerses players in soybean farming, challenging them to make decisions impacting individual, local, and global scales. Navigating seasons fraught with real-world challenges like droughts, floods, diseases, and insects, players must balance financial considerations with organic and sustainable farming practices. To create the appropriate design values, inspiration was drawn from tycoon and economic simulation games while staying rooted in biopesticide research, mimicking authentic farming challenges.The project emphasizes the vital role of effective communication in translating complex agricultural concepts into an engaging game format. As noted by Erickson (2000), the challenge lies in the diverse perspectives of designers, engineers, managers, marketers, researchers, and users. The game's development underscores the necessity for a shared language and collaboration between disciplines, fostering a common ground for the effective design of an educational game tailored to a diverse audience. "From Pods to Profit" not only stands as a testament to the potential profitability of sustainable agriculture but also exemplifies the power of collaboration in creating an immersive, educational, and entertaining experience.

Oliver Tebbetts

TX - Texas Woman's University

Discipline: Health and Human Services

Authors:
#1 Oliver Tebbetts
#2 Renee Blanchard

Abstract Name: Effects of Autism and Gender Diversity on Identity Formation During Adolescence

Autism Spectrum Disorder (ASD) is one of the quickest growing diagnoses in the country, with the number of children who are diagnosed doubling in the last decade (CDC, 2020). These children are more likely to struggle with intense emotion and prosocial behaviors, which limits their adherence to social norms (Oerlemans et al., 2018, p. 1043). Additionally, they are more likely to possess deviations from common gender schemes, creating feelings of dysphoria or gender incongruence (George & Stokes, 2018, p. 977). Due to the nature of ASD, autistic individuals typically experience gender differently from binary masculine and feminine identities, using labels which fall under “gender diverse.”This study aims to analyze the identity formation experiences of gender-diverse and autistic individuals in order to discover intersections that may exist among these identities. James Marcia’s (2012) identity status theory will be used to analyze how ASD and gender diversity may affect the formation of identity in adolescence. This study will utilize a phenomenological, qualitative method. Data analysis will include coding to determine common themes among responses (Miles et al., 2014). Data will be collected via semi-structured interviews with individuals over 18 years of age and who have a diagnosis of ASD and consider themselves to have a gender diverse identity. Findings from this study will increase understanding of individuals with these identities and allow medical professionals to offer more effective resources and support. Common themes researchers may find include: fear or shame due to gender identity, gender incongruence at a young age, dismissal of typical gender schemes, and personal associations of ASD with gender identity. It is also expected to be concluded that both ASD and gender diversity play a defining role in identity formation during adolescence, and as a result, the individual’s perception of themselves and others' perceptions of the individuals are altered.

Isaac Tebele

NY - Brooklyn College

Discipline: Business and Entrepreneurship

Authors:
#1 Isaac Tebele

Abstract Name: Why does the carry trade exist work, and how effective can it be?

The carry trade is when a person borrows a currency with a low-interest rate to invest in a higher interest rate currency to make the spread. According to interest rate parity theory, this investment strategy should be irrational, since the difference in two countries' interest rates should equal the depreciation or appreciation of the currencies. Therefore, any spread you make on the trade should be lost to inflation. In practice, however, this doesn’t hold. It is common for people to profit from carry trading in times of low volatility. This study investigates why this market imperfection exists and if carry trading is a sustainable long-term strategy. I examine the G10 currency's inflation and interest rates over the last ten years to see what extent interest rate parity holds. I also study external factors to explain why some currencies appreciate and depreciate more than expected. I factor in the bid-ask spread and inflation rates to see how the strategy compares to the market and risk-free rates to determine if the strategy is viable. I show that interest rate parity does exist, and risk helps explain market imperfections. The potential for capital gains with G10 currencies is low, and thus, a carry trading strategy is only viable as a low percentage of a consumer's portfolio. This research is valuable as it can help investors inform their trading practices. After reading this thesis, investors will know why carry trading isn’t a favorable investment method and is unlikely to produce significant returns.

Zahra Tehrani

IN - Purdue University Main Campus

Discipline:

Authors:
#1 Zahra Tehrani
#2 Chaonan Liu
Chaonan Liu

Abstract Name: Improving Undergraduate Research Experiences Through Graduate Mentor Training: A Transformative Model Across STEM and Beyond

The Entering Mentoring (EM) mentor training curriculum has been well-studied and shown to promote positive outcomes for research faculty mentors. However, evidence related to the impact of mentor training for graduate students who are mentoring undergraduate researchers is limited. The Future Mentors (FM) program was launched at the John Martinson Honors College at Purdue University in 2021 to increase student access to high-quality mentored research experiences in STEM. Adapted from the EM curriculum, the FM program employs a comprehensive model offering a structured training course as well as a guided community of practice with the goal of equipping graduate students with evidence-based tools and strategies for the effective mentoring of undergraduate researchers across racial, ethnic, and gender differences. In addition, mentors gain practical experience by working concurrently with matched undergraduates from the Honors College. Positive feedback has emerged consistently from both the graduate mentors and the undergraduate mentees across all three iterations of the program. This presentation will highlight 1) the structure of the model, 2) key assessment outcomes for mentors and mentees from the third iteration of the program, and 3) reflections on the successes as well as the practical challenges of implementing a graduate mentor training program in undergraduate research programs. Dissemination of the FM model and experiences may offer valuable resources for institutions, faculty and staff who seek to initiate similar programs or courses to enhance the mentorship culture for undergraduate student research experiences within their academic communities.

Erik Tejeda

IL - University of St. Francis

Discipline: Natural and Physical Sciences

Authors:
#1 Erik Tejeda
#2 John Hejl
#3 Katie Chamberlain
John Hejl

Abstract Name: EFFECTIVENESS OF VR-BASED STRESS REDUCTION ON PEOPLE WITH ACUTE INDUCED STRESS.

Stress is a biological response shared by all organisms, yet the manner which organisms experience it is vastly different. There is no direct sensor which can measure stress but there are a variety of physiological markers that are impacted by stress and can be measured. Such markers include increased galvanic skin response (GSR), heart rate, and blood pressure. There are numerous ways to manage stress but modern technologies like virtual reality (VR) can offer new ways to manage stress. In this study, the effect of VR on stress levels was assessed in situations with and without acute stress. Participants were asked to either sit quietly or they were placed into a VR naturescape after either an induction of acute stress or remaining seated quietly. In situations after acute stress was present, those who were placed into VR showed a statistically significant 5.89 mmHg decrease in mean arterial blood pressure (MAP) ($p=0.000149$). No significant difference in MAP was found in those that were not placed into VR after an induced acute stress situation

(p=0.7928). A drop of 0.199 volts in GSR (p=0.0172) was seen by those using VR after an induced acute stress event as well as those that were not using VR after the stress event. This indicated that VR is as effective as sitting quietly at lowering GSR. Self-reported results indicated that participants felt 22% greater stress reduction after using VR than if they were just sitting (p=0.02029); however, this was only found in groups that had not been exposed to an acute stress event. No significant changes were observed in heart rates when using VR. Our findings suggest that VR can lower GSR and MAP; however, additional testing is needed to make a general conclusion about its effectiveness.

Kshitij Teotia

MA - Massachusetts Institute of Technology

Discipline: Natural and Physical Sciences

Authors:
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#2 Ashrita Gandhari
#3 Nihitha Reddy
Nihitha Reddy
Ashrita Gandhari

Abstract Name: High-Accuracy Machine Learning Approach for Medical-Imaging Cataract Classification

Thesis/Objective: Cataracts, a leading cause of visual impairment and blindness worldwide, can be effectively managed and treated with early diagnosis. In an attempt to reduce misdiagnosis and increase the efficiency of the process, machine learning has emerged as a promising tool for automated cataract detection by analyzing medical-grade images. This research paper outlines a comparative study of various machine learning models for the purpose of cataract detection, eventually utilizing an InceptionV3 architecture to predict cataracts with 91.02% accuracy. Methods: Our study parsed ~6300 binary labeled optical coherence tomography (OCT) eye scans in order to build an effective dataset. From this dataset, we tested a variety of machine learning modes in the range of convolutional neural networks (CNNs) such as InceptionV3, VGG16, DenseNet121, ResNet50, and MobileNet. Each model was also evaluated with a variety of flat/dense layers to most optimally predict the cataract. Results/Findings: The most optimal model at the end predicted the correct cataract from the image 91.67% of the time with a 0.92 ROC-AUC score. This model used an InceptionV3 architecture along with a flatten/dense layer to work the best. Conclusion/Impact: In conclusion, this research paper underscores the potential of machine learning, particularly the usage of the InceptionV3 model, as a valuable tool in cataract diagnosis. Our work contributes to the growing body of knowledge in the field of medical imaging analysis and paves the way for more accurate and efficient cataract detection systems, ultimately benefiting patients and healthcare providers.

Mason Terra

MA - Bridgewater State University

Discipline: Visual and Performing Arts

Authors:
#1 Mason Terra

Abstract Name: Exploring Life and Loss Through Oil Paintings

This project aimed to create a series of eight to ten large-scale artworks on handcrafted canvases. These

artworks explored themes of grief, self-image, love, and the delicate nature of life, using an expressive and abstract style. The main goals included improving technical skills, strengthening the portfolio for better opportunities in getting a graduate degree or finding jobs, and raising funds for a semester abroad in Florence, Italy. Taking from painting courses and reflections on abstract art seen in museums, the project focused on understanding the balance between technical precision and intuitive creativity needed for outstanding art. Aspects like using harmonious colors, carefully placing subjects, technique, and design played crucial roles in creating these paintings The project aimed to blend personal perspectives with acquired skills, injecting fresh ideas into the art world. Taking notes, sketching extensively, and painting prolifically helped to develop skills further, and learning from celebrated artists' techniques added to this growth. Embracing the "neo-expressionism" style, characterized by intense themes and bold medium use, the project was inspired by artists like Jean-Michel Basquiat,and Keith Haring. The resulting artworks were vibrant and immersive, briefly offering viewers a glimpse into the artist's view. The themes in the paintings acted as channels to convey emotions and thoughts, fostering the artist's growth and connecting with others. While each canvas had different content, the distinctive artistic style remained consistent. Using larger canvases allowed for exploring diverse subjects and evoking deep feelings on a larger scale. This interaction required viewers to step back and understand the artwork's size, creating a sense of intimacy and connection. It allowed for broader brushstrokes, thicker layers of paint, and vibrant colors to evoke dynamic motion that is hard to achieve on a smaller scale.

Emily Tesbir

PA - Lafayette College

Discipline: Business and Entrepreneurship

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#1 Emily Tesbir
#2 Susan Averett

Abstract Name: Examining the Effect of State-Level Paid Family Leave on Mental and Physical Health Outcomes: Evidence from Seven States and the District of Columbia

The United States is one of two countries without a paid maternity leave policy. Although there is no federal paid leave, many states have passed their own paid family leave policies, starting with California in 2004. While much of the early research is limited to data from California, the available literature demonstrates that paid leave can benefit child and maternal health. As more states implement paid leave policies and advocacy for a federal paid leave program grows, understanding how paid leave potentially impacts parents' wellbeing is critical to informing the policy debate. This is especially important in the context of the care crisis exacerbated by the pandemic. In this research, I use data from the CDC's Behavioral Risk Factor Surveillance System for the years 2000-2022 to investigate the effect of having state-level paid parental leave on the mental and physical health outcomes of women and men of childbearing age who have a child under age 18 in the household. I contribute to the literature by considering all states with mandatory leave policies implemented before 2022. Using a difference-in-difference model, the health outcomes of women and men ages 20-35 years old living in the seven states and the District of Columbia are compared to those of women and men living in states that don't have paid leave. These comparisons are made both before and after the implementation of paid leave policies. I hypothesize that paid leave policies alleviate stress and therefore will improve health outcomes for women. As men's leave take-up is significantly lower, I predict that there will be little or no effect on men's health outcomes.

Kevin Teye-Yalley

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

Authors:
#1 Kevin Teye-Yalley
#2 Graham Banes

Abstract Name: Updating the Patas Monkey Fact Sheet

As new studies and observations are conducted on primates, it is important to compile these research findings into one accessible and easily understandable fact sheet so that people of all ages are able to read about different primates that are not as well-known like gorillas, orangutans, and chimpanzees. The Wisconsin National Primate Research Center not only conducts medically-related and ecological research but also manages their “Primate Info Net” as a large hub of research and conservation on non-human primates. The Primate Info net organizes the fact sheets of 50+ different primate species, each with its own unique fact sheet. The purpose of this research paper was to help the “Primate Info Net” update its fact sheets on, specifically the fact sheet of the Erythrocebus Patas (Patas Monkey). Since the initial creation of the fact sheet for the Patas Monkey on December 18, 2006, many new studies have been conducted as well as the addition of information that was left out of the first fact sheet. The importance of this fact sheet was to help spread awareness of the situation of the Patas Monkey. Currently the International Union for Conservation of Nature (IUCN) labels the Patas Monkey as “Near Threatened” as they are being driven out of their habitat due to deforestation and bush killings due to farming. With the help of the Wisconsin National Primate Research Center (WNPRC) and Dr. Graham L Banes, this research was able to compile a meta-analysis like paper on new and updated information regarding the Patas Monkey. This new info was then written into a research paper where it discussed their Evolution and Ecology as well as Behavior and Sociality. It would then replace the old fact sheet on the Primate Info Net.

Vivian Thai

TX - Southern Methodist University

Discipline: Natural and Physical Sciences

Authors:
#1 Vivian Thai
#2 Jessica Elliott
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#4 Brian Zoltowski

Abstract Name: CRY-Based Optogenetic Tools for Drug Discovery

The circadian clock involves input signals, an oscillator, and output functions that regulate circadian rhythms. Clock protein disturbances can cause sleep, immune, and mood disorders. In the mammalian circadian clock, the suprachiasmatic nucleus relies on transcription-translation feedback loops with activators CLOCK and BMAL1, and repressors period (PER) and cryptochrome (CRY). CRY, a negative regulator, inhibits its own expression. Small-molecule modulators alter the circadian period by targeting pathways or clock protein pockets, working as selective drugs that bind to CRY or have therapeutic properties for various disorders. To study CRY's role, we developed an optogenetic tool to examine its interactions with nuclear receptors (NRs).As presented during NCUR 2023, we used a mammalian two-hybrid assay to examine interactions between mouse cryptochrome 2 (mCRY2) and NRs: androgen receptor (AR), glucocorticoid receptor (GR), and pregnane receptor (PXR). Prior to the assays, mCRY2 was cloned into the pACT vector, containing the VP16 transcriptional activation domain, while the NRs were cloned into the pBIND vector, containing the GAL4 DNA-binding domain and the renilla luciferase reporter gene. Our optogenetic tool revealed mCRY2 and NR interaction, proving it to be an accurate indicator for interaction between clock components and receptors. Since then, we have tested interactions between mCRY2, NRs, and small-molecule modulators in

transfected mammalian cells. We ran titrations of KL001, which targets CRY's ability to bind with other proteins, and dexamethasone, which functions as a GR agonist. Our data revealed that KL001 reduces mCRY2's binding ability to GR, while dexamethasone enhances it.For future work, we are cloning mCRY2 into the pBIND vector and GR into the pACT vector to determine KL001 and dexamethasone's effects on the mCRY2 and GR interaction. Overall, our study sheds light on the connections between circadian clock components and key regulators, providing valuable insights for potential therapeutic interventions in circadian-related disorders.

Shreya Thakuri

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Shreya Thakuri
#2 Vivian Tran
#3 Hojin Moon
Vivian Tran

Abstract Name: Precision Treatment in Non-Small-Cell Lung Cancer through Advanced Machine Learning Approaches.

Non-small-cell lung cancer (NSCLC) is a prevalent and impactful disease affecting over 200,000 Americans annually and constituting 85% of lung cancer cases. The two treatment options for patients with NSCLC are Adjuvant Cisplatin-based Chemotherapy (ACT) and curative surgery, a surgical procedure aimed at completely removing the cancer. With NSCLC affecting a substantial amount of the population and being a leading cause of lung cancer, this research explores the potential of genomic biomarkers to optimize individualized patient treatment in the context of chemotherapy, which aims for maximum efficacy. Implementing advanced statistical methods and learning algorithms such as Cox proportional model and Random Survival Forest, we comprehensively analyze genomic data from two independent clinical trial datasets (GSE14814 and GSE68465) found in the National Institutes of Health Gene Expression Omnibus (NCBI GEO) of patients with non-small-cell lung cancer (NSCLC). The findings underscore the importance of genomic biomarkers for optimizing and tailoring treatments for patients with non-small-cell lung cancer (NSCLC), showcasing significantly higher survival times for patients who cohere to the recommended treatment strategies, and emphasizing the clinical impact of genomic-guided interventions. Our findings also illustrated actionable insights into the identification of treatment-associated genes. Importantly, the Random Survival Forest model scores a .925 on the concordance index in predicting the best treatment outcomes, which creates a strong basis for personalized medicine in treating non-small-cell lung cancer (NSCLC). In conclusion, our study reinforces not only the significance of genomic markers in enhancing treatment but also is a stepping stone for precision medicine in cancer care with the help of advanced machine learning approaches.

Angelina-Rose Thalheimer

CA - Chapman University

Discipline: Health and Human Services

Authors:
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#2 John Miklavcic
#3 Laura Glynn

Abstract Name: Arachidonic acid content in human milk is negatively related to neurodevelopment through early childhood

Omega-3 and omega-6 polyunsaturated fatty acids (PUFAs) are crucial for brain accretion and central nervous system development, and a source of docosahexaenoic acid (DHA; 22:6n-3) and arachidonic acid (AA; 20:4n-6) or their essential fatty acid precursors need to be consumed in diet. Clinical studies suggest that milk PUFAs are related to developmental outcomes in infancy, but whether these relations persist is not known. This study investigated whether milk DHA and AA content is related to neurodevelopment through early childhood. Human milk was collected between two and eight weeks (n=80) postpartum and fatty acids were analyzed by liquid chromatography-coupled mass spectrometry. The Bayley Scales of Infant Development (BSID-III) was administered at 12 months and the NIH Toolbox was used to assess Picture Sequence Memory (PSMT) at 36 and 54 months of age. Multiple regression determined associations between relative DHA and AA content in milk and developmental outcomes. Milk DHA content was not related to BSID or PSMT performance. Relative milk AA content was a predictor of infant cognitive (r = -0.28; p < 0.02), language (r = -0.28; p < 0.02), and motor (r = -0.27; p < 0.02) composite development. Relative milk AA content was inversely related to the PSMT scores at 36 (r = -0.35; p < 0.03) and 54 months of age (r = -0.32; p < 0.03). All associations persisted after adjusting for infant sex and age as well as maternal education level. Exposures to higher levels of milk AA content is associated with less optimal neurodevelopment at least through 5 years of age, indicating the importance of optimizing fatty acid nutrition in early life. The study was funded by NIH grant (MH096889).

Sriman Thangaraj

DC - American University

Discipline: Social Sciences

Authors:
#1 Sriman Thangaraj

Abstract Name: Advancing Minority Representation: Evaluating Cumulative Voting in a U.S. Context

Alternative voting systems in the United States should be seriously considered, as it allows minority representation to prosper. The current winner-take-all system does not effectively translate the minority community's vote into their preferred representation. Cumulative voting (CV) has primarily been used in local and state governments across the United States, most notably in Texas and New Mexico. A prominent and most extensive use has been in the Illinois state legislature in the 20th century. An analysis of past use of cumulative voting (CV) in the United States and predicting potential situations in which it could be used, including congressional elections, is necessary to create a foundational background. Qualitative comparative analysis and situational analysis are proven methods for answering these questions. The findings show that CV has been successful in increasing minority representation. It is more impactful in areas where minority groups are a significantly low percentage of the population and coalition building has a strong foundation. CV, in conjunction with multi-member districts, will allow congressional representation to have an increase in minority officials. While it has proven successful, most Americans are unaware of cumulative voting and other methods, so a coordinated voter education effort is necessary. Public officials and politicians should also put aside their partisan goals and unite to create a more just electoral system that works for all Americans, not just a privileged few. Especially when the country's democracy is at risk, establishing other voting methods is crucial now more than ever. The longstanding Voting Rights Act of 1965 has been slowly whittled down; its protections won't be enough to allow minority communities to elect their preferred representation equitably. Cumulative voting is essential for advancing minority representation.

Kayla Thayer

MO - Missouri State University

Discipline: Social Sciences

Authors:
#1 Kayla Thayer

Abstract Name: One Man's Terrorist: The Kurdistan Workers' Party's Use of Political Violence and Terrorism for Democratic Autonomy

The Kurdistan Workers' Party (PKK) is commonly identified generously as an insurgency, and less generously as a terrorist group. The exact nature of the PKK's function and intentions has fundamentally changed from its origins as a communist, ethnonationalist, guerilla group to a self-described anarchic, libertarian political force within Türkiye and broader Kurdish communities. This case study approaches an analysis on the cause-and-effect relationship of the PKK's goals and strategies as a Kurdish nationalist group with a chronological case study. The strategy undertaken by the PKK at any given period in history will be broadly categorized as violent or nonviolent; the cause, therefore, is the goal from which the PKK calculates its stratagem. This research seeks to elucidate the relationship between and pattern of the category of goals (causes) and nature of tactics (effects) used by the PKK. This research will then analyze the efficacy of different tactics used by the PKK in pursuit of political recognition, secession, and security. The methodology of this research will include a case study that analyzes the four phases of the PKK's history for the PKK's stated goals, tactics, and the degree of success achieved by different violent and nonviolent tactics.

Aparna Thiagarajan

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
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#2 Sunny Chan
#3 Nabiha Chaudhry

Abstract Name: Transdifferentiating Muscle Stem Cells into Brown Fat to Treat Metabolic Disorders

Metabolic disorders, such as obesity and diabetes, pose increasing global health challenges with limited long-term success from existing treatments, leading to high worldwide morbidity and mortality. Our project explored a novel approach to treat obesity by transdifferentiating muscle stem cells (MuSCs) into brown adipose tissue (BAT), which expends energy as heat, in contrast to white adipose tissue which stores energy as fat. The objective was to identify a specific MuSC subpopulation with an enhanced capacity to develop into BAT. The methods involved isolating MuSCs from mouse hindlimb muscles, sorting them into subpopulations based on Sca1 expression levels with fluorescence-activated cell sorting (FACS), and growing them in a pro-adipogenic medium to induce brown adipocyte differentiation. We analyzed the efficiency of BAT transdifferentiation through morphological changes, immunostaining for brown adipocyte markers, and quantification of lipid droplets. Preliminary analysis from the first two experiments revealed no significant expression of BAT derived from MuSC in either the Sca1- or Sca1+ subpopulations, suggesting the need to modify the methods of future experiments to obtain more meaningful results.

May Kyi Phyu Thinn

CA - Irvine Valley College

Discipline: Social Sciences

Authors:
#1 May Kyi Phyu Thinn

Abstract Name: Save COVID-19 Scapegoats: The Time Is Now for an Accurate Report on Anti-Asian Hate Crimes

This secondary research examines the topic of why anti-Asian hate crimes are not addressed adequately and perceived as an immediate threat. Criminology scholars have examined anti-Asian hate crimes' growth. Still, none have addressed the effect of underreporting and low statistics in hate crime records. This study analyzes FBI 2020 anti-Asian hate crime statistics with local crime reports. The FBI reported a 77% spike in anti-Asian hate crimes in 2020, while the Center for the Study of Hate & Extremism reported 145%. Although, it is well-established that many, if not most, anti-Asian hate crimes are still underreported, unlike the case for other bias-motivated crimes (Lantz and Wenger). Statistics on anti-Asian hate crimes are not reliable due to two underlying factors; a fraction of law enforcement agencies are not reporting and poorly investigating Asian hate crimes and the victims themselves are not reporting. Two underlying factors overlap; victims' reluctance to report crimes intensified tracking challenges for agencies. In many Asian cultures, being a victim of a hate crime has a shameful stigma and humiliation for the victim's family, which is one of the factors that prevent Asian American victims from coming forward (Pezzella and Fetzer). Additionally, hate-biased crimes are typically psychologically driven, creating challenges for law enforcement agencies to identify murderers' animosity without racist remarks. "#Chinese Virus" tweet by President Trump condemned Asian Americans as scapegoats for the pandemic (Lloret-Pineda et al.). Agencies have been extensively indoctrinated by Trump's denial claim that "This is not Racism," leading them to examine anti-Asian hate crimes as typical crimes. Though several legislations and solutions have been proposed to combat anti-Asian hate crimes, only a few focus on the reporting issue yet still cannot be tackled. Therefore, it is crucial to address this issue for the actual accurate figures to appeal action and forestall anti-Asian hate crimes.

Dakota Thomas

VT - Saint Michael's College

Discipline: Humanities

Authors:
#1 Dakota Thomas

Abstract Name: Interpreting Constructs: A Phenomenology of Race

This is an analysis into the phenomenology of race and racism. This research hopes to act as a genealogy of the current circumstance of race and white supremacy (as it exist in a black/white binary). By inspecting different philosophers, historians, and political theorist ideas on racialization, assimilation, and indoctrination, I investigated and critiqued the condition into which we are socialized in a racist society. It explores the effects of racism on those socialized into it, and considers whether we are able to recover from racism. This research includes an analysis of the phenomenology of race, what different philosophers have interpreted from this condition, and finally, my thoughts and additions to this dialogue.A phenomenology is the examination of a phenomena, an inquiry into the way of things as we experience them. A phenomenology of race, then, would be an inquiry into how the subjective person consciously experiences race. We live in a racialized world. From racism, to colorism, to caste- race and color have been a topic of discussion, specifically in the Americas, (but throughout the world) since the rise of colonialism. The hierarchy of culture, and thus people, and thus races emerge persistently into modernity, but begins especially when the

Americas transitioned from an indentured slavery system to a racialized slavery system. Slavery itself is not the system that is being investigated in this research. Slavery has been a human practice since the Ancient Greek, the difference and effects of racialized slavery, and conditions of the subsequent caste system that still exists, is what we will be producing an ontological critique of. This ontological interpretation of race will observe of the most general features of racism, and how racism relates to black and white people alike in the metaphysically most general ways.

Jonathan Thomas

TX - Southern Methodist University

Discipline: Engineering and Architecture

Authors:
#1 Jonathan Thomas
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#3 Jalen Johnson
#4 Gabriel Mego

Abstract Name: A triplet loss model using transportation metrics to identify income disparity in Dallas, TX

Addressing income disparity in the United States is crucial for fostering economic stability, social mobility, and ensuring equal access to opportunities for all citizens. Consequently, remedying income disparity stands as a top priority, exerting a substantial influence on policymaking. However, effective intervention necessitates a comprehensive understanding of income disparity. In this study, we adopt a unique perspective by employing a transportation lens to identify and analyze this multifaceted issue. Through an examination of variables such as travel time to work, transportation mode, and household income, we employ a triplet loss model to explore potential connections between transportation metrics and income disparity in Dallas, TX. Our research aims to uncover nuanced insights that can aid policymakers in crafting targeted interventions. Notably, we demonstrate how an increase in transportation infrastructure funding serves as a viable means of addressing income disparity systematically.

Laura Thomas

FL - Florida International University

Discipline: Engineering and Architecture

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Abstract Name: Metaverse-based Platform for Enhanced Active Shooter Preparedness and Response in Developing Countries

Global increases in disasters are rising threats worldwide. Innovative safety training methods are thus required to improve disaster preparedness and response. The emergence of metaverse presents unprecedented potential to address this need. However, despite extensive existing studies, there is still a lack of effort focusing on training for man-made disasters like mass shootings, terrorism, and gang violence. The few studies tailored for these events are usually meant to train law enforcement personnel, not civilians. To address these knowledge gaps, this paper proposes a metaverse-based virtual game platform designed to train civilians on active shooting events. The proposed platform features a user-controlled design, which allow the

users to customize their training environment to familiar settings (e.g., home, office, or school). This approach aims to simulate the real-world situation of the users, thus significantly enhancing their spatial awareness and improving their training performance. The platform is developed using the Unity game engine and is implemented and tested using Haiti as a case study. Preliminary results indicate substantial promise in employing the metaverse to enhance disaster preparedness and response in developing countries with limited resources. Keywords: Gamified safety training; Disaster preparedness and response; Developing countries.

Amy Thomas

NY - City University of New York - City College of New York

Discipline: Education

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#4 Louis Voigt

Abstract Name: Enhancing Knowledge in Clinical Ethics: An Evaluation of MSK's Bioethics Ambassador Program

Statement of the Problem: At Memorial Sloan Kettering Cancer Center (MSK), the Ethics Committee developed the Bioethics Ambassador Program (BAP) for an annual cohort of 25-30 multidisciplinary staff. The primary goals of BAP were to provide the analytic tools necessary to identify common ethical challenges, inform about useful ethical frameworks, and create a safe space for thoughtful/transparent discussions about ethical issues. Our study aims to evaluate the change in students' knowledge of bioethics after BAP.Methods: A Bioethics Core Competency survey, comprising 20 multiple choice questions, was administered through REDCap to every BAP participant before and after program completion. 50 (89%) of 56 participants completed the pre and post BAP surveys. We compared pre and post survey scores for these 50 participants, and we analyzed which questions and related topics were associated with the highest percent increase and lowest proportion of correct answers. Results: Among 50 BAP participants who completed pre and post surveys, 37 (74%) scored higher in the post survey than the pre survey. Scores improved most in questions on patient decision-making (Question 1, pre=56%, post=80%) and clinical ethics consultations (Question 2, pre=54%, post=74%). These topics were addressed in multiple sessions. Scores were lowest in pediatrics (Question 11, pre=24%, post=32%). Pediatrics, a topic in which none of the participants had prior expertise, was addressed in only one session.Conclusion: We found substantive improvement in BAP participants' bioethics knowledge as demonstrated by higher scores in their post BAP Bioethics Core Competencies surveys. This improvement in knowledge indicates the potential impact of BAP on multidisciplinary participants at a large cancer center like MSK. In the complex area of bioethics, we hypothesize that addressing a topic in multiple sessions over time enhances learning. Our findings may allow evidence-based recommendations to improve future bioethics trainings.

Emma Thompson

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Emma Thompson

Abstract Name: Designing for Controlled Chaos: Stefan Sagmeister's profound impact on the graphic design community

Stefan Sagmeister has played a considerable role in graphic design for decades and has a habit of pushing the envelope and experimenting in ways no one before him ever had. Using recurring themes of human emotion, disturbance, humor, and sexuality, he has had a hand in reshaping the way that designers think and feel about their work. Sagmeister is a well-educated and highly decorated designer who is often thought to be responsible for the resurgence of handwritten and handmade typography. As well as being a two-time-Grammy-award-winning album designer, he has dipped his toes into many different aspects of design and inspires countless others to broaden their horizons as well. As an outspoken, odd-ball designer he has worked hard to make a name for himself in the community, consistently challenging the status quo about what institutes "good design." While it is clear that he has made a substantial impact in this field, his work, along with his contentious attitude is oftentimes met with controversy. Due to Sagmeister's ability to think so far outside of the box and idiosyncratic personality, he has found himself at the center of extremely unfavorable discussions. Despite the pushback, Sagmeister prevailed to become one of the most influential designers in the career field, and his legacy will live on for several generations to come. He has had a long career full of highs and lows, but his ability to change the monotonous way things were being done at the time solidified his place in graphic design history. While not necessarily a design hero, Sagmeister changed the direction of graphic design forever.

Emma Thompson

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Emma Thompson

Abstract Name: Responsible Design: Designing with Purpose for the World Around Us

In a world where graphic design's influence is profound, but often overlooked, this paper delves into the importance of practicing responsible design. Responsible design lends itself to many different aspects, including acknowledging the impact designers have on society, and using sustainable design practices. Using historical examples such as the French Revolution and more recent ones such as the ongoing conflict in Palestine and Isreal, this paper gives historical context and examples of times when the power of design has been both used and abused, from protest design to propoganda. With work by Stephen Kroningeer and Michael Lebron being used as an example, this paper highlights examples of past designers who were able to make waves by using their voices and their platforms. It is through these historical examples that the paper is able to call attention to the overwhelming impact that graphic design can have on society. Along with this, it looks into the impact that graphic design, and more specifically the printer, has on the environment. The environmental impact that is caused by certain materials used in the printing process is examined and scrutinized, and more sustainable alternatives, such as algae ink, are presented. Realizing that responsible design is necessary for the profession to stay legitimate and stable as a career. Overall, this paper covers a variety of topics under the umbrella term of "responsible design" and challenges readers to make a conscious change for the betterment of the world.

Kyra Thordsen

DC - American University

Discipline: Social Sciences

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#1 Kyra Thordsen

Abstract Name: Anti-Abortion Extremism Post-Dobbs

Protesters harassing those seeking abortions, glue in the locks of clinic doors, the doxxing of healthcare professionals – all of which have been part of the long history of anti-abortion violence, before and after the overturning of Roe v. Wade with the Dobbs v. Jackson decision in 2022. This paper aims to establish connections between anti-abortion extremism and extremist actors pre and post Dobbs, focusing on groups working together with additional attention on lone wolf actors. Additionally, this paper hopes to track anti-abortion rhetoric inside other political movements, including a new and expanding left-wing anti-abortion movement. Scholarship on anti-abortion extremism can be traced back to before Roe v. Wade, but in the post-Dobbs v. Jackson era, it's critical to expand knowledge of the new and continuing extremism and violence that persists in its wake.

Ashley Thorshov

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
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#2 Alex Frañó
#3 Holden Bauer

Abstract Name: Mapping the Time Development of Hydrogel Inhomogeneities using Laser Interference

Hydrogels are materials composed of inhomogeneously crosslinked polymer chains. When exposed to an aqueous solution, hydrogel samples can expand up to ten thousand times their dehydrated size. The intense swelling of these materials, along with their naturally inhomogeneous structure, results in widely varying polymer chain densities in hydrated states. This unique property has made hydrogels a material of interest in many fields, such as biochemistry and Health care; hydrogels are used as contact lenses, tissue reinforcers, and distributors of medicine throughout the body. However, the nonuniform swelling of hydrogels is still widely unexplored. To better understand the time evolution of the material's polymer chain structure, our team is using two laser interference techniques (Bragg scattering and coherent interference) to develop a three dimensional mapping of polymer chains within hydrogel samples. In each method, a light source is shone into a hydrogel sample, where it interacts with the polymer chains and scatters accordingly. The resulting interference pattern can then be analyzed to gain information about internal spacing between polymer chains. By employing these techniques at different sizes in the swelling process, we can quantify a sample's time evolution. Preliminary results suggest that our set of experiments produce valuable information on the polymer chain density/sample structure and we have since focused on fine tuning our data collection process. The ability to accurately characterize the internal configuration of hydrogels will allow us to study the time development of our samples at an in depth level. Better understanding these materials may help advance their current uses and uncover new applications/relevance.

Heather Thrower

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Heather Thrower

Abstract Name: THE LIFE OF CIPE PINELES

ABSTRACT Cipe Pineles historically helped women transition into a male-dominated industry at a time when women began needing to step up and take jobs outside of the home; she was an example of how to reach high and work hard in everything, encouraging women to do the same in everything they do. Cipe Pineles was a kind woman who cared about others and took the time to educate and help others improve their work. She collaborated with her coworkers to design and create very successful magazines and in turn reached teens and working women through her designs, helping women transition from at-home moms to women in the working world and influencing young women to make their dreams come true. She made history by becoming the first woman accepted into the Art Directors Club, this was not her first attempt but she did not give up. She was a woman who made steps in history to help women become accepted into a once male-dominated workplace.

Emery Thul

MN - Hamline University

Discipline: Interdisciplinary Studies

Authors:
#1 Emery Thul

Abstract Name: Modeling The Influence Of Collective Music-making On Group Formation

It is well-established in the fields of social neuroscience and ethnomusicology that engaging in collective music activities promotes prosocial behavior—that is to say, they make us more cooperative with one another. However, the way this relationship between music and prosocial behavior has evolved has not been elucidated. Thus, we explored the evolutionary dynamics of group formation via music-making. To do this, we turned to game theory and mathematical modeling.We devised a multi-stage model to simulate the process of making music in a group followed by an opportunity to make a social decision. In this model, players first choose whether or not to make music and then play either a Hawk-Dove (HD) or Stag Hunt (SH) game, simulating a competitive and cooperative situation respectively. To imitate the prosocial behavior caused by group music-making, musicians are always friendly to one another. Non-musicians and musicians playing against non-musicians play individual strategies in both games. By imposing these rules, music acts as a way to make team membership (and therefore, likelihood of cooperation) known, following Bacharach's teamplay schemata.We found that none of the pure strategies are evolutionarily stable, meaning that none are perfectly better than any other. However, there are two musician strategies that are stable against non-musicians. Applying mixed group analysis, we found that musicians have quite large benefits in the SH game and smaller, conditional benefits in the HD game. These results indicate that being a musician and cooperating with other musicians is beneficial not only in settings where cooperation is favored, but also in competitive settings. Even with these positive results, we have work left to do. Future work will incorporate the more unique aspects of group musical activity. It will also involve the creation of an agent-based simulation to analyze individual behavior and N-player games.

Micheal Tidwell

TX - Tarrant County College

Discipline: Business and Entrepreneurship

Authors:
#1 Micheal Tidwell

Abstract Name: NASA needs more funding before our return to the Moon.

We are going to the Moon before 2030 and NASA's Artemis program aims to put the first African American and Woman on the Lunar surface and pave the way for future scientific discovery. NASA's ambitions face financial hurdles as the Lunar program is projected to cost $93 billion, and NASA currently has a budget of $30.92 billion in 2024. However, this budget lacks the financial sustainability needed. Leadership within NASA, particularly Administrator Bill Nelson, expressed concerns that if NASA were to receive less funding than requested, many programs would be forced to shut down. Programs such as the Cancer research done onboard the ISS will create challenges for scientists currently exploiting the microgravity environment to construct more efficient protein structures to combat cancerous cells. Such program cancellations would mean loss of scientific opportunities where technological innovations would revolutionize the world we live in. Neglecting budget constraints and their effect on space flight can lead to disaster. The Rogers Commission report clearly underlined that financial pressure led to mismanagement with construction of Space Shuttle Challenger. Moreover, NASA economically benefits the US both internationally and domestically. Our partners in space, such as the CSA and ESA, foster international cooperation and provide economic commerce through research and development. Additionally, the private sector helps NASA generate an economic output of $21 billion annually as well as collect $7.1 billion in tax revenue as we prepare for Lunar exploration through the M2M campaign. To ensure NASA's additional funding, reconsidering expenditures in the Department of Defense is vital. Emphasis on benefits of redirecting resources towards NASA's innovation, particularly the medical and scientific industries. Highlighting NASA's role in driving progress and improving lives would garner support for increased funding, ensuring a better future for scientific exploration and technological advancement.

Mariam Tiews

MI - Hope College

Discipline: Humanities

Authors:
#1 Mariam Tiews

Abstract Name: The Currency of Medieval Friendship: The Portable Altar of Bishop Nitker and Emperor King Henry III

The objects we make are fragile and transitory; some pieces have managed to persist with only minor scars from the vicissitudes of time, yet others have disappeared completely and mysteriously from the historical record. The portable altar-turned-reliquary of La Trinité is one such example of an object that remains only in the fragmentary traces of written and visual sources. However, from these sources stems an intricate and unpredictable narrative concerning a friendship between Holy Roman Emperor Henry III (1016-1056) and a lesser-known bishop of 11th-century Germany, Nitker of Freising (r. 1039-1052). Weaving clues from the drawings of an 18th-century publication, scholars have predominantly explored the object in its final form as a reliquary for the Holy Tear of Jesus in the abbey of Vendôme, France. However, an intriguing inscription incised in gold and nailed upon the chest suggests there is more to the story. Written unassumingly on the edge of the lid, the inscription reads: HEINRICO NITKERUS DAT (Nitker gives [this] to Henry). These three Latin words indicate a previous life of medieval societal practice and ecclesiastical opulence. This paper focuses on the object's prequel as a portable altar. Originally crafted in 11th-century Germany, I demonstrate that the portable altar signified the complex political-ecclesiastical reality of the Middle Ages and affirmed the relationship between HRE King Henry III and Bishop Nitker of Freising. Likely given as a gift to Henry

on Nitker's episcopal installment, my research shows that as an object of exchange between the two men, the portable altar negotiated the physical and conceptual space between ecclesiastical and royal power. This paper specifies how the altar was a symbol of affirmation in a time when gift-giving was the very foundation of society, solidifying roles of power, esteem, and of the church and state respectively.

Erik Tillman-Smith

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Erik Tillman-Smith
#2 Dawit Hailu

Abstract Name: Quantifying RF Radiation of common items

Electromagnetic fields (EMF) AM-11 equip you to make quick and informed judgements regarding radiofrequency (EMFs) in your environment. This study measures and catalogs common item radiation levels. After extensive testing and measurement, the study tries to comprehend these electronic objects' radiation emission. These data will raise awareness of radiation exposure from everyday objects. This study illuminates the radiation spectrum of ordinary products and emphasizes the need for educated usage decisions. In this study, the purpose is to validate that EMF decreases when increasing the distance and to determine if older models of electronics emit more radiation than newer models.

Erik Tillman-Smith

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Erik Tillman-Smith
#2 Dawit Hailu

Abstract Name: Quantifying Caloric Consumption through PhyPhox

Phyphox is a Cartesian-coordinate-based mobile application useful for conducting physical phone experiments. It houses a repository of tools with raw sensors, which can be used to measure various kinematic variables. We are interested to see if a mobile application like Phyphox is sufficient in computing such variables for broader relevant use. In this project, we want to determine if a mobile application like Phyphox can accurately frame our caloric consumption from derived values. We used Phyphox's raw sensor, GPS Location, to simulate twelve walking trials and determine the accuracy of a subject's average movement. We utilize this data to quantify caloric consumption. However, preliminary experimentation only provided a few useful trials, as Phyphox was often unreliable. The initial data obtained did demonstrate an accurate measurement of work done and calories expended; but, further study is necessary to find significant data points for conclusion.

Arian Timm

MN - University of Minnesota - Duluth

Discipline: Natural and Physical Sciences

Authors:
#1 Arian Timm
#2 Jeffrey Levesque
#3 Michael Mauel
#4 Nigel DaSilva

Abstract Name: Investigation of High-Frequency mode activity in the HBT-EP Tokamak

High-frequency transient mode activity in tokamaks, like the High Beta Tokamak - Extended Pulse (HBT-EP), can be excited by instabilities and are often associated with minor and major disruption events. Previous HBT-EP observations have focused on lower-frequency modes by applying digital low-pass filters to multiple plasma diagnostics, including magnetic sensor arrays, X-ray detector arrays, and scrape-off-layer (SOL) tiles. In this presentation, we instead use high-frequency filters to separate the high-frequency activity from the lower-frequency modes. We find the most intense high-frequency magnetic activities occur in brief mode bursts associated with strong plasma perturbations caused by large amplitude low-frequency modes. We present a correlation analysis for characterizing these high-frequency mode bursts from multiple diagnostics and determine the spatial, as well as temporal, dynamics for these bursts in the HBT-EP. This work was made possible by funding from the Department of Energy for the Plasma and Fusion Undergraduate Research Opportunity (PFURO) program. This work is supported by the US DOE Contract No. DE-AC02-09CH11466 and DE-FG02-86ER53222

Robert Tinajero

TX - University of North Texas

Discipline:

Authors:
#1 Trevor Dupree
#2 Robert Tinajero
Trevor Dupree

Abstract Name: Female Rappers, Sexuality, and Intersectionality: Empowerment or Objectification?

Hip Hop, a musical genre that was once dominated by male rappers, has slowly embraced and celebrated the presence of a plethora of female artists. Some of the most popular ones use sexuality regularly to attract fans and followers, to the tune of millions of listens, views, and dollars. This research focuses on female rappers' sexuality and intersectionality as possible agents of empowerment and/or objectification with a look at specific lyrics, videos, and social media posts. Artists such as Sexyy Red, Megan The Stallion, Nikki Minaj, and Lil Kim are highlighted. Aspects of rhetorical studies and critical feminist theory are used to contexualize the lyrical and visual rhetoric of these female rappers as they communicate and display their sexuality.

Shreya Tirumala Kumara

TX - University of Texas at Dallas

Discipline: Engineering and Architecture

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#11 Lee Miller
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Abstract Name: Mechanical Characterization of Amorphous Silicon Carbide as a Neural Interfaces Device

Intracortical microelectrode arrays (MEAs) are implantable devices used for neural recording and stimulation. Following MEA implantation into cortex, the neural recording performance decreases over time by glial scarring. The use of ultra-thin microelectrode arrays (UMEA) has been proposed to minimize the glial scar as UMEAs have a small cross-sectional area which is expected to minimize persistent foreign body response associated with implantation. However, unaided implantation of UMEAs can be challenging because they tend to buckle prior to penetration into the brain. Therefore, this study investigates amorphous silicon carbide (a-SiC) UMEA designs with various cross-sectional areas and lengths, used to determine those geometries that facilitate unaided implantation into the cortex of rat, pig, and macaque.First, we evaluated the critical buckling force (Fc) of UMEAs as a function of geometry. We measured UMEAs with 200, and 300 μm2 cross-sectional area and lengths of 1.3, 1.5, and 1.7 mm We then characterized the penetration force (Fp) into the cortex of rat (n = 3), pig (n = 4), and macaque (n = 1) after exposing the brain through surgical craniotomy and durotomy procedures. Subsequently, the UMEAs were inserted cortex at a controlled speed of 100 μm s−1.As expected, increasing the length, and decreasing the cross-sectional area of the UMEAs decreased Fc. The UMEA design with a length of 1.7 mm and cross-sectional area of 200 μm² required the least Fp (0.55 ± 0.304 mN) in macaque brain. However, in pig and rat brains, the UMEA design with a length of 1.5 mm and cross-sectional area of 200 μm² (Fp = 0.7 ± 0.25 mN and, Fp = 0.13 ± 0.14 mN, respectively).By measuring the Fc, the study determined an insertion-depth-dependent critical buckling force that could predict whether insertion would occur without buckling based on the UMEA geometry.

Anna Titcomb

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Anna Titcomb

Abstract Name: Empowering female students in higher education: An In-Depth Exploration of Needs, Expectations, and Challenges, with a focus on learning disabilities

This research will cover the topic of Empowering female students in higher education: An In-Depth Exploration of Needs, Expectations, and Challenges, with a focus on learning disabilities. The research questions that will be discussed are, what are the specific needs and expected support of female students in higher education settings, what are the main challenges and pain points that female students encounter inside

and outside of the classroom, what factors influence female students academic performance, career aspirations, mental health, and overall well-being, what strategies and institutional support to empower female students effectively? The methodology used in this research will be survey (quantitative) and interview (qualitative). Women have faced barriers throughout history on many topics, including education. Though some barriers have been remedied, women still face some hardships in higher education. In this research, the author will explore the barrier to learning disabilities in higher education. Most learning disabilities present differently in women than in men. Previous research on learning disabilities has only been done with men. To create a better learning environment for women they must be understood just as much as men are. This research hopes to scratch the surface of understanding learning disabilities in higher education and how teachers and institutions can best support these women. In this research women in higher education will be asked questions to understand their pain points in and outside of school, their aspirations in higher education and careers, their overall mental health and well-being, and how their learning disabilities affect these variables.

Ashley Tittelbaugh

AZ - University of Arizona

Discipline: Engineering and Architecture

Authors:
#1 Ashley Tittelbaugh
#2 Cinque Peggs
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#4 Taylor Olp
#5 Joshua Tyler
#6 Donald Reising
#7 Daniel Loveless

Abstract Name: Preamble-based RF-DNA Fingerprinting Under Varying Temperatures

A total of 30.9 billion Internet of Things (IoT) deployments are expected by 2025 with most employing weak or no encryption at all, which raises concerns about IoT security. This concern is exacerbated by IoT-connected critical infrastructure and the successful exploitation of this security vulnerability. This led researchers to propose a physical layer-based IoT security solution coined Specific Emitter Identification (SEI). However, SEI has been shown to be sensitive to temperature changes. This sensitivity is important when considering IoT deploymentsin highly variable temperature environments. The presented ap- proach shows the temperature sensitivity of SEI is mitigated whenthe classifier is trained using RF-DNA fingerprints drawn from waveforms collected at two temperatures. In fact, SEI performance improves the most when the two temperatures are at or near the extremes of the operating temperature range. Specifically, our work shows that training SEI classifiers using the extremes of the collected temperatures improves overall classification performance across temperature ranges. The work in this paper also shows that emitters operating in a sub-ambient, exothermic state have a more consistent fingerprint than those operating in a high-temperature, endothermic state.

Kaitlin To

CA - University of California - Irvine

Discipline: Natural and Physical Sciences

Authors:

#1 Kaitlin To
#2 Hasitha Premathilake
#3 Maire Doyle
#4 Josephine Egan

Abstract Name: Pig Taste-Cell Derived Organoids Synthesize Insulin

Insulin is a hormone responsible for the uptake of glucose into myocytes and adipocytes, where it can be turned into usable energy. Insulin is essential to life. Recent findings suggest that insulin exists in taste receptor cells on the mammalian tongue, and these cells' high rate of proliferation from taste stem cells makes taste stem cells a promising source of insulin-producing cells. This project aimed to obtain mature taste cell organoids from taste stem cell organoids and increase insulin gene expression in these organoids. Porcine tongue stem cells were plated in a matrix structured to encourage organoid formation, and these initial cultures were grown in an Lgr-6 promoting control condition. Immunofluorescent staining revealed that some stem cell organoids spontaneously differentiated into mature taste cell organoids in this control condition. To encourage cell differentiation, new taste stem cell organoids were exposed to the control media and a condition named "C5," which was designed to downregulate developmental pathways via the removal of exogenous growth factors from the media. After 16 days in culture, the experimental organoids appeared to contain mature cells and had an increased expression of mature cell markers, a decreased expression of stem cell markers, and an increased expression of insulin transcription factors and insulin gene itself. To achieve this project's second goal, more stem cell organoids were exposed to the control condition, the C5 condition, and a new condition named "CQ," which actively inhibited growth pathways via small molecule inhibitors. These new cells showed a 4000-fold increase in insulin expression compared to the control. This project establishes a proof of principle for taste-derived organoids as an accessible and potentially renewable source of insulin- producing cells. Although the primary presenter is affiliated with the University of California, this project was conducted at the NIH's National Institute on Aging.

Megan Tobias

MN - Minnesota State University - Mankato

Discipline: Natural and Physical Sciences

Authors:
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#2 Kendall Young
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#4 Hunter Burgess
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#6 Meaghan Keohane
#7 Austen Bayne
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#9 Samantha Katner

Abstract Name: Evaluating notum interaction with glypican-3 in hepatocellular carcinoma

Hepatocellular carcinoma (HCC) is the third most common cause of cancer related death. Typically, HCC arises in patients having a previous liver condition such as cirrhosis or inflammation. There are few treatment options that exist for HCC but they are only curative if the HCC diagnosis occurs in the early stages. Therefore, current therapy explorations involve identifying molecular targets for a personalized medicine approach. Uniquely, Glypican-3 is only overexpressed HCC tumor cells making it an attractive target for potential therapies. Glypican-3 on the surface of the cells has been known to play a role in growth factor signaling to aid in tumor progression. Like glypican-3, notum is overexpressed in HCC cells and minimally expressed in normal healthy tissues. Here, we investigate notum interaction with glypican-3 using an ELISA

assay by comparing CRISPR-edited notum knockout HCC cells with wild-type HCC cells. We propose further exploration on notum and glypican-3 relationship for developing HCC-targeted therapy approaches.

Marissa Todesco

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Marissa Todesco
#2 Lauren Stanwicks
#3 Lucas Kuhnau
#4 Alina Siddiqui
#5 Dr. Timothy Gentner

Abstract Name: The Neuroscience of Vocal Flexibility: Mapping Auditory-Motor Dynamics in Songbirds

Few species have developed the ability to adaptively change elements of a learned vocal signal to communicate information. Vocal flexibility – the ability to modify, combine, and learn new vocal expressions – has been theorized to depend on interactions between auditory and motor brain regions. Humans and European starlings both display this ability in speech and in song, respectively. In songbirds, natural variations in vocal flexibility between species offer an opportunity to explore the neural connections underlying this ability. Zebra finches are closed-ended vocal learners; they learn their song from older birds during their juvenile developmental window, after which they lose all vocal flexibility. Preliminary investigations have found an auditory-motor projection from avian auditory center NCM to pre-motor nucleus HVC in zebra finches that is present during the developmental phase, but fades once this period has ended. The disappearance of this auditory-motor projection coincides with the loss of vocal flexibility. European starlings, however, are open-ended learners, possessing lifelong vocal flexibility in their communication. We hypothesized that starlings possess a persistent auditory-motor projection between NCM and HVC that allows them to maintain vocal flexibility throughout adulthood. To determine if projections exist between these two areas, we injected a fluorescent retrograde tracer (Dextran Alexa Fluor 488) into neurons in both NCM and HVC of adult European starlings. If this projection exists bidirectionally, the fluorescent tracer will appear in NCM neurons in the HVC-injected birds, and in HVC neurons in the NCM-injected birds. The existence of information transfer between auditory and motor brain regions in adult starlings may explain how some species maintain vocal flexibility, while others do not. This study aims to contribute valuable insights into the neural mechanisms that arise from functional connectivity between auditory and motor brain areas to govern vocal flexibility, ultimately providing insight into human speech and language.

Abhiroop Reddy Tokala

WI - University of Wisconsin-Milwaukee

Discipline: Engineering and Architecture

Authors:
#1 Abhiroop Reddy Tokala
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#3 Pradeep Rohatgi

Abstract Name: The Effect of Cerium and Cooling Rates on the Cast Microstructure of Aluminum-Cerium

Alloys – Wedge Mold and Melt Spun Castings

Aluminum Cerium alloys are receiving increasing attention given their excellent high temperature properties. A series of nine Al-Ce alloys of compositions ranging from 2 – 18 wt% Ce were cast in steel wedge molds, and the changes in microstructures, including primary α-Al (in hypoeutectic alloys) or primary Al11Ce3 (in hypereutectic alloys) phases and the lamellar eutectic phase (of α-Al and Al11Ce3), were studied. The Al-12wt% Ce sample was recast in a water-cooled copper wedge mold and also melt-spun on a copper drum. The cooling rate in the copper mold was estimated to be 23.36 oC/s and 10.93 oC/s at 1" and 2" from the base of the wedge. The secondary dendrite spacing in Al –12 Ce alloy in copper wedge mold increased from 14.5 μm at 1" from the base to 18.5 μm at 2" from the base. The secondary dendrite arm spacing was 2.6 μm in the melt-spun sample. The microstructures in Al-Ce alloys have been compared with the microstructures in Al-Si alloys.

Genesis Tolbert

NC - Elon University

Discipline: Natural and Physical Sciences

Authors:
#1 Genesis Tolbert
#2 Justin Clar

Abstract Name: Examination of Trace Metal Content in Sparklers and Effect on Lungs Utilizing Synthetic Lung Fluid

Sparklers are designed for use by burning metallic particles, a process that produces a variety of colored flames and releases metal oxides as a result. Respiratory exposure to subsequent fumes and pollutants can induce oxidative stress and increase the risk of developing health issues such as lung irritation and cancer. While previous research has examined particulate matter emission from fireworks and related health consequences, little research has been done regarding handheld sparkler use. This study examined handheld sparklers that produce red, blue, green, and gold flames to determine the quantity of trace metals left in lung fluid after combustion. Filter papers with particulate matter were submerged in Artificial Lung Fluid (ALF) and Gamble's Solution (GS) and analyzed to determine metal content via ICP-OES. Results revealed high levels of aluminum in sparklers compared to other metals (i.e., arsenic and chromium). Future research will indicate the associated health risk of sparkler use by inhalation.

Benjamin Tolppanen

IL - Eastern Illinois University

Discipline: Social Sciences

Authors:
#1 Benjamin Tolppanen

Abstract Name: A Study of Deviance: Why Might a Person Join a Gang

My research involves watching and analyzing multiple youtube videos from the Soft White Underbelly channel run by Mark Laita. This channel is dedicated to interviewing different deviant individuals and others who are often ignored by society. In his interviews he talks about their experiences and lives. At first I was assigned to watch just one video for a deviant behavior course I was enrolled in, but after that I decided to do more research and look into multiple indidvuals experiences and how they compare to each other. For my research I selected multiple videos interviewing deviant individuals such as Mohawk Matt, Johnny, Spooky, and El Gordo. These individuals were/are all deviant in different ways, but the common theme for all of them is that they have all been involved in gangs. While analyzing these videos I applied multiple sociological concepts such as theories surrounding culture and subculture, both formal and informal sanctions, and stigma management. After analyzing all of the videos, I was able to draw comparisons between all of the individuals about things such as what got them into gang subculture and why they stayed involved. These results can help to better understand why a person would get involved in this type of deviant lifestyle, and also what society could do to prevent harmful deviant behaviors, such as this one, from continuing to occur.

Fathia Tom-Alli

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Fathia Tom-Alli
#2 Cindy Ejezie
#3 Tennille Noyan
#4 Anne Wiley

Abstract Name: Where have all the Females Gone? Examining Causes of Male-Biased Sex Ratios in the Eastern Painted Turtle

Biased sex ratios in animal populations can significantly reduce reproductive rates and contribute to population decline. Here, we examine the potential causes of male-biased sex ratios in eastern painted turtles (Chrysemmys picta picta) captured in wetlands in the Patuxent Research Refuge and nearby Bowie State University campus. Using two years' of capture data, we tested two hypotheses and their predictions: 1) females are killed by vehicles while traveling to lay eggs, and therefore sites closest to roads will experience the most male-biased sex ratios, and 2) females are active in earlier months of the year compared with males, and the timing of our trapping efforts bias study-wide sex ratios in favor of males. We ranked ten sites based on their relative proximity to roads and relative vehicle traffic. However, we did not find a significant relationship between sex ratio and road proximity. Instead, we found differences in sex ratio based on season, with spring sample dates showing a slightly female-biased sex ratio, on average, and fall sample dates showing a strong male-bias. We conclude that male-biased sex ratios in our study are mainly driven by our history of fall sampling. The study-average bias in sex ratio could also be influenced by higher depredation rates of females during nesting. While we cannot conclude that traffic causes biased sex ratios in our eastern

painted turtle population, we note that turtles are regularly killed on local roads and we therefore urge the community to consider tunnels or similar means of preventing turtle road mortality.

Elissa Torgerson

IN - Valparaiso University

Discipline: Natural and Physical Sciences

Authors:
#1 Elissa Torgerson
#2 Laurie Eberhardt

Abstract Name: Plastic nesting material and its potential impact on predation

Rising levels of plastic pollution in the environment continue to impact aquatic and terrestrial organisms, including birds when they incorporate it into their nests. Whether the use of plastic as nesting material is entirely helpful or harmful is largely unknown. Potential detrimental effects of incorporating non-anthropogenic matter as nesting material include entanglement, ingestion, alteration of thermal properties, and increase in predation risk. The proportion of plastic used in robin (Turdus migratorius) nests was determined in 3 types of locations in Northwest Indiana. These sites included shopping area parking lots, Valparaiso University campus, and local parks. Post-breeding season robin nests (n=44, f=4.51, p<.025) were collected and dissected. Overall, 89% of the nests contained plastic. The nests with the most plastic originated from shopping areas. The effects plastic material had on nest predation rate were examined by placing artificial and natural nests around campus with model clay eggs. Half of the trials had white polyethylene plastic incorporated into their nests, and half contained no plastic. Time to nest disturbance or the presence of animal markings on the eggs were used to measure predation. In 2022, 74% of the nests were attacked with more predation from bird species than mammals. The time until predation was significantly longer for nests with plastic (n=11, t=2.3, p<.050). In 2023, the experiment was replicated, and results indicated that the time until predation was significantly longer for nests without plastic. Findings also suggested there are seasonal differences between the rate of predation for nests with and without plastic. Plastic might be making the nest more visible to predators, the sound of the plastic moving could attract predators, or the plastic might deter predators by scaring them away. Future research is required to understand the comprehensive impacts plastic has on bird nest quality and breeding success.

Andrea Torres

MA - Babson College

Discipline: Business and Entrepreneurship

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#1 Andrea Torres
#2 Megan Way
#3 Joseph Ricciardi

Abstract Name: The Relationship Between Mexican Informal Labor and Poverty

By looking at the relationship between historical Labor Market Regulations and the growth of Informal Labor in Mexico, this research studies poverty as a spillover effect of informality growth. This study will test if a reduction in the size of the informal economy in Mexico leads to a decrease in poverty levels. Moreover, this

research will also confirm if past policies that lead to labor market rigidities increased informal employment in Mexico, hoping to clarify a causal relationship between labor market rigidities and informal labor growth.

Cindy Torres Camacho

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Brandon Stark

Abstract Name: Advancement of Autonomous Animal Burrow Detection at the Vernal Pools and Grassland Reserve: A Deep Learning Approach Using Drones

The Merced Vernal Pools and Grassland Reserve situated behind UC Merced constitutes a vital ecosystem, hosting delicate vernal pools with unique biodiversity and hydrological significances. Traditional vernal pool counting and tracking methods often fall short due to the dynamic nature of these pools. In this study, we propose a continued exploration of an innovative approach combining drone technology and deep learning to accurately count and track vernal pools in real time. By deploying drones equipped with high-resolution cameras, we capture detailed aerial imagery of the reserve's landscape. Using deep learning, we use models that can find and track the ground mammal burrows by themselves, even in the complex grassy surroundings. This research not only introduces a state-of-the-art methodology for vernal pool monitoring but also contributes to the broader goals of the Natural Reserve System by facilitating precise ecosystem assessments. The outcomes will empower conservationists, researchers, and policymakers with timely, accurate data to inform decisions and safeguard the delicate balance of the Vernal Pools and Grassland Reserve. Identifying certain land characteristics that determine the range of burrow abundance. This would allow species to thrive and also ensure future land management to safeguard this natural reserve for many more years.

Anika Tosh

VA - Virginia Commonwealth University

Discipline: Health and Human Services

Authors:
#1 Anika "Nikki" Tosh
#2 Christina Sheerin

Abstract Name: Substance Coping Mechanisms and Startle Responses Related to Trauma History in Post-9/11 Veterans

In post-9/11 combat-exposed US veterans, rates of alcohol and other substance use are notably high and suggest their use as often problematic coping mechanisms. Evidence of significantly heightened fear responses in these veterans may be a result of enduring previous traumatic experiences and/or subsequent post-traumatic stress disorder (PTSD). Previous literature suggests that fear responses operate differently in trauma-exposed brains, thus this research aims to further investigate the startle responses of this population and its association with PTSD and alcohol use disorder (AUD). Those with increased startle response may be at a greater risk for substance use coping over time. Identification of this risk is important given that problematic alcohol and other substance use amongst veterans are associated with significant negative impacts including physical health consequences, functional impacts, and even increased mortality.This research will examine startle responses as they relate to trauma history, PTSD status, and AUD status as a

potential driver of substance coping. Our sample consists of post-9/11, combat trauma-exposed, white, male veterans (n=27) who completed self-report measures, a clinical interview, and a laboratory task assessing fear potentiated startle. In this sample, 46.2% had PTSD and 38.5% had AUD. This research will present descriptive information and run association tests between startle responses and numerous trauma and alcohol-related variables: trauma load, drinking motives, PTSD status, AUD status, and binge drinking. Preliminary findings indicated that shocked-associated startle response ($p = 0.031$) correlated with trauma load ($M = 7.8$, $SD = 4.2$). Further, there was a trend-level difference in baseline startle response ($p = 0.067$) such that individuals with PTSD ($M = 50.4$, $SD = 2.3$) demonstrated greater baseline startle compared to those without ($M = 47.8$, $SD = 4.0$). There was no significant difference in AUD diagnosis ($p = 0.408$) with baseline startle response. Additional findings will be reported and implications and next steps discussed.

David Totty

GA - Morehouse College

Discipline: Natural and Physical Sciences

Authors:
#1 David Totty
#2 Kim Rooney
#3 Charles Searles

Abstract Name: Identifying Mechanisms Underlying Cardiovascular Health in Black Adults: Investigating the Role of miR-122-5p on Glutamine Production through Regulation of Glutamine Synthetase Expression.

Cardiovascular disease (CVD) is the leading cause of mortality and morbidity in the United States of America, and there are marked disparities in CVD prevalence and outcomes between Black Americans and other racial groups. Previously, the Morehouse-Emory Cardiovascular (MECA) Center for Health Equity examined the microRNA (miRNA) and metabolomic profiles underlying cardiovascular health (CVH) in a cohort of Black Americans living in Atlanta, GA. They found that plasma levels of microRNA-122-5p (miR-122-5p) and glutamine correlated with CVH. While much is known about the benefits of glutamine, nothing is known about the mechanisms that connect miRNA 122-5p to glutamine. The goal of this study was to further examine the relationship between expression of miRNA-122-5p and glutamine. We hypothesized that miR-122-5p can suppress glutamine production in endothelial cells by targeting glutamine synthetase, the enzyme responsible for converting glutamate to glutamine. In silico analysis revealed that the 3' untranslated region (3' UTR) of glutamine synthetase mRNA contains a target sequence for miR-122-5p. Subsequently, human aortic endothelial cells (HAECs) were cultured in glutamine supplemented media or in glutamine free media. To overexpress miR-122-5p, HAECs were transfected with miR-122-5p mimic or scrambled mimic control. Real Time polymerase chain reaction (RT-PCR) was performed to measure expression of glutamine synthetase mRNA. Overexpression of miR-122-5p did not suppress glutamine synthease mRNA levels in cells grown with glutamine-free or glutamine supplemented media. Although these results indicate that miR-122-5p did not suppress the expression of glutamine synthetase through mRNA degradation, miRNA can also modulate target expression through translational repression. In future studies, protein expression of glutamine synthestase will be investigated through western blot analysis. This work provides insight into the connections between the miRNA and metabolomics pathways underlying cardiovascular health. Understanding the role of miRNA in regulating metabolite levels will also help identify therapeutic targets.

Luke Toussaint

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Luke Toussaint

Abstract Name: Direct Human Impact on Whitewater Mammal Species

Human activity and disturbance have a very large effect on the diversity and survival of mammal species. The purpose of this study is to see if direct human presence could have an effect on the makeup of species in different parts of a habitat, and potentially affect the times they are active in these areas. In this experiment, 10 motion-sensing cameras were deployed for two months in areas of the Whitewater Nature Preserve. Six of the cameras were facing trails, with direct, consistent human contact throughout their deployment. The other four faced more off-trail, forested areas that saw no human activity. Our results showed that there was a greater diversity in the mammals that were captured off the trails. In addition, mammals like the coyote (Canis latrans) and the red fox (Vulpes vulpes) were captured only during the early morning and late night on the cameras facing the trails, times where there is little to no human activity. Mammals are very important factors in our ecosystems. Our impact on these species could affect our environment and how it functions. Understanding how we affect mammal species, directly or indirectly, could help to prevent the loss of biodiversity and endangerment of key species in our environments.

Darlina Tran

LA - Louisiana State University, Baton Rouge

Discipline: Social Sciences

Authors:
#1 Darlina Tran
#2 Danbi Choe

Abstract Name: Parental Ethnic-Racial Socialization and its Influence on Asian American Adolescents' Psychological Well-Being

Despite the increasing demand for more minority representation, Asian American research continues to be an underrepresented demographic. Current research on Asian Americans delves into socialization effects on Asian American adolescents. The term parental Ethnic-Racial Socialization (ERS) entails the types of messages and conversations Asian parents have with their children pertaining to race, ethnicity, and identity. While parental ERS significantly influences the development of racially and ethnically minority youth, there is a scarcity of research specifically addressing Asian American youth (Juang et al., 2016). ERS may benefit or harm Asian American adolescents' psychological well-being depending on the level of significance Asian parents imply with concepts of race and ethnicity. Adverse effects were shown in Asian American adolescents doubting the validity of belonging in a minority demographic as a result of the lack of racial conversations with their parents (Young et al., 2020). This paper aimed to expand the current literature about the effects of ERS on Asian American adolescents' psychological well-being. We administered a questionnaire and collected 554 samples who identified within the age range of 18-24 years old, including both first and second Asian American immigrant generations. Subsequently, we employed t-tests to examine the impact of parental ERS on Asian American adolescents' psychological well-being. Preliminary findings reported that parents' minimization of race significantly reduced Asian American adolescents' self-esteem. In other words, Asian American youth were more likely to exhibit increased self-esteem if their parents advocated diversity and emphasized the significance of race. Our findings emphasized the significance of parental ERS research for Asian American adolescents and highlighted protective and risk factors regarding their psychological well-being.

Michelle Tran

CA - Mount Saint Mary's University

Discipline: Natural and Physical Sciences

Authors:
#1 Michelle Tran
#2 Melissa Painter
#3 Chasitee Collins
#4 Eli Griffin
#5 Jessica Izzi
#6 Lydia Hopper

Abstract Name: Evaluation of Behavior and Welfare in Laboratory-Housed Beagles (Canis lupus familiaris) When Provided a Raised Surface

In 2022, USDA-registered laboratories contained approximately 48,000 dogs; thus, providing proper enrichment to them and assessing its quality is an important topic of study for ethical and scientific reasons. Laboratories are recommended to provide dogs with environmental enrichment in the form of furniture, such as raised platforms and ramps, but the welfare benefits provided by such interventions have not been thoroughly researched. This study examined the behavior and welfare of four pair-housed beagles (Canis lupus familiaris) when raised platforms were added to their enclosures. We hypothesized the beagles would prefer resting on the platform over the ground floor when provided the choice, and that the platform's presence would enhance their welfare, which would be demonstrated by lower activity rates and better sleep efficiency scores. Two pairs of beagles were observed in their enclosures through surveillance cameras over four 1-week long phases, following an A-B-A-B study pattern (A=baseline: no platform; B=intervention: platform provided), to compare the beagles' behavior with and without the platform. One pair of beagles had collar-mounted accelerometers that collected data concerning their activity patterns, and the quality and duration of their sleep. On average, the beagles chose to rest on the platform half the time the platform was present, and the amount of time they spent in the platform's segment of the enclosure increased during the B phases. We conclude that the platform affected the beagles' behavior and potentially positively impacted their welfare, and therefore recommend the implementation of platforms in dog enclosures.

Vu Bao Khanh (Karley) Tran

CA - California State University - Northridge

Discipline: Health and Human Services

Authors:
#1 Vu Bao Khanh (Karley) Tran
#2 Vickie Yu

Abstract Name: Rethinking Bilingual Advantage: Examining the Interaction of Language Experience and Executive Function

As the demand for bilingualism increases in our culturally diverse society, various issues related to bilingualism have garnered considerable attention. One such area of focus is the cognitive benefits associated with being bilingual. Over the past decade, numerous studies have explored the concept of bilingual advantage, particularly its impact on executive functions. However, the findings in this regard have been inconsistent. While a substantial body of literature supports the idea that bilingual individuals possess cognitive advantages over their monolingual counterparts in specific cognitive tasks, there are also scholarly works that have failed to demonstrate such enhanced cognitive benefits. This discrepancy in research findings

may be attributed, in part, to the multifaceted nature of bilingualism, which includes factors of language experience, such as language proficiency and daily language usage. Many experimental studies on bilingual advantage have overlooked the necessity of controlling these variables in their participants, contributing to the inconsistency in results. Recognizing the complex nature of bilingualism and its potential influence on executive functions, this study aims to identify the language experiences that impact executive function. Through a systematic review, we aim to scrutinize the methodologies employed in previous research, specifically focusing on how these studies controlled for variables, in order to identify the influential factors of language experiences on executive function. We expect to find a strong correlation between language experience and the cognitive advantage of bilingual individuals. The finding will provide clear direction for future bilingual research and will ultimately be a valuable reference in the cognitive enhancement of bilingual individuals in the field of Speech-Language Pathology.

Ngoc Tran

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Ngoc Tran
#2 Doina Bein

Abstract Name: Factors That Can Affect the Accuracy of Some Non-neural Machine Learning Models Applied to Numerical and Categorical Data

My research investigates what factors affect the accuracy level of various machine learning models when applied to different attributes of the same database. I'll test the dataset "Data Science Salaries 2023" and experiment with key data fields. My hypothesis is: will providing more data points and outcomes for various models to work on lead to better results, and will all the models produce the same level of accuracy? My method uses six non-neural network models to predict accuracy: Linear Regression, Logistic Regression, K-nearest Neighbor Classifier, Decision Tree Classifier, Random Forest Classification, and Naive Bayes Classifier. After seeing the result, my first conclusion is that too many outcomes to predict will lead to less accuracy. Second, the accuracy will increase if there is a big gap (one factor takes the majority). This research can help identify the optimal model for specific data types.

Michelle Tran

CA - Mount Saint Mary's University

Discipline: Natural and Physical Sciences

Authors:
#1 Michelle Tran
#2 Andrea Garcia
#3 Samantha Chajon
#4 Natalia Penarrieta
#5 Lilianna Suarez
#6 Adriane Jones
Andrea Garcia
Samantha Chajon

Abstract Name: Assessment of Antibiotic Resistance and Water Quality in Urban and Rural Watersheds:

Ballona Creek to Playa Del Rey Beach and Topanga Creek to Topanga Beach

Water quality includes the assessment of total coliform bacteria, specifically Escherichia coli (E. coli). The Environmental Protection Agency (EPA) has a limit for E. coli of 125 CFU/100 mL for high-contact water activities and 576 CFU/100 mL for low-contact activities. Besides bacteria's direct role as potential human pathogens, they are a source of antibiotic-resistant (AR) genes, a growing public health concern, and there is a lack of research on their role in the environment. We studied two watersheds in the spring and summer of 2023: urban (Ballona Creek (BC) and Playa Del Rey Beach (PDR)) and rural (Topanga Creek (TC) and Topanga Beach (TB)) to look at the connectivity between the streams and the ocean. Water quality was evaluated with onsite environmental sensors, IDEXX Colilert-18, and a modified IDEXX method using antibiotics (tetracycline and erythromycin). We hypothesized that the urban watershed would contain higher levels of coliforms and AR compared to the rural watershed and that within each watershed, the streams would have higher levels of coliforms and AR than the beaches, which could serve as inputs into the ocean. BC consistently had high levels of AR (35% were resistant to erythromycin), and the E. coli count was above EPA limits. Meanwhile, its connected beach PDR contained low levels of coliforms and AR. In contrast, TC had low levels of E. coli and AR, while the beach had higher levels. TB is a popular surfing spot and could be a source of AR in the environment.

Du Tran

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 Du Tran
#2 Bogdan Suceavă

Abstract Name: Inequalities Between Intrinsic and Extrinsic Quantities for Three Dimensional Smooth Hypersurfaces

By J.F. Nash's Theorem, any Riemannian manifold can be embedded into a Euclidean ambientspace with dimension sufficiently large. S.-S. Chern pointed out in 1968 that a key technicalelement in applying Nash's Theorem effectively is finding useful relationships between intrinsicand extrinsic elements that are characterizing immersions. After 1993, when a groundbreakingwork written by B.-Y.Chen on this theme was published, many explorations pursued thisimportant avenue. Bearing in mind this historical context, in our present project we obtainnew relationships involving intrinsic and extrinsic curvature invariants, under natural geometricconditions.

Bach Tran

FL - University of Central Florida

Discipline: Interdisciplinary Studies

Authors:
#1 Bach Tran

Abstract Name: Mapping Accessibility to Health Care Using Public Transportation

Can people get to healthcare facilities promptly using public transportation? Public transit offers various advantages for both communities and individuals in terms of mobility and has the potential to serve as a

practical alternative to private, motorized transportation. Public transportation improves the population's health and provides reliable general accessibility to care. Meanwhile, timely and convenient public transit becomes a lifeline for people who cannot access other types of transportation, especially when it comes to emergency care. We will analyze the spatial accessibility to care via public transit by building a private network analysis within ArcGIS Pro. Data layers include: (1) coordinate data of hospital and stand-alone emergency rooms as designated by the North American Industrial Classification System (NAICS), (2) public transit route and stop data for Orlando, Florida, and (3) demographic data by ZIP code. We will compute and visualize the public-transit accessible areas within the benchmark accessible time of 30 minutes, determining inaccessible regions (i.e., healthcare deserts via public transit) as a separate layer. We will overlay the map generated with demographic data to determine the relation between the population characteristics and access to healthcare facilities via public transit. Based on the literature review, we expect to find an overlap between areas with high poverty levels, vulnerable populations, and healthcare deserts via public transit. Future implications of this research include establishing GIS analytical methods to address disparities in access to healthcare facilities (i.e., primary care, specialists, or labs) via public transit.

Alyssa Tran

CA - California State Polytechnic University - Pomona

Discipline: Natural and Physical Sciences

Authors:
#1 Alyssa Tran
#2 Chantal Stieber

Abstract Name: Reactivity of N-heterocyclic carbene nickel(0) complexes for CO2 reduction

Greenhouse gas emissions contribute to a concerning increase in the global temperature, with CO2 being of significant concern. CO2 activation with transition metal catalysts can be an effective method for greenhouse gas reutilization. This work aims to probe CO2 activation with bidentate N-heterocyclic carbene (NHC) Ni(0) complexes and captured CO2 sources. Bis(imidazolium) salts as ligand precursors can be synthesized from substituted imidazoles reacted with dihaloalkanes. This work created a new bis(imidazolium) salt using bifonazole (BIF) and dibromomethane to form [BIFNHC2Me][Br]2. The NHC ligand was formed by deprotonating a bis(imidazolium) salt, [tBuNHC2Me][Br]2 or [BIFNHC2Me][Br]2, using two equivalents of KHMDS. The NHC2 was then reacted with Ni(COD)2 to form (tBuNHC2Me)Ni(COD) or (BIFNHC2Me)Ni(COD). These NHC2Ni(COD) complexes were tested with captured CO2 sources in the form of imidazolium carboxylates and under electrochemical conditions.

Tina Tran

FL - University of Central Florida

Discipline: Mathematics and Computer Science

Authors:
#1 Tina Tran
#2 Carlos Borges

Abstract Name: A Reinforcement Learning Method for the Inverse Acoustic Scattering Problem for a Sound-Soft Obstacle

The mathematics of scattering theory has contributed to the fields of computational wave phenomena, ocean

acoustics, geophysics, remote sensing, and medical imaging by creating technology such as radar, sonar, and MRI. Recent advancements in Artificial Intelligence have catalyzed research into improving image reconstruction using methods such as reinforcement learning. Finding a cost-effective method could improve accuracy and reduce costs of imaging technology. My research focuses on expanding upon a reinforcement learning method that optimizes sensor placement for image reconstruction. Prior research efforts have yielded a reinforcement learning program to optimize sensor placement if waves pass through the target object unchanged. My research will attempt to expand this model for sound-soft objects, which reflect some of the incoming waves. Preparatory steps include first testing star-shaped objects, which have a finite dimensional representation due to the number of coefficients in the Fourier series representing the radius. This aspect makes star-shape more complex than geometric to construct. After testing star-shaped objects, I will move forward with implementing the sound-soft boundary conditions into the model. Expanding the current reinforcement learning model or creating a new model able to efficiently reconstruct sound-soft objects will enable this program to be a cost-efficient solution in settings where a high-definition image of a sound-soft object is necessary. Many situations in the medical field such as the process of tumor analysis require high resolution reconstruction of domains. Cancer is the second leading cause of death in the United States, with over 600,000 deaths in 2022 (CDC). I hope to find a reinforcement learning algorithm that will enable faster generation of high-definition images with accuracy similar or better than current methods therefore reducing the cost of MRI scans for patients. Lower costs will help potential cancer victims identify tumor growth at an early stage and receive life-saving treatment.

Tina Tran

FL - University of Central Florida

Discipline: Mathematics and Computer Science

Authors:
#1 Tina Tran

Abstract Name: Expandable Music Recommendation using a Joint Embedding Space

Current music recommendation algorithms use user data to recommend similar songs to other users. This method is prone to cold start, where the model requires initially gathering ample user data. In addition, updating the model requires a training process that grows exponentially with each new song in the database. My research will create a model for music recommendation borrowing methods used in music generation. The premise is for an input paragraph of text detailing aspects of the desired song to produce an existing song with the desired elements. To enable learning of audio given text, the model will utilize a lookup space where points in the space are vectors representing a single song. These song vectors are created by joining a text vector and audio vector, hence the term “joint embedding space”. The distance between two points in the joint embedding space represent the similarity between those songs, with the closest point to the input text point being the recommended song. A music recommendation model created with the proposed method cuts costs for updating, since adding a point to the space is all that is needed. The proposed method also standardizes the recommendation process for other high-quality, specialized media such as videos. Any media that can be represented by text can utilize this method. Therefore, the method of using text data as an intermediate is versatile with promise towards creating a multi-media recommendation system. For example, a music piece can be recommended for an art piece with a caption, for a movie given a summary, or for a book through reviews. A multi-media recommendation system would combine all creative platforms including music, art, and video to allow users to discover new varieties of media and increase exposure for lesser-known artists.

My Nha Quyen Tran

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
#1 My Nha Quyen Tran
#2 Martin Horvath

Abstract Name: A Glance into the Origin of Life through the Lens of the DNA Repair Enzyme MutY from the Lost City Metagenomes

I have been studying the DNA repair enzyme MutY found at the Lost City thermal field 3000 feet deep in the Atlantic Ocean with conditions similar to those that may have shaped the origin of life. With no sunlight and very little oxygen, life at the Lost City is driven by chemical transformations in rocks at extremely high levels of pH and temperature. DNA in all organisms strictly follows base pairing rules in which A pairs with T and G pairs with C. We all think of oxygen as beneficial, but it can cause damage to DNA. Oxidized guanine (OG) violates the base pairing rules and pairs with A. This causes mutations, which can lead to changes in the genetic information. The mutagenic potential of OG was a challenge that had to be solved early in the emergence of DNA-encoded life. The enzyme MutY functions in suppressing mutations and therefore protects us from developing cancer by finding and removing A from OG:A mispairs. In my effort to replicate conditions at the Lost City so as to explore how the DNA repair enzyme MutY evolved to function in this strange environment I need to purify the enzyme. I used DNA cloning to attach the MutY-encoding genes to a soluble bacterial protein called GST that hopefully will make it easier to purify the MutY proteins. Encouragingly, these fusion proteins expressed well in bacteria and appeared to be soluble. I am now exploring different conditions looking for optimal enzyme activity, which I predict to be different from what familiar bacteria can tolerate. Basic science research on how DNA repair enzymes adapted to the strange environment at the Lost City may inform future translational applications to treat and cure cancer and thus ensure a healthy society.

Lindsey Tran

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Lindsey Tran
#2 Daniel Erenso

Abstract Name: A Preliminary Study: Harvesting and Storing Electromagnetic Radiation using Animal Blood and Micromagnetic Beads

Electromagnetic (EM) radiation, omnipresent in our surroundings, serves diverse purposes from simple cellular communication to advanced medical treatments and space exploration! Our research explores a preliminary study utilizing laser-trapping, micromagnetic beads, and animal blood for potentially revolutionizing EM energy harvesting and storage. The livestock industry annually generates an excessive 1.4 billion pounds of waste, primarily animal blood, representing a significant environmental concern. By utilizing blood samples from key livestock animals, including sheep, goat, chicken, bovine, turkey, horse, and porcine, our study produces enduring, self-sustaining EM radiation. The experiment involves a 3:1 mixture of animal blood and micromagnetic beads on a depression slide within an infrared laser trap, progressing through two phases: Plasma formation and Star-like radiation. In Plasma formation, exposure to the laser trap induces electric breakdown, ionizing blood cells and micromagnets, forming a dense plasma. The subsequent Star-like radiation phase accelerates the dense plasma, generating intense black-body radiation. The study attains 90-95% radiation energy absorption over 1.5 to 7.5 hours, marking a micro-level advancement in EM harvesting with animal blood. We envision this as a foundational step for macro-level applications like solar

energy harvesting, offering potential benefits for the environment through waste reduction and enhanced safety in the livestock industry.

Tiffany Tran

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Tiffany Tran
#2 Brianna Bisby
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#4 Natalia Zavala
#5 Lizbeth Mendez Martinez
#6 Aaron Li
#7 Mason Zhang
Brianna Bisby
Samuel Cullen

Abstract Name: Construction of Antibody-Antifungal Protein Hybrids as a potential Drug Against Candida albicans

Candida albicans is a yeast-like fungus commonly found in human bodies in a commensal symbiotic state. It may cause localized superficial infections but it can also cause systemic candidiasis through the bloodstream. Systemic candidiasis is life-threatening and is associated with an extremely high mortality rate, in part due to a lack of effective anti-Candida drugs. With the emergence of drug resistance, there is an urgent need for the development of new drugs. This project proposes to generate anti-Candida antibody-antifungal protein hybrids as a potential drug for candidiasis. The anti-Candida antibody is M1g1, a human recombinant IgG1 antibody previously developed in our lab. The antifungal protein is human chitotriosidase, an enzyme that directly hydrolyzes the fungal chitin. We hypothesize that when M1g1 and chitotriosidase are combined in a hybrid form, the antibody should direct chitotriosidase specifically to C. albicans cells for killing. The gene for M1g1 will be linked to the gene of chitotriosidase, and the gene construct will be verified by DNA sequencing. The gene construct for M1g1-chitotriosidase will be introduced into Chinese hamster ovary cells for expression. M1g1-chitortisisidase hybrid proteins will be subsequently purified and their antifungal properties will be analyzed through a series of tests, such as germ tube inhibition and fungicidal assays. The antifungal hybrid proteins may be a potential alternative to conventional anti-Candida medications.

Minh Tran Ha

OH - Denison University

Discipline: Natural and Physical Sciences

Authors:
#1 Joy Dorsten
#2 Minh Tran Ha

Abstract Name: Effect of low poly-unsaturated fatty acid diet on Drosophila melanogaster larval development and motility

Fatty acids play a significant role in an animal’s developmental biology and the nervous system. Unsaturated

fatty acids, including monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA), have been pivotal in dietary enhancing Drosophila melanogaster behaviors. The omega-3 alpha-linolenic acid (ALA), one example of PUFA, is an essential fat only obtained from diets. In contrast, MUFAs, such as oleic acid (a MUFA), are synthesized by most animals and considered non-essential. Previous unpublished studies in the Dorsten lab have shown that Drosophila melanogaster larvae on diets where the source of PUFA is removed (low PUFA diet) display slower crawling speeds than those raised in diets with sufficient PUFA (high PUFA diet). Hence, we continued to confirm the Drosophila melanogaster crawling defects by conducting crawling assay experiments, measuring larval body weight, and calculating percent pupal recovery. In assaying the crawling experiments, we recorded the distance the larvae in various diets had crossed and the frequency of pause-turns during larvae crawling traces, which were then analyzed manually or through Python coding. Although the final results illustrated no significant defects in Drosophila melanogaster larvae crawling behaviors between low PUFA diets and high PUFA diets, we were able to demonstrate the mechanism of adding more MUFA or Omega-3 would benefit Drosophila melanogaster larvae from crawling faster. Further conclusions for no crawling defects could be reduced straight-line crawling speed, developmental delays resulting in smaller larvae, or alternations in other crawling behaviors. Our future work should include applying tracking software to measure and calculate animal traveled distance and speed precisely. We want to investigate the Drosophila melanogaster eclosion rate and percentage of pupal lethality for data authority in larval developmental delays.

Alexia Trapier

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Alexia Trapier

Abstract Name: Visual Perception of the Classical Orders: Eye-tracking Simulations on the Orders

I am studying architectural column orders and how they are interpreted by the average person. I chose this because I want to learn how people are drawn to the orders when looking at them so I may better understand the orders themselves, and how the world perceives them without an in-depth knowledge or understanding of their composition. I will be doing a comparison of three column orders via eye-tracking software. These consist of the doric, ionic, and corinthian orders. First, I will use the eye-tracking software over an image of each column capital on its own, afterwards I will run it again with all three images side-by-side. This process will help us discover which column order is preferred by the human eye, and why. I believe by doing these two comparisons we will learn which column order will draw the eye of its viewers, and how in-depth someone might look at the detailing of the capitals. I anticipate that the corinthian order may draw the most attention due to the higher level of detailing this capital contains. As a designer it is important to learn and understand what the human experience and interaction is with a building's design. To understand what your viewers prefer and how it makes them feel is important in the world of architecture. An architect doesn’t design for themselves, they design for others of the world, and thus, it is important to understand why people enjoy a certain amount of detailing, or proportionality. Although I’ve sampled at a small scale, it shows that there’s room for expansion into other aspects of design. I hope that through this research we can better understand why the classical orders are important to have in the world of design today and how they impact design in our world today.

Taryn Trapp

TX - Texas Woman's University

Discipline: Social Sciences

Authors:
#1 Taryn Trapp
#2 Christian Hart

Abstract Name: Talking About Death: Exploring How Attitudes Towards Death Influence Our Openness and Honesty in Discussing Mortality

This study aims to expand our knowledge of death attitudes as they correlate with willingness to be open and honest about death. We have recognized that the topic of death and dying is taboo in America, which often leads to people avoiding these important end-of-life discussions. We hypothesize that individuals who have more fear and avoidance of the subject of death would demonstrate lower levels of openness and honesty in discussing it. In total 243 respondents with an average age of 30.54 completed the anonymous online survey. We also assessed their gender, religion, and religious level, the latter of which was measured on a five-point scale with an average of 2.91. Included in the survey was the already established Death Attitudes Profile-Revised questionnaire, which measured levels of fear, avoidance, and acceptance. We also created a Willingness to Lie About Death scale of our own for this study. With the information collected, we wanted to determine if individuals with more negative attitudes toward death would be willing to lie about it, and for what reasons. This research aims to contribute to understanding the barriers to discussing death and the impact of insufficient education.

Josephine Traver

KY - Morehead State University

Discipline: Natural and Physical Sciences

Authors:
#1 Josephine Traver
#2 Emmalou Schmittzehe

Abstract Name: Determining the Labeling Accuracy of Nicotine Content Across U.S. E-Cigarette Manufacturers Using HPLC and GCMS

The popularity of nicotine usage, especially among adolescents, is increasing. However, studies have shown that the labeling of nicotine content on e-cigarette products is often inaccurate. Some products contain higher levels of nicotine than stated on the label, while others have lower levels. Due to the lack of FDA regulation on e-cigarette products, manufacturers in the U.S. are not held accountable for accurately disclosing nicotine content. This project aims to investigate whether the nicotine levels reported on e-cigarette labels align with experimental findings. Implementing regulation in this area can ensure trust between e-cigarette users and U.S. manufacturers.

Allyson Treat

TX - McLennan Community College

Discipline: Humanities

Authors:
#1 Allyson Treat

Abstract Name: Examining Felony Disenfranchisement: A Tripartite Ethical Analysis through Consequentialism, Deontology, and Ethics of Care

This paper considers the ethical implications of felony disenfranchisement through several ethical lenses, including consequentialism, deontology, and the ethics of care. After reviewing literature on criminal law and philosophy, I contend that felony disenfranchisement is morally impermissible and serves as a punitive mechanism. A critical analysis reveals that consequentialist frameworks often fail to justify the burdens imposed on offenders, neglecting their autonomy. Similarly, deontological perspectives find felony disenfranchisement to be unethical, deeming it a degrading treatment of the guilty and a tool for the benefit of the privileged. This study extends its focus to care ethics, critically evaluating the United States' prison system. Proposing a care-centered approach to justice, I advocate for an alternative to the prevailing retributive system in the US. Throughout the paper, race-related issues associated with felony disenfranchisement will be closely explored, and a nuanced examination of the intricate intersectionality within this complex ethical dilemma will be provided.

Ace Trede

CA - University of Redlands

Discipline: Natural and Physical Sciences

Authors:
#1 Ace Trede
#2 Dustin VanOverbeke

Abstract Name: Development of Novel Camera Trap System to Monitor Hymenoptera

Monitoring of native bees has significant importance as populations continue to decline, primarily as the result of exposure to pesticides, habitat fragmentation, climate change, and the introduction of non-native plant and bee species. Pan trapping is one of the most commonly used methods for monitoring in the field because it requires little labor, collects samples passively, and is cost effective. However, biases impose important limitations on pan trapping data. Pollinators captured by pan traps are often smaller which could skew statistical analyses and interpretation. In the present study, camera monitoring was done in direct comparison to pan traps to determine the viability of a non-destructive and potentially less-biased form of collection in the field. Initially, no significant difference was noted in the collection of Hymenoptera. As testing continues with improved trap designs deployed into the field, a continued trend of comparable Hymenoptera catch between methods and insight into genera richness may be seen.

Salma Treish

NC - Appalachian State University

Discipline: Health and Human Services

Authors:
#1 Jennifer Schroeder Tyson

Abstract Name: Navigating the Mediterranean: A Comprehensive Analysis of Refugee Health

Objective: This research explores the complex challenges affecting the health of refugees in the Mediterranean region. Background: To grasp the nexus between refugees and health, it is crucial to examine the roots of these issues. Refugees often grapple with trauma, leading to mental health issues, while language

barriers and financial constraints impede healthcare access. Crowded living conditions elevate the risk of infectious diseases, reproductive health challenges, and potential worsening of chronic diseases. Issues related to vaccination and preventive care further compound health concerns. Legal frameworks, cultural competence, and collaborative efforts by governments, NGOs, and international agencies are vital in addressing refugee health challenges. The study investigates the adverse impacts of migration, congested camps, and trauma on refugees' physical and mental well-being. Methods: Utilizing a comprehensive causal theory model, the research includes a literature review, network analysis, and synthesis of key factors affecting refugee well-being. Results: Examining migration routes, the study analyzes health risks during perilous sea and land journeys, considering the impact on fatigue, malnutrition, and exposure to harsh conditions. Host country factors, such as healthcare access and social integration, are explored, along with the role of humanitarian aid and health policies. Emphasizing healthcare infrastructure's significance, including capacity, resources, and cultural competence, the research delves into individual and community resilience, exploring coping mechanisms and support networks to mitigate trauma and enhance mental well-being. By synthesizing these elements, the research aims to comprehensively understand factors influencing refugee health around the Mediterranean. Discussion: The literature review and network analysis provide nuanced insights into the challenges faced by refugees, contributing valuable information for policymakers, healthcare professionals, and humanitarian organizations working to improve the health of displaced populations in the region.

Joselin Trejo

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 JOSELIN TREJO

Abstract Name: "Harmony in Radiance: Designing an Accessible Home Inspired by the Northern Lights"

This project addresses challenges unique to individuals with retinitis pigmentosa, a degenerative visual impairment. The symptoms of retinitis pigmentosa, which include night blindness, tunnel vision, and light sensitivity, can be reduced by custom-made solutions, including tactile pathways, non-glare surfaces, and smart home systems. Accessibility, ease of travel, and sensory pleasure are enhanced by creating an indoor garden and clearly marked pathways. Inspired by the northern lights, the project merges accessibility features with sensory design elements, aiming to contribute to the inclusive house design. Understanding how individuals with retinitis pigmentosa interact with their environment, the study seeks to create solutions tailored to their unique visual needs, potentially involving lighting, sound, and other design elements to enhance navigation.This project's relevance stems from the increasing awareness of inclusive design practices and understanding of the built environment on the well-being of individuals with vision impairment. Expert insights from meeting with a specialist of the non-profit organization that provides vision services to people who are blind or have low vision, Sandy Wright, enriched this project's outcomes. This project aims to design a single-detached family home, adopting a qualitative approach emphasizing a user-centric perspective and analyzing observed phenomena in accessible housing projects.Anticipated outcomes encompass design principles and recommendations specifically tailored to the needs of individuals with retinitis pigmentosa. Through design solutions inspired by the Northern Lights, this inclusive home environment addresses a family's needs while prioritizing accessibility, safety, and sensory experiences, especially for a family with a member's visual impairment, leading to an improved quality of life and a serene retreat in Anchorage that reflects their diverse travels. In summary, this research project aims to contribute actionable insights for developing accessible and sensory-rich homes for individuals with retinitis pigmentosa.

Edwin Trejo-Rivera

GA - Kennesaw State University

Discipline: Social Sciences

Authors:
#1 Edwin Trejo-Rivera
#2 Israel Sanchez-Cardona
#3 Tyler Collette

Abstract Name: Negative Implications in Meaningful Work. A Latent Profile Analysis of Meaning and Well-Being Among Nurses.

Meaningful work is key to improving and maintaining well-being among workers. However, a small but supportive amount of research has shown that meaningful work may not always result in positive outcomes, suggesting potential negative implications by acting as a “double-edged sword” to well-being. In this study, we propose to identify distinct profiles based on the perceived meaningful work, work engagement, subjective well-being, and emotional exhaustion among nurses. We sampled 380 nursing staff from the US and collected the data using a Qualtrics Panel. Most of the participants were women (77.6%) and were working primarily in a hospital (55.3%) in the private sector (47.4%). We employed Latent Profile Analysis (LPA) as the methodological framework to identify distinct profiles within our sample based on selected continuous variables. In our analysis, we consider participants' responses to meaningful work, work engagement, subjective well-being, and emotional exhaustion. The LPA showed four profiles, of which two presented a distinct pattern of emotional exhaustion regardless of their well-being scores. Profile 1 showed workers with high meaningful work, work engagement and subjective well-being, and low levels of emotional exhaustion. Profile 2 shows workers with above-average meaningful work, work engagement, subjective well-being, and higher levels of emotional exhaustion. One-way analysis of variance (ANOVA) post hoc test showed non-significant differences in meaning, work engagement, and subjective well-being between both profiles; however, Profile 1 showed significantly lower emotional exhaustion ($M = 2.20$, $SD = .814$) compared to Profile 2 ($M = 5.50$, $SD = .769$). These findings indicate that workers with highly meaningful work can experience emotional exhaustion and suggest that meaningful work can bring forth a series of consequences to the individual’s well-being. Additional research to understand the mechanisms that explain this pattern is needed.

Satvik Tripathi

PA - Drexel University

Discipline: Mathematics and Computer Science

Authors:
#1 Satvik Tripathi

Abstract Name: Domain-Specific Transfer Learning for Diabetic Retinopathy Classification in Resource-Constrained Settings

Background. Diabetic Retinopathy (DR) is a leading cause of vision impairment and blindness among diabetic individuals worldwide. DR diagnosis still relies heavily on the manual examination of retinal images by ophthalmologists and can be prone to observer bias; hence, automation is highly desirable. With the success of deep learning methodologies in various medical imaging tasks, data availability remains a key issue, especially in resource-constrained settings. Therefore, we propose a domain-specific transfer learning technique for limited datasets used for robust and accurate DR classification.Methods. Utilized the EyePACS database (n=5,000) of retinal images split between 4 classes (Normal, Mild, Moderate, and Severe). Applied advanced data augmentation techniques like rotations, random scaling, cropping, and random noise addition. Three DenseNet121 architecture variants were trained and adapted for multi-class classification: a baseline

model without pre-training, a model pre-trained on the ImageNet database, and another pre-trained on a chest X-ray (CXR) dataset. Rigorous hyperparameter tuning and 5-fold cross-validation were conducted to optimize the model's performance. Results. The performance of each model variant was evaluated using Area Under the Curve (AUC) metrics. Preliminary findings suggest that the model pre-trained on CXR data demonstrated superior performance, achieving an AUC of 92%, which indicates the viability of domain-specific transfer learning in scenarios with limited medical image data. The model pre-trained on Imagenet, and the model with no pre-training had an AUC of 84% and 72%, respectively. In comparison, state-of-the-art (SOTA) models trained with 30,000 images achieved an average AUC of 94%. Conclusions. Our results confirm the efficacy of domain-specific transfer learning in the robust classification of DR, especially when limited by data. Taking a significant step towards automated and reliable DR diagnosis in resource-constrained settings and setting the stage for broader applications of domain-specific transfer learning in medical imaging.

Satvik Tripathi

PA - University of Pennsylvania

Discipline: Health and Human Services

Authors:
#1 Satvik Tripathi

Abstract Name: Deep Learning-Based Natural Language Processing for Classification of Renal Surgical Pathology Outcomes in a Multi-Site Dataset

Background Accurate classification of pathology is essential for guiding clinical care and measuring patient outcomes. Natural language processing (NLP) can automate the analysis of medical data, including pathology reports. In this study, we developed and evaluated a deep learning-based NLP framework on a multi-site database to accurately classify renal surgical pathology outcomes as benign, indeterminate, or malignant. Methods We utilized a multi-channel convolutional neural network (CNN) model for the classification task. The model was trained on 688 renal surgical pathology reports from three different health systems in the state. The reports were labeled by two radiologists with 10 and 14 years of experience, respectively. The four labels used were: “malignant,” “indeterminate,” “benign,” and “ignore” (n = 140, 51, 192, and 305, respectively). “Ignore” was used to indicate cytopathology, urinalysis/urine cultures, or any other pathology not specifically from a mass lesion in the kidney. Only the summary text from each pathology report was used and tokenized. The model was validated using a 20% holdout validation sample using 10-fold cross-validation and evaluated using cross-entropy loss. Results We achieved an average validation accuracy of 83.67% across all the folds. The model was also evaluated on precision, recall, and F1 score. The model is generalized and robust over all three sites and does not exhibit any site bias. The model performance was best in the "ignore" class while suffering in the "indeterminate" class due to class imbalances in the dataset. Performance in the classification of “malignant” and “benign” classes remained consistent through each fold. Conclusion The proposed framework will not only improve the efficiency and consistency of renal pathology assessment but also have the potential to uncover novel insights and correlations within the dataset. Also, automated pathology data can be correlated with radiology reports in order to map imaging features with patient outcomes.

ISHA TRIPATHI

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:

#1 ISHA TRIPATHI
#2 Ben Knowles
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Abstract Name: Estimating Virus-Host Encounter Rates Using Mass Action vs Agent Based Modeling

Viral lysis of microbes is a leading cause of microbial death. Lysis is commonly modeled using the Mass Action term, where encounters are proportional to the products of host and viral densities, despite it not being validated empirically or theoretically. To assess the validity of Mass Action in modeling virus-host encounter rates, we implemented dynamical models using ODEs and agent based models to determine if it accurately estimates virus and host encounters. Doing so, we found that Mass Action overestimates encounters between virus and host populations by nine orders of magnitude (i.e.1,000,000,000 fold). Further, we found that implementing models without the Mass Action term leads to stability of both hosts and viral populations while including Mass Action leads to oscillations and collapses within the populations. Altogether, this suggests that the Mass Action term is logically problematic and may not reflect findings in the empirical world.

Alexandra Triplett

FL - Embry - Riddle Aeronautical University

Discipline: Humanities

Authors:
#1 Alexandra Triplett

Abstract Name: The Effect of Social Media on Interpersonal Communication

The purpose of this project was to provide insight into the effect of the internet and social media on the interpersonal skills of Generation Z. The work is a digital artifact that replaces an essay and is a digital rhetorical argument that was created using Monroe's Motivated Sequence as its organizational structure. Research was acquired through several mediums, including videos, journal articles and scholarly internet articles. These secondary sources all provide context that substantiates the negative effect of an overreliance on social media. For instance, an article written by New York Behavior Health provides statistics that support the claim that increased screen time has eroded the social skills of younger generations. A brief clip from a TedTalk used as the introduction to the project simplifies this claim with the bold statement that "social media is making us unsocial." Finally, an article by Martech Zone provides a brief description of how each generation utilizes technology. The author states that Generation Z primarily uses handheld devices with the goal of making communication more efficient, rather than substantial. These materials are discussed in a creative video format with the purpose of informing a variety of demographics on how increased screen time can result in a decreased desire to communicate in person and can potentially diminish one's mental health. Although it is not the primary focus of the project, the work also encourages mindfulness of the danger of isolation and dependency on external validation. As the developed world becomes increasingly reliant on technology, it is imperative that research be conducted and shared to spread awareness of its effects.

Caitlin Trower

OK - University of Central Oklahoma

Discipline: Humanities

Authors:

#1 Caitlin Trower

Abstract Name: Alexey Brodovitch and His Influential Career

For this research paper, I was researching Alexey Brodovitch and whether or not he was inflectional as a graphic designer. In the process I learned about his life, how he grew up, what influenced him from a young age, and his journeys. I also was able to gain knowledge on his teaching styles while teaching at the Pennsylvania Museum School of Institutional Art. He pushed students to do their best and wanted them to succeed. He wanted to truly teach them visually instead of just speaking the words into their heads. He would try to be more of a student to them instead of a teacher. Then after that, I went on to learn and write about how he got his job at BAZAAR and how he changed the game. Brodovitch pushed boundaries that were not yet fully pushed in the United States. He brought Eastern art from places like Paris to BAZAAR and even America. He used fun energetic photography and paired it with experimental layouts and type. In doing this he was able to make a visually interesting magazine that people wanted to read. Not only did I learn that he was a teacher and an art director, but he was also a photographer. Most well-known for his Ballet book, he took pictures that were not ordinary stand and shoot. He would purposely make them blurry or high contrast to make them more visually interesting. In my research process one of my main sources that I found helpful was the book by Kerry William Purcell titled “Alexey Brodovitch”. This is a book that provided the most information about his life from start to finish.

Hannah Truong

FL - Florida International University

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Abstract Name: Exploring GdTe1.8 Through Raman Spectroscopy Under High Pressure

Gadolinium Telluride1.8 (GdTe1.8), a type of Rare Earth Chalcogenide, presents intriguing properties under ambient conditions. The non-integer number found for Te atoms signifies the occurrence of some structure defects, which leads to attractive properties. Due to the presence of special f orbital characteristics in Rare Earth Tellurides (RETe), the lanthanide-based compounds are able to display interesting magnetic and optical properties. GdTe1.8, possesses an exclusive 2-D shape that leads to paramagnetic properties at low temperatures while retaining high electrical resistivity. Rare Earth Chalcogenides can undergo pressure-induced changes of the structure which may enhance its properties.The objective of this project is to investigate the behavior of GdTe1.8 at high pressure using a diamond anvil cell (DAC). In a DAC, the sample GdTe1.8 is placed between two opposing diamonds and compressed up to the desired pressure while performing in situ measurements. DAC can be used to generate pressures up to 1,000 Gigapascals (GPa), surpassing Earth's core pressure of 360 GPa. In situ measurements such as Raman spectroscopy can be used due to the transparency of diamonds and the wide range of electromagnetic radiation. By using software T-Rax, Fityk, and Origin, we analyzed the Raman spectra taken during compression of GdTe1.8, identifying peak positions and assessing pressure dependence. GdTe1.8 was compressed up to 53 GPa with a step of 6 GPa. Upon compression, the position of Raman peaks shifts. We detected those movements of 6 Stokes and 5 anti-Stokes peaks. The appearance or disappearance of the peaks indicates the phase change. Our study uncovered two phase transitions below 14 GPa.

Amanda Tsang

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Amanda Tsang

Abstract Name: Determining Potential Oxygen Transport Membranes with Hexagonal Perovskites BaFeO3 and BaCoO3

The increase in global warming causing greenhouse emissions caused by the dependence on fossil fuels has led to the demand for cleaner energy. Oxygen Transport Membranes are solid-state membranes that can separate oxygen from complex gas mixtures and an in the process synthesize H2 from the partial oxidation of methane or water splitting. Many different oxides can be OTMs, but the perovskite structure has been shown to be a strong OTM candidate due to its ability to adopt a wide range of chemical compositions. To develop new OTMs, the perovskites, BaFeO3, BaCoO3, and oxygen deficient derivatives will be studied. Through computation of the columbic repulsions throughout the structure, several compounds in these families were determined to support oxygen diffusion. The samples have been synthesized via sol-gel synthesis. The H2 production from the partial oxidation of methane will be measured using a Gasboard 3100 and the oxygen content will be determined via iodimetric titration. In the future the structural changes in these materials as a function of gas atmospheres will be explored via in situ diffraction.

Elliana Tsang

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Elliana Tsang
#2 Hanna Seabaugh
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Hanna Seabaugh

Abstract Name: Structural Studies of Yeast Prion Mot3 using Electron Paramagnetic Resonance Spectroscopy

Prions disrupt normal neural structure, causing a set of neurodegenerative diseases collectively called transmissible spongiform encephalopathies (TSEs) which are characterized by their spongy appearance. TSEs occur in humans, cows, deer, cats, and more, causing diseases such as Creutzfeldt-Jakob Disease (CJD) in humans and Bovine Spongiform Encephalopathy (BSE) in cattle. In our lab, we are using yeast prions as a trackable system due to very similar features to mammalian prions including protein only hypothesis, species barrier, and strain phenomenon. Recent studies have revealed that other amyloid proteins involved in neurodegenerative diseases, such as Aβ in Alzheimer's disease, form a parallel in-register β-sheets. The purpose of this research is to investigate if the Mot3 prion structure also adopts the parallel in-register β-sheet structure via the use of spin labeling and electron paramagnetic resonance (EPR).Using the preliminary data from previous work in the lab, we will use site-directed mutagenesis to introduce cysteine mutations every 20th residue position from 1-295. By attaching spin-label to the residues with cysteine mutations, EPR spectra revealing the strength of intermolecular forces can be generated. The residue is presumably located closer to the amyloid core and is in a region of high order when there is stronger interaction. This process is

repeated for multiple residues across the Mot3 sequence, defining the boundaries of the amyloid core. After obtaining the EPR scans of fibrils at various residues, we will quantitatively compare scans via simulation and the single line ratio, which determines the strength of spin interaction. Stretches with high spin interaction and a periodicity of 2 are consistent with beta sheets, while stretches with low spin interaction are consistent with turns or loops. Current qualitative data suggests high interaction near the 120th residue. Through this method of analysis, Mot3 structure and mode propagation can be proposed.

Allison Tschetter

ND - University of North Dakota

Discipline: Engineering and Architecture

Authors:
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#3 Andre Figueredo Alves

Abstract Name: Implantable Artificial Kidney Model

The pursuit of an artificial kidney arises from challenges in treating end-stage renal disease (ESRD), where transplantation and dialysis have limitations. The quest aims to offer a sustainable solution, improving patient outcomes and transforming renal replacement therapy. The development process involves breaking down the kidney into components, such as the bioreactor, hemofiltration unit, sensory technology, and biocompatibility. The team focuses on replicating a single nephron initially, which forms the basis for a nephron bundle and, ultimately, the entire artificial kidney. The hemofiltration unit becomes a key component, integrating tangential flow, osmotic pressure, and hydrostatic pressure principles to mimic the natural kidney's filtration mechanism. The team employs CREO Parametric 7.0 for modeling and A/B testing to optimize pore sizes and shapes, simulating blood plasma and waste. The results showcase promising advancements in mimicking the selective filtration process of the human kidney. While facing software and manufacturing limitations, the iterative design process enhances understanding and lays the groundwork for an efficient kidney filtration unit. The project's outlook involves optimizing tangential flow and pressure, evaluating efficiency, and scaling up the model for potential incorporation into a complete artificial kidney design, contributing to the broader goal of curing kidney disease.

Sophia Tseng

KY - University of Kentucky

Discipline: Engineering and Architecture

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#6 Tequila Harris

Abstract Name: Fabrication of a Composite Polymeric Membrane Made with Green Solvents for Water Filtration

Water filtration via polymeric membranes is one of the most efficient ways to assure access to clean water security. However, most membranes are made with petroleum-derived solvents which can be toxic to work with during fabrication and also have a negative impact on the environment. In the interest of sustainability, research on alternative materials has shown that green solvents such as Rhodiasolv® PolarClean and gamma-valerolactone (GVL) can be used in conjunction with the polymers polysulfone (PSF) and polyvinylidene fluoride (PVDF) to make membranes with high permeability associated with PSF and selectivity of PVDF. The objective of this research is to make a composite membrane using both polymers so that the filter can have the benefits of both. A composite membrane like this has not been made before, as it is difficult to cast the two layers simultaneously due to different viscosities, repulsive charges, and delamination. By characterizing PVDF and PSF membranes separately and then using different casting methods to combine them, a solution to this challenge can be found to cast a composite membrane. PSF and PVDF membranes were characterized by observing the phase inversion rate, diffusivity, water contact angle, pore structure, and permeability. Then, different casting methods were examined, first in lab scale casting with a doctor blade extrusion and then in scale up casting with a slot die coater. It was found that having a similar viscosity and rate of phase inversion aided in making a stable composite membrane. A sustainable composite membrane made of both PVDF and PSF will not sacrifice strength or functionality and will provide the benefits of both a higher flux and selectivity to ensure our future water security.

Meghan Tucker

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: The kinematics of Social Distancing

This experimental study aimed to simulate and analyze potential transmission patterns of COVID-19 by utilizing spray bottles filled with liquids of various consistencies. Students of various heights conducted trials by spraying these mixtures onto a sheet of poster paper, emulating potential scenarios of respiratory droplet dispersion. The primary goal was to investigate how the viscosity and consistency of the liquid might influence the spread and dispersion patterns, resembling the potential transmission mechanisms of COVID-19. The study sought to provide valuable insights into how different fluid consistencies could affect the dispersion and surface deposition of respiratory droplets, contributing crucial information to our understanding of viral transmission dynamics.

Savannah Tuhro

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Savannah Tuhro

Abstract Name: The Price of Submission: Exploring Gender Roles and the Violation of Women's Boundaries in "The Husband Stitch"

Sacrificing your liver to satisfy your husband's hunger, allowing the one you love to remove the ribbon that

ties your head to your body, ignoring a madman lurking outside the car as you continue to please your boyfriend; these are some of the elements of horror that Carmen Maria Machado uses in her short story, “The Husband Stitch,” from Her Body and Other Parties to creatively illustrate the ways in which traditional marriage and gender roles pressure women to surrender all boundaries in relationships, resulting in the destruction of their individuality and autonomy. Machado’s “The Husband Stitch” shows the effects of these toxic gender roles by recounting a woman’s life and her relationship with her husband. The woman in the story establishes two rules with her husband, reflecting her bodily and mental autonomy, but as she becomes more intimate with the man he begins to repeatedly challenge and strip away her boundaries. Unable to battle against both the pressure her husband has placed on her and traditional society’s expectations of women, the woman relinquishes her control, which results in her metaphorical death. Machado presents this as a bold retelling of “The Green Ribbon,” while also alluding to other horror stories, such as “Just Delicious” and “The Hook” to unmask the barriers that women face as they attempt to protect their bodies and identities against men while also revealing the toxic culture that allows this behavior. The stories ultimately combine grotesque imagery with everyday events to depict the adverse effects that traditional marriage and gender roles have on women, who, as a result of the pressure placed on them by men, allow their boundaries to be violated and become a shell of their old selves, living in a state of submission comparable to death.

Elizabeth Tuley

OK - University of Central Oklahoma

Discipline: Humanities

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#1 Elizabeth Tuley

Abstract Name: Susan Kare: Her “Iconic” Accomplishments and Impact on the World of UI/UX

Susan Kare was an early pioneer of 1980s desktop user-interface design through her creative formation of elements, such as icons and typefaces, for the early Macintosh computer. The desktop user interface was a newly developed advancement of the time, where fresh designs were needed for new functions. It is Kare’s designs for these functions that she is best known for. This was due to her talent in both visualizing aspects of function and emotional conveyance, all while keeping her designs simple and comprehensive to the user. She often employed ideas of symbolism or metaphor to achieve this. There were challenges in early icon design and other desktop element design, including the medium itself, pixel-based bitmap format, and how to represent a wide array of functions. In addition, visual accessibility through analysis of elements of design, such as the use of line, had to be prioritized by Kare to ensure that her designs, particularly typefaces in this respect, remained comprehendible. In addition, she had to consider the attitudes of the users she was designing for, which comprised a public where most had little familiarity with the new concept of computers. This led to her prioritization of keeping her designs visually friendly with a welcoming appeal to users. Her designs were a success of the time in conveying this. Her impact is still felt as many of these designs are in continued use in operating systems, such as the modern-day MacOS. In addition, her sense of giving designs a human feel is a concept that has stuck in the UI/UX industry. Therefore, Kare’s wide-reaching work has been and is successful because of the innate creativity she possesses, and her careful consideration of how visual conveyance can reach a wide audience through UI/UX.

Aryan Tummala

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:

#1 Aryan Tummala

Abstract Name: Plasma Temperature Measurements in Argon and Helium Plasma with Nitrogen Addition

Plasma, an ionized gas, manifests in two primary forms: thermal plasma, where electrons and ions coexist at equivalent temperatures, and non-thermal plasma, distinguished by elevated electron temperatures and lower ion temperatures. Specifically, Dielectric Barrier Discharge (DBD) plasma, a subset of non-thermal plasma, arises between two electrodes separated by an insulator, creating charge within the gas particles which results in a plasma plume. Dielectric Barrier Discharge (DBD) plasma has applications in the medical field for healing and sterilization of wounds, through Reactive Oxygen and Nitrogen Species (RONS) reacting with the water in blood to produce Hydrogen Peroxide, which allows for growth factor production. Through the generation of RONS, hydrogen peroxide is formed, allowing for wounds to clot. Since RONS produced from DBD plasma allows for medical wound healing and sterilization, studying the optimum rotational and excitational temperatures of the DBD plasma will maximize wound healing. The addition of Nitrogen addition to Argon plasma and Helium plasma impacts the produced RONS concentration. Analyzing the rotational and vibrational temperatures influenced by Nitrogen's inclusion provides crucial insights into specific emission line variations within the spectra. Employing an Ocean Optics Spectrometer (HR4000CG-UV-NIR) for emission spectra measurement and SpecAir for plasma characterization, this study examines the differences in the behavior of Argon with Nitrogen plasma and Helium with Nitrogen plasma's behavior.The obtained results show notable alterations in temperatures of Nitrogen’s addition to Argon and Helium Plasma at similar operating conditions (13 kV, 40kHz, 16slpm, 0.01%-1% Nitrogen by volume). This presentation aims to expand upon the acquired results and analyze the emission spectra to look at the impact of Nitrogen addition on the two plasma's behavior and emission characteristics. These findings will assist us to understand RONS production in DBD plasmas.

Dhrithi Tummala

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Absence of Brain Angiogenesis Inhibitor (BAI3) Improves Energy Expenditure in Skeletal Muscle

The Brain angiogenesis inhibitors (BAI1-3) constitute a poorly studied subgroup of the adhesion G-protein coupled receptors (aGPCR) and are implicated in various neuronal and metabolic disorders. Previously, our research revealed that the deletion of BAI3 reduced body weight gain while enhancing whole-body energy expenditure. Additionally, we demonstrated elevated mRNA expression and protein levels of genes associated with energy expenditure in brown adipose tissues. Although muscle significantly contributes to energy expenditure, the impact of BAI3 on the expression of these genes in muscle under obese and lean conditions remains unknown. To investigate this, we utilized tissues isolated from BAI3 whole-body knockout mice fed normal and high fat diet to assess the effect of BAI3 deletion on the mRNA expression of genes—Cpt1a, PPARγ1, PGC1a, Tfam, Ampka1, and HSL—in muscle. This study is ongoing, and our hypothesis posits that the data will indicate an upregulation of genes promoting energy expenditure through increased fatty acid oxidation due to the absence of BAI3. Augmented energy expenditure might contribute in reducing weight gain and lowering susceptibility to metabolic diseases such as obesity and type 2 diabetes.

Chase Turbyfill

OK - Southern Nazarene University

Discipline: Mathematics and Computer Science

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Abstract Name: Social Media Algorithm Development

This research explores the worrisome side of social media algorithms and how the technical uses of them can both help and hurt us. Concerns about algorithmic influence on public opinion and decision making are discussed, emphasizing the importance of understanding and transparency. Reciprocal relationships between online news consumption, political knowledge, and behavior are examined, highlighting the need to comprehend the interplay between algorithms and news dissemination. The benefits of algorithms are presented, challenging fears and discussing their role in content curation and personalization. The potential impact of algorithms on political speech and news recommendations is explored, raising concerns about filter bubbles and lack of normative standards. The importance of researching algorithms is underscored, focusing on combating fake news through social norms and addressing advertising standards. This paper will emphasize the need for understanding, transparency and further research into how these algorithms are influenced.

Erin Turman

MN - University of Minnesota - Crookston

Discipline: Natural and Physical Sciences

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Abstract Name: Analysis of Crocin, Picrocrocin, and Safranal Content in Crocus Sativus L. Samples from Iran, Spain, and Morocco

Crocus sativus, a small perennial plant with a height of about 20-30 cm, is native to the Mediterranean and Central Asia regions. Iran, India, Greece, and Morocco are the leading producers of saffron, followed by Spain and Italy. It is primarily cultivated for its highly prized spice called saffron, which is obtained from the dried stigmas of its flowers. The stigmas are carefully handpicked and dried to obtain saffron, which is used as a seasoning and coloring agent in many cuisines worldwide. Extensive studies and ongoing research on the chemistry of C. sativus aim to further explore the plant's chemical composition and potential therapeutic applications. However, due to the high cost and labor-intensive nature of saffron production, research into alternative sources and methods for obtaining saffron's bioactive compounds is also being pursued.The principal components of C. sativus are crocin, picrocrocin, and safranal. In addition to these compounds, C. sativus contains other bioactive compounds such as flavonoids, terpenes, and phenolic acids, contributing to its medicinal properties.Eleven samples of C. sativus flowers from Iran, Morocco, and Spain were examined for the relative composition of saffron's principal components from the stamens of the sample. The dried

petals were extracted with aqueous methanol (70%) and the extracts were subjected to reverse-phase HPLC. The relative composition of the three main compounds was determined for each sample with crocin being the major constituent. Significantly the stamens contained very little of crocin, picrocrocin, and saffranal. The comparative composition will be presented. In addition, the samples are being tested against ESKAPE pathogens to test for antibacterial and antifungal activity. The research is important because it enables the standardization and grading of the C. sativus samples on the market and also explains differences in biological activities.

Beau Turner

AR - Lyon College

Discipline: Social Sciences

Authors:
#1 Beau Turner

Abstract Name: Risk Affinity and the Willingness to Forgo Civil Liberties

Civil liberties are the bedrock of Western political culture; so if the factors that lead to the preservation of civil liberty can be determined, it will be a victory for Western democracy. Nevertheless, some people are willing to give up their civil liberties in the name of national security and public safety. Why are some individuals willing to forgo their civil liberties in times of crisis whereas other individuals are not? Forgoing one’s civil liberties in the name of security is a large gamble due to the uncertainty of these liberties being regained. This paper argues that risk affinity is a significant factor that determines individuals' willingness to forgo their civil liberties. Furthermore, risk-acceptant individuals are more willing to wager that their civil liberties will be returned once they are renounced, and risk-averse individuals are less willing to commit to this gamble. To test this hypothesis, I surveyed undergraduate students at a U.S. liberal arts college in 2022 on their willingness to gamble in order to gauge risk affinity and their position on COVID-19 lockdowns, which many view as an infringement upon civil liberties, in order to gauge their willingness to forgo their civil liberties. Then, I compared the results of the survey to see if risk-acceptant individuals were more willing to forgo their civil liberties. I demonstrate that risk-averse individuals are less likely to support COVID-19 lockdowns than risk-neutral or risk-acceptant respondents. These findings suggest that if risk aversion promotes protection of civil liberties, global campaigns can be implemented to educate individuals on the risks of renouncing civil liberties in order to ensure that individuals’ natural rights are not infringed upon and the state does not become too powerful. This paper also details avenues for future research pertaining to individual attitudes toward state measures that curtail civil liberties.

Alizabeth Turner-Ward

FL - University of West Florida

Discipline: Natural and Physical Sciences

Authors:
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Chasidy Hobbs

Abstract Name: Developing a Conservation Program Plan for the University of West Florida

The University of West Florida Campus Master Plan 2021-2031 designates over one thousand acres of

undeveloped natural landscape for long-term conservation and sets forth a policy to “establish an environmental stewardship program for the University to follow.” This land is part of the UWF Main Campus in Pensacola, Florida, and home to valuable longleaf pine habitat, a Great Florida Birding Trail, and the largest vascular plant flora of any southeastern university campus. Ongoing activities in these natural areas include academic research, course-related field learning, interdisciplinary events, and recreation. To effectively implement conservation on the UWF Main Campus, it is vital to devise a conservation plan that specifies program goals, management, values, strategies, and projects. This research project addressed the above need by developing a proposed UWF Conservation Program Plan. Diverse research methods were followed to inform the Plan and included reviewing literature, investigating other successful conservation programs, assessing the UWF community’s current relationship with its natural spaces, and consulting experts across multiple relevant disciplines. Major program goals, values, strategies, and projects drew from a synthesis of the Campus Master Plan, best practice found in research, and assessed community needs. The culminating proposal was a written document that considered possibilities such as establishing a formal entity tasked with Program management, development of specific conservation projects, strategies for maintaining community investment, and collaboration with other entities and agencies.

Kennedy Tutak

MN - Hamline University

Discipline: Natural and Physical Sciences

Authors:
#1 Kennedy Tutak
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Abstract Name: Probing the Active Site of Guanylurea Hydrolase to Investigate Catalysis and Substrate Specificity

Metformin is one of the most regularly prescribed Type II Diabetes drugs in the world, and its use is likely to expand as diabetes diagnoses rise globally. This drug and its main degradation byproduct, guanylurea, are not fully metabolized by humans and cannot be removed through conventional water treatment processes. These compounds have been detected in coastal waters around the world and are currently considered emerging pollutants. The goal of this research was to examine the catalytic mechanism and substrate specificity of Guanylurea Hydrolase (GuuH), a recently discovered enzyme that converts guanylurea to ammonia and guanidine. Bioinformatic analyses were conducted to predict the active site and three-dimensional structure of GuuH. Site-directed mutagenesis was performed to construct mutants in amino acids predicted to be part of the enzyme’s catalytic triad and substrate binding site. The mutants created were K138R, E211D, and E211N. The wild type and mutant enzymes were purified using His-tag affinity chromatography. Enzyme activity was assessed by measuring ammonia released using Berthelot assays. The results showed that the K138R mutant had similar specific activity compared to the wild type GuuH when reacting with guanylurea, while E211N and E221D showed a low specific activity under the same conditions. All of the enzymes had no detectable activity when reacting with biuret, which suggests they have low affinity for this substrate. Future work will focus on kinetics analyses of the wild type and K138R enzymes and additional mutagenesis to identify the amino acids that determine the substrate specificity to the enzyme. Understanding GuuH's catalytic activity and substrate specificity is essential to use this enzyme in the development of biotechnological applications for water treatment.

Amy Tutt

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Amy Tutt
#2 John Robertson

Abstract Name: Implications of Hypothyroidism on Reproductive Development in Xenopus laevis

Exposure to propylthiouracil (PTU) is known to induce hypothyroidism in Xenopus laevis, which in turn causes the inhibition of larval to juvenile metamorphosis. The aims of this project, using Xenopus laevis as the model organism—a well-developed model for a variety of systems, processes, and structures—are to determine how PTU exposure affects the gross anatomy of male and female gonads in tadpoles arrested at metamorphosis stage 54 and whether these animals produce sterile or fertile gametes. Xenopus laevis tadpoles at varying stages of metamorphosis (stages 40-45) will be randomly separated into groups: control (no treatment) with replications and treatment (PTU) with replications. The collected data from histology will be analyzed using the one-way ANOVA—similarities of specific male and female structures and gamete development stages—and any possible significant differences will be analyzed with the Tukey test to determine which values differ from each other. The methodology described should yield expected results of structurally underdeveloped and non-functional female gonads and gametes—inhibiting gamete maturation and fertilization. Male gonads are expected to have some functionality, permitting the reproduction and transport of gametes; the male gametes are expected to be slightly developed, specifically with limited sperm motility and general sperm structure.The level of function and ability to successfully reproduce has not yet been studied in these animals. Both normal gonadal development and inhibited gonadal development have been studied, but neither has been compared to the other to determine the exact maturity and level of development in experimental tadpoles. This is the aim of the research project.

Nathan Twitchell

UT - Utah Valley University

Discipline: Natural and Physical Sciences

Authors:
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#2 Stephen Chamberland
#3 Craig Thulin

Abstract Name: Comparative Analysis of Synthetic Deaminated Kynurenine versus Kynurenine Deaminated via Collision-Induced Dissociation

Kynurenine, a ketone and amino acid derivative, is an important compound to many metabolic processes. As an intermediate compound of the tryptophan catabolic pathway it participates in immune regulation, inflammatory action, and possesses a structure capable of crossing the blood brain barrier leading to important roles in nervous system pathology. It is also an essential compound in the synthesis of photo pigments in many different species. Kynurenine's collision-induced dissociation (CID) fragmentation patterns might serve to characterize other compounds that are synthesized from kynurenine. CID in multiple successive rounds of fragmentation – referred to as MSn – can yield robust structural information. The most abundant CID fragment of kynurenine is deaminated kynurenine. MSn of synthetically deaminated kynurenine showed differences in fragmentation compared to the MSn patterns of kynurenine that had been

deaminated within the mass spectrometer via CID. This study postulates structural dissimilarities based on these fragmentation differences. Additionally, should our syntheses provide sufficient xanthommatin (a chemical synthesized from kynurenine) to effectively deaminate it, CID will be employed to explore both xanthommatin's fragmentation patterns, and its deaminated product - a compound whose structure remains uncharacterized.

Jessica Ubbelohde

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

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#2 Devin Sobottka
#3 Grace Rooney
#4 Tyler Doyon

Abstract Name: Synthesis of Heterocyclic Biaryl Catechols for the Characterization of Ring-Cleaving Dioxygenase Activity

Non-heme iron (NHI) ring cleaving dioxygenases (RCDs) are important enzymes for the bioremediation of aromatic chemical waste products in the environment. Benzene-derived aromatic molecules are widely used for industrial applications, such as in the synthesis of pharmaceuticals. The enzymes can break open oxidized aromatic substrates to detoxify and break down the materials. However, to achieve broad scale bioremediation, these enzymes must process structurally diverse catechols. We seek to probe the substrate scope of a library of RCDs, aiming to discover and characterize enzymes capable of oxidizing complex heterocyclic biaryl catechols. We have synthesized a variety of diverse biaryl catechols to quantify NHI enzyme activity against these potential substrates. Several biaryl catechols were shown to have activity with enzymes in the library, enabling broader characterization of the substrate scope of these catalysts. We envision that these results will inform future efforts in genome mining or evolution of improved catalysts for bioremediation of aromatic compounds.

Emily Udle

CAN - Carleton University

Discipline: Humanities

Authors:
#1 Emily Udle

Abstract Name: A Systemic Functional Linguistic Analysis of Remote Real Estate Listings

In the aftermath of the Covid-19 pandemic, Canada’s rural population increased faster than in any other G7 country. The province of Newfoundland was a distinct outlier, seeing a 6.4% decrease during the same period, the most drastic drop of all rural Canadian regions. This is no surprise to Newfoundland communities: since the 1992 Cod Moratorium, these populations have faced a continuing period of socioeconomic hardship and decline. While Lynch (2007) traces decades of outmigration from Newfoundland’s rural communities to urban centres, current research does not account for this post-pandemic phenomenon. Newfoundland’s population decline has been analyzed from a linguistic viewpoint, noting a redirection of regional discourse towards a perpetuation of tourism development (Stoddart, 2016). While tourist discourse represents one

apparent strategy for combating population decline, the linguistic implications upon the genre of real estate listings have not been investigated.In an era of increased global mobility and urbanism, this project strives to investigate the linguistic implications of such changes on real estate listings. Drawing upon the theoretical framework of Systemic Functional Linguistics (SFL), this project analyzes the Interpersonal, Experiential, and Textual metafunctions of a 2022 real estate listing from the remote town of Harbour Breton, Newfoundland. As the 2023 Linguistics Global Winner selected by the Global Undergraduate Awards Committee, this project not only strives to demonstrate the analytical value of SFL, but systematically reveals persuasive linguistic choices made by an author as they attempt to attract buyers to a declining rural region. Findings include the frequent use of declarative mood structures, a prevalence of relational attributive processes, and a majority of topical themes relating to the home. These features demonstrate a deliberate saturation of favourable details, and a foregrounding of the home's features above other notable factors (e.g. location, proximity).

David Ulloa

FL - Florida International University

Discipline: Mathematics and Computer Science

Authors:
#1 David Ulloa
#2 Wenbin Zhang
#3 Zichong Wang

Abstract Name: Optimizing BodyPix for the Measure of Body Fat Percentage Readings

Obesity related disease is a leading cause of preventable death not only in the United States, but in other countries where healthcare is less available or affordable. Traditional methods of measuring body fat require professional understanding or expensive equipment. If body fat percentage could be estimated quickly and in a cost-effective manner, users impacted by obesity could more quickly monitor their own health independently of their country's health care systems. Building on other research, which uses deep learning to quickly estimate body fat percentage through pictures, the current research will improve on these methods to create more reliable results. The Navy Body Fat Formula uses the circumferences of a user's neck and waist to calculate BMI, which compared to other methods of BMI calculation, such as bio-electrical impedance scales, is cost effective and accurate. Through AI image segmentation, users will take a picture of their front and side from which a neck and waist circumference can be attained, leading to an accurate BMI calculation. The error will then be based on the estimated BMI and a user's known BMI measured by their general practitioner. The choice was made to use TensorFlow's MobileNet as our body segmentation model since it is efficient enough to run on a user's mobile device, despite being less accurate compared to TensorFlow's ResNet. In order to improve on the work of previous research, optimizations will be made on the image segmentation model used in previous research to continue performance on mobile devices, but allow more accurate predictions. By improving the efficiency and accuracy of BMI calculation, a user's obesity related health information can be obtained almost anywhere with internet and a smartphone making health awareness more accessible.

David Ulloa

FL - Florida International University

Discipline: Mathematics and Computer Science

Authors:

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#2 Wenbin Zhang
#3 Zichong Wang

Abstract Name: Correlation between Instagram Use and Political Apathy Among 2020 Young Adult U.S. Voters

Voter turnout among young adults, aged 18 to 29, have consistently been lower than their older counterparts in the United States. Despite this lack of voting, the engagement over social media through online movements such as Black Lives Matter and Me Too paint a different picture. In order to create a more representative democracy, engagement among young adults should match the engagement of older generations. While the correlation between social media and political apathy - or the distaste for participating in politics - has been previously researched, the impact of certain social media sites like Instagram on U.S. young adults has been overlooked. The current research studied the use of Instagram, and its correlation with political efficacy, apathy, and voter turnout in the 2020 U.S. election. Data was collected through a survey open between January through March of 2021 and asking Likert-scale questions for Instagram use, political engagement, and voting behavior. Through the use of Chi-squared Pearson tests, the correlation between voting, political efficacy, and political apathy was found. To find the correlation between Instagram use and voting rate a sample T-test was also used. The study found no significant correlation between Instagram use and political engagement among young adults. Although the study did not find a significant correlation, it is possible that this was influenced by the insufficient sample of data. In order to fully investigate the impact of social media, a new type of media, on young people's political participation, we believe that there is an urgent need for further research on a wider range of people. This suggests that factors influencing political apathy and voter turnout are more complex and extend beyond social media use.

Steven Umbarger

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Visualizing Star Clusters That Form Within Giant Molecular Clouds

Stars are born in open star clusters when large regions of cold molecular gas and dust in space, giant molecular clouds (GMCs), meet a density threshold for star formation. By looking at simulations of GMCs, the relationship between these clouds and open star clusters can be determined. We used both the Friends-Of-Friends (FOF) Python code and developed our own visualization package to easily and clearly see individual GMCs and the star clusters that form inside of them. In this work, we present our analysis run on FIRE-2 (Feedback In Realistic Environments) galaxy simulations from the Latte suite of Milky Way-like galaxies. We started with one galaxy and focused on visualizing one GMC at one particular moment in time. Then we generated multiple images of the same GMC over time to track the full evolution of the gas and the star cluster that formed within it. We hope to make this code accessible and available for the astrophysics community to use in the future. With this data, we can form a deeper understanding of the influence of Galactic structure and its environment on the formation of star clusters.

Connor Underwood

IN - Purdue University Main Campus

Discipline: Interdisciplinary Studies

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Amit Manchella

Abstract Name: Mapping Affordable Housing: Advancing Lafayette's Housing Stability through Automated Data Integration and Analysis

Since 2010, the city of Lafayette, Indiana has identified higher than average levels of homelessness, eviction rates, and transiency among the six neighborhoods: Lincoln, Hanna, Vinton, Monon, St. Lawrence McAllister, and Historic Jefferson. One of the largest causes attributed to these city detriments is a lack of affordable housing. The U.S. Department of Housing and Urban Development defines affordable housing as necessitating occupants to allocate no more than 30 percent of their gross monthly income towards housing costs, including utilities (1). In an earlier phase of this ongoing research initiative, another group of Purdue undergraduate researchers developed processes to identify unaffordability in the aforementioned neighborhoods. However, the frameworks developed in these studies lacked the ability to provide continuous and accurate data to the city, highlighting the clear need for a regularly updated system. The future stability of these neighborhoods now hangs in question, with permanent residency retention reaching an unprecedented low. Without regularly updated housing information, the city risks prolonged economic instability. As a community partner responding to the City of Lafayette's need for an automated solution, the team proposed the development of an interactive heatmap. Affordability metrics are to be collected by comparing HMDA mortgage data against the Polk Directory's income data for each identified neighborhood. Data storage and manipulation are to be streamlined between a SQLite database and Python's extensive data analysis libraries like Pandas and Seaborn. Map creation will be facilitated through the GoogleAPI, allowing granular geographic visuals for Lafayette community leaders. By leveraging the heatmap alongside additional resources, our research initiative provides Lafayette with powerful tools for informed decision-making on affordable housing efforts. With the affordability threshold at 30%, our methodology offers a strategic framework for Lafayette to identify and create more accessible housing solutions for the citizens of these neighborhoods.

Hou Ung

CA - University of La Verne

Discipline: Natural and Physical Sciences

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Abstract Name: Investigation of Cytosine and Isocytosine Analogs as DNA Binding Agents

During ordinary biological processes such as DNA transcription or DNA replication, double-stranded DNA must unravel into its single strand. During this unraveling processes, these single strands undergo supercoiling and can form secondary structures. Regions that are primarily guanine rich can self-associate to form a secondary structure called the G-quadruplex, and its complementary cytosine rich strand can self-

associate to form another secondary structure known as the i-Motif. The targeting of these secondary structures have drawn great interest over the recent years due to their presence in oncogenes. More reserach have been dedicated to the G-quadruplex with the i-motif recently gaining more recognition. Small organic compounds have been synthesized and act as binding agents to stabilizes the i-motif, but none utilize compounds with cytosine or isocytosine as its base core. Herein, the syntheses, characterizations, and calculated binding energies of bisguanidynlated 1-methylcytosine and guanidynlated 6-hydroxyisocytosine with all nucleobases are presented. Density functional theory (DFT) calculations were utilized to calculate and predict stable protonation sites and binding orientations of bisguanidynlated 1-methylcytosine and guanidynlated 6-hydroxyisocytosine with DNA nucleobases. These compounds have been shown to significantly increase in DNA melting temperatures of both telomeric and hypoxia-inducible factor 1 (HIF-1α) DNA sequences.

Lilianna Urbina

NM - University of New Mexico Main Campus

Discipline: Health and Human Services

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Abstract Name: Examining the Role of Familial and Social Factors in Promoting Resilience Among Children, Parents, and Adult Migrants

The process of migration and subsequent events following immigration influence the mental health and overall well-being of migrants. Migration, as a social determinant of health, can expose migrants to a diverse range of factors that can influence their health outcomes. Previous research has primarily relied on cross-sectional studies that compare the rural-to-urban migrant experience or the mental health of migrant children to their peers, highlighting a detrimental impact on migrant health. Contrary to what can often be assumed, the migration experience can also provide multiple protective factors for children and adult migrants. However, there is a lack of evidence on what factors may promote mental health and resilience among migrants. Using community-based participatory research methods, this qualitative study investigated experiences of migration, mental health, and resilience. Semi-structured focus groups and interviews were carried out with a purposive sample of migrant children, their parents, and adult migrants. Recordings were transcribed and analyzed using thematic analysis and an ecological framework. Individual-level themes, including social and familial connection, emerged as promoters of resilience among migrants. Specifically, participants detailed how connections with friends and relatives enabled them to persevere through several challenges. Key findings across 24 participants highlight the pivotal role of familial relationships in fostering resilience among children and parents navigating the complexities of migration. The significance of support networks, cultural adaptation, and adaptive coping mechanisms promote resilience across generations. Additionally, this study identifies nuances in the experiences of different family members, shedding light on how varying sociocultural contexts impact individual resilience within the family unit.

Sofia Uribe

CA - California State University - Long Beach

Discipline: Social Sciences

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Abstract Name: The Relationship between Hyperglycemia Following Traumatic Brain Injury and Depression

Traumatic brain injury (TBI) may result in mortality as well as long-term mental and physical changes. Such changes may include depression, one of the most prevalent psychological disorders, and hyperglycemia. Hyperglycemia, or high blood sugar, is a common occurrence following a stressful or traumatic event. Additionally, prolonged episodes of hyperglycemia may lead to diabetes. Part of the treatment process following TBI includes lowering glucose levels to a normally accepted range. However, previous studies regarding optimal glucose levels and health outcomes following TBI have been contradicting, with some associating hyperglycemia with poor outcomes, while others indicate that some level of controlled hyperglycemia may pose benefits. The current study is utilizing the TBIMS National Database to examine the relationship between hyperglycemia, measured through diabetes onset following moderate or severe TBI, and depression. Participants (n = 275, White = 68.36%, African American = 18.91% Hispanic = 11.27%, Asian = 4.00%, Native American = 1.82%, Pacific Islander or Native Hawaiian = 1.09%, 69.5% Male) were diagnosed with diabetes (Type 1 or Type 2) either before, same time as, or 1 year, 5 years, or 10 years post-TBI. Depression scores were assessed using the Patient Health Questionnaire-9 (PHQ-9). Additionally, all participants were above the age of 16. A one-way between-SS ANOVA was conducted to assess if there is a difference in PHQ9 scores across time of diabetes diagnosis in participants. Results showed no significant difference in PHQ9 scores across time of diagnosis, $F(4, 270) = 0.33$, $p = .860$, $\eta 2 = .01$. Depression may not show immediately after diagnosis, therefore future studies should examine depression over time. Additionally, future studies should explore differences in glucose levels, as the database did not have a glucose measure. Furthermore, the database does not have data on mild TBI, but all participants received TBIs severe enough to require hospitalization and physical rehabilitation.

Aamina Usmani

CA - MiraCosta College

Discipline: Natural and Physical Sciences

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Abstract Name: Detecting Elusive Exosomes in Various Bacterial Strains

Exosomes are emerging as promising candidates for future diagnostic tools in disease detection due to their ability to carry disease-specific cargo. By isolating exosomes from various bacterial strains, researchers can explore the unique cargo carried by these vesicles, which may contain biomarkers indicative of the presence of specific diseases. This innovative approach could offer a non-invasive and highly sensitive method for early disease detection. This study aimed to isolate exosomes from various bacterial strains using diverse methodologies. The research involved multiple techniques, including the use of bacterial growth media such as terrific broth to enhance exosome production, concentration of media, and affinity/size exclusion chromatography techniques. Manual and automatic chromatography processes were conducted to isolate exosomes effectively. To confirm the presence of exosomes and their cargo, the study utilized protein

analysis and nano particle tracking analysis (NTA). These analyses helped validate the isolation process and provided insights into the characteristics of the exosomes. It was confirmed through the aforementioned techniques that bacterial exosomes are present in culture mediums, as well as in raw bovine milk. Confirmation was done through SDS-Page where exosome signals were found to be clear on milk, while signals for the concentrated bacterial mediums were found to be low to none. In conclusion, this study investigates diverse methods for isolating exosomes from different bacterial strains and verifies their presence and cargo through protein analysis and NTA. The findings hold promise for the future development of diagnostic tools that rely on exosome-based biomarkers, potentially revolutionizing disease detection and monitoring.

Alex Vacca

NC - Western Carolina University

Discipline: Social Sciences

Authors:
#1 Alex Vacca

Abstract Name: Contributing Factors to Natural Human Mummification

Natural mummification is known to occur in a diverse range of global locations throughout time, including in temperate climates. This stage of decomposition can have important impacts on determining the post-mortem interval (PMI) of a set of remains by forensic specialists. However, the factors that contribute to natural mummification remain poorly understood in current literature. This lack of understanding has reflected itself in such instances, as reported in Volume 206 of the Forensic Science International Journal (Schotsmans et al. 2011), where a man's partially mummified remains were found in a shallow grave in Belgium during spring. The PMI was unable to be determined by forensic experts due to the lack of typical evidence such as the body itself or entomological specimens on or surrounding the deceased. Cases such as this prove the need for additional research into the study of natural mummification. This study will review previous literature to assess what variables appear to contribute to natural mummification in relation to the decomposition process. It will examine where reported rates of natural mummification are known to occur and hypothesize what factors may lead to natural mummification. Once identified, these variables will be evaluated to see if they can be subjected to further experimentation to help answer how and why mummification occurs in such a wide variety of climates, including, specifically, the temperate climate of western North Carolina. This research will provide new information to the field of human taphonomy concerning mummification patterns. It will serve as an important step in better understanding the factors that contribute to the widely observed phenomenon of natural mummification, which may one day lead to more refined methods for estimating PMI when mummification is observed.

Jayamallika Vadapalli

AL - University of Alabama at Birmingham

Discipline: Interdisciplinary Studies

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Abstract Name: Correlation Between Composition and Mechanical Properties of Dental Filling Materials

Objective: Tooth colored dental filling materials (resin composites) are composed of filler particles and a resin matrix to bind it together. The filler particles are claimed to increase strength and decrease its shrinkage (an undesirable property). This study aimed to test that correlation.Methodology: Nineteen commercially available dental composites were included in the study. Filler percentage by weight (n=5) was determined by burning the resin and weighing the residual filler particle (800°C for 15 minutes). Three-point bend flexural strength and modulus (n=10) were measured by making 2x2x25mm bars of composite in a ISO specified mold. The bars were fractured in a Universal Testing Machine. Shrinkage stress (n=8) was evaluated using a testing machine in which composite was bonded to and light polymerized through two transparent acrylic rods (diameter = 6.45mm). The maximum force applied to the acrylic rods was measured (following 500 seconds) and divided by the surface area of the rod to determine shrinkage stress. Linear correlation between mean filler weight percentage, flexural strength, modulus, and shrinkage stress were measured by Pearson's correlation coefficient using statistical analysis software.Results: The Pearson's correlation coefficient determined that there is a positive linear correlation between filler weight percentage and both flexural strength (r=0.70 p<.01) and modulus (r=0.85 p<0.01) but not shrinkage stress (r=-0.14 p=0.54).Conclusion: Filler weight percentage is a good indicator of the stiffness (modulus) and flexural strength of a resin composite. Shrinkage stress may not be determined solely based on filler weight percentage.

Brenda Valdes

TX - The University of Texas at San Antonio

Discipline: Education

Authors:
#1 Brenda Valdes

Abstract Name: Translanguaging in the classroom: Unveiling the power of multilingualism

Using a sociocultural lens, this paper examines the practice and use of second languages in pedagogy. Due to the increasing diversity in the world, we will look at multilingual learning education, more specifically translanguaging behaviors in pedagogy. Literature suggests that translanguaging is not just beneficial, but also fundamental for rich learning outcomes. As well as the sustainability of cultural identity. Although Dual Language (DL) has shown good results, English Learners (EL) are the less likely to graduate college and receive unequal instruction in areas of study in Science, Technology, Engineering and Mathematics (STEM). Literature propose that educators should not make the focus on language as a deficit but build on their funds of knowledge to make multilingual education an asset for learning and creativity. During this investigation, we observed video recordings of Texas students in dual classroom settings, Bilingual Teacher Candidates (BTC), and mentor Teachers. We also look at how the adaptation of this multilingual pedagogy, could leverage these inequalities in minority students in higher education, more specifically STEM disciplines. We observed classroom instruction and interaction between students and teachers, transcribed these videos, and analyzed the instances in which students, and teachers, engaged in translanguaging behaviors. To analyze the discourse, we applied thematic analysis to identify patterns and themes. Based on the data, we identified three main themes: student reciprocity, recall of learned concepts, and group collaboration. Hence, this paper focused on the behavior of translanguaging in a real classroom setting, investigating when and how students use translanguaging.

Diego Valdes Cavazos

TX - The University of Texas at San Antonio

Discipline: Engineering and Architecture

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Abstract Name: Development of an in-vitro Model with Controlled Stiffness to Study Adipogenesis

The extracellular matrix (ECM) is a three-dimensional, multicellular network composed of proteins such as collagen that characterizes cells' fundamental properties and behavior. One of these properties is stiffness, which has been proven to play a role in stimulating stem cell differentiation and tumorigenesis. In obesity, research has shown that ECM stiffness increases drastically, however, there is minimal information on how this change affects adipogenesis. This study works on optimizing the characteristics of polyacrylamide (PA) gels to create an in vitro model of controlled stiffness to understand its effects on mouse adipose-derived stem cell (mADSC) culturing.For this, a mixture of acrylamide and bis-acrylamide is made using varying concentrations to make the hydrogels. The gels are then coated with collagen in preparation for cell attachment. Human and mouse adipose-derived stem cells were seeded in the different stiffness PA gels, to observe attachment on coated gels. The cells are then cultured for two weeks with media changes every other day to ensure cellular adaptation.The Young Modulus was measured using the compression tester: Mach-1TM Mechanical Testing System. Analysis of the gels showed a consistent range of young modulus with the flexible gels having an average of 3.58 kPa and 7.29 kPa, and stiffer gels having an average of 76.03 kPa. Microscopic images showed human and mouse ADSC were able to attach and grow on top of the coated gels of different stiffness. Preliminary findings show a higher expression of integrins adiponectin, UCP1, and PPRG by hADSC seeded in 7 kPa range gels. Further analysis must be performed to elucidate the effects on the differentiation of brown and white adipocytes with varying stiffness.

Iris Valdez

TX - San Jacinto College

Discipline: Education

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Abstract Name: Latinos in Education. Bridging the Gap: A comprehensive Exploration of Educational Inequity faced by Latinos in the United States from Historical Struggles to Current Challenges

Latinos, the largest and fastest-growing minority group in the United States, face a striking disparity in college completion rates, with only 15% attaining a bachelor's degree or higher. The perplexing question arises: why is this the case? Latinos encounter unique challenges in the educational landscape, struggling more than their English-speaking counterparts. A primary hurdle lies in the lack of resources tailored to non-English-speaking students and their families, compounded by barriers related to immigration status, economic factors, and other obstacles hindering their pursuit of higher education. Latinos, representing diverse Latin American origins, including Mexico, South and Central America, and Brazil, grapple with systemic issues spanning the pre-20th century to the 21st century. This research seeks to explore essential changes needed in the current school curriculum to bolster Latino representation in higher education, addressing cultural, historical, and academic needs. It aims to uncover how the curriculum can be enhanced

to better support the educational journey of Latino students, tackling three central themes: school segregation, language, and economic barriers, along with the challenges posed by undocumented status.

Lexi Valeri

WI - University of Wisconsin-La Crosse

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Regional Differences of Stress-Induced Increase in Intestinal Permeability

Intestinal epithelial permeability has been proven to be impaired by stress, which contributes to conditions such as irritable bowel syndrome (IBS). Despite this finding, regional differences in epithelial permeability along the intestinal tract and their responses to stress have yet to be explored. Male and female mice were utilized to compare the regional permeability differences amongst sex and their responses to stress. Mice in the stressed groups were placed in restrainers for one hour per day for five days as a form of stress. Control mice remained in their primary cage without undergoing restraint stress. Following the last stress/control session, the duodenum, jejunum, ileum, proximal colon, and distal colon were removed, and the mucosa/submucosa preparations were mounted onto the Ussing Chamber System. Transepithelial resistance (TER) was recorded as a measurement of paracellular permeability. FITC-insulin (4kD) and horseradish peroxidase (HRP, 40 kD) were added to the luminal chamber, and the flux rates from luminal to basolateral side were used to assess the paracellular and transcellular permeability, respectively. Stress resulted in a significant decrease in TER only in the distal colon of male and female mice. FITC-insulin flux rate remained unaffected by stress in male mice; however, significantly increased in the distal colon of the stressed female mice in comparison to the control females. HRP flux rate was significantly increased in the proximal colon of the stressed male, while showing no significant effect of stress on the female intestinal tract. The results suggest that the epithelial layer in the large intestine is more vulnerable to stress compared to the small intestine, and male and female mice respond differently to stress. Aiming toward the specific regions impacted by stress may aid in the creation of regional specific medications that more specifically target IBS or other stress related gut problems.

Saul Valle

CA - Dominican University of California

Discipline: Humanities

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Abstract Name: Words Speak Louder Than Actions: How National Leaders Use Rhetoric to Frame the Issues of National Security and the War on Drugs

In the preamble of the 2024 presidential election seasons in both the United States and Mexico, there has been an increase in aggressive outspoken expression by national leaders regarding how to best handle the

issue of drugs and drug use across the hemisphere. These types of sweeping policies are often credited to President Richard Nixon, who on June 18th, 1971 initiated his “War on Drugs,” a global policy campaign intended to address the production, distribution, and consumption of the illicit drug trade. Existing scholarship on this topic has extensively analyzed the early years of the American war on drugs during the Nixon administration and the institutionalizing effects of the “drug problem,” however, there is a gap of knowledge covering sanctions of administrative strategies between 1992-2012, specifically any analysis on the power of the presidential rhetoric and, consequently, its influence on setting the agenda for domestic/foreign drug policy between the U.S. and Mexico. Drug control is an enduring and evolving issue, with the presidential rhetoric surrounding narcotics constantly shifting to adapt to the political climate and to define social reality for its citizens, with the president often merging moral and ethical reasons to establish their constitutional authority and role as a leader. Using critical analysis on archived presidential public statements of Bill Clinton, George W. Bush, Vicente Fox, and Felipe Calderon, along with historical context on narcotic reform in the United States and Mexico, this multi-national research argues that presidents utilize rhetoric in the contemporary war on drugs to shape punitive policy reforms.

Liliana Valle-Contreras

CA - Dominican University of California

Discipline: Health and Human Services

Authors:
#1 Michaela George

Abstract Name: Evaluation of the Family Therapy Program: In This Together (ITT) for Survivors of Domestic Violence

Domestic violence affects one in every four women in the United States. Previous research shows the importance of group therapy for those who have experienced this trauma. The purpose of this study is to evaluate the “In This Together” (ITT) program that takes place in Marin County, CA, through the organization Center For Domestic Peace (C4DP). This quantitative analysis consisted of 10 cohorts, with a total of 65 participants. Eligibility criteria for survivors of domestic violence included being a parent and fluent in English or Spanish. Scaled questions were asked before and after the 10 week ITT therapy program. The questions were based on the Regulating Emotions in Parenting Scale (REPS), and Hope for Parenting Scale (HFPS) measurement tools. By asking participants before and after ITT, it allowed the researchers to measure the impacts of the program. Based on preliminary results, show that on average, individuals who completed the ITT program were better communicators, strengthened their relationships with their children, and felt empowered against their abuser. Both the REPS and HFPS scales were statistically significantly improved after the 10 week therapy program (p>0.05). Further analysis is underway to understand the components of these scales and how those were impacted by ITT. ITT has shown to have impacted participants by improving their parent-child relationship after the trauma of domestic violence. Being more aware of feelings and finding empowerment gives survivors of domestic violence more tools to better their lives in many ways. Implementing ITT into different group therapy settings for other populations who have suffered traumatic experiences is crucial and encouraged.

Jaxon Vallerand

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Jaxon Vallerand

Abstract Name: The ways a logo is successful

Logo design is one of the most important things a brand or company needs in order to start providing their goods and services to the world. A logo needs to be recognizable and relevant to the market that the business is trying to target. This idea often uses color theory, a study that shows how colors work together and represent emotions and perceptions. For example, warm colors can represent high energy emotions, while cool colors can represent low energy emotions. It is very important for a design to stay consistent and relevant when it comes to logos. What this means is that the design has the same idea or target audience as the years go by. Many companies have been able to achieve this characteristic. From Apple to McDonalds, they have remained the same in terms of their logo design and targeted audience for their products. The most significant visual element is the logo. The logo must show the company's essence. But what makes a logo stand out from other companies? The design needs to have a balance between artistry, inventiveness, and elegance. In order to have a successful logo, a designer needs to challenge themselves to create an image that stands out and has not been done before.

Elena Vallis

GA - Emory University

Discipline: Interdisciplinary Studies

Authors:
#1 Elena Vallis
#2 Sarah Higinbotham

Abstract Name: Lights Out: Mechanization and Metaphors for Worklife

One can hardly play a role in society in which it is not fitting to be busy. Overcommitment is the mark of success; in fact, hustle culture demands what marketable value can be extracted from an unbusy life. My project breaks down the phenomenon of burnout through a metaphorical lens, empowering my audience to reject its hold on us. Partnering with Dr. Sarah Higinbotham, my research into conceptual imperialism and the origins of burnout have led me to conclude that, more than an innocuous metaphor, "burnout" has fundamentally changed the way we see our work (and not for the better). Besides breaking down burnout as a cultural, psychological, and productive phenomenon through a metaphorical lens, I also hope to gain visibility for my own metaphor ("low tide"). By challenging the language surrounding burnout, and proposing an alternative metaphorical angle, I hope to publicly rework a destructive thought pattern into a more life-giving worldview—one I hope will be a step towards recapturing purpose in our lives. To my knowledge, this project is completely original and very timely. Burnout and workplace dissatisfaction are at all-time highs across age groups, and mental health challenges do not discriminate: we all live and work in a culture of chronic stress; one that prioritizes output over the out-putter, equates work with worth, and glorifies toxic busyness. However, my proposal—that a simple paradigm shift, accompanied by a change in language, can significantly improve our outlook on energy expenditure—rejects the conviction that our personal fulfillment relies on blind external forces. At the most basic level, we are responsible for our own well-being; and sometimes that means working against the odds and empowering ourselves to say "no." By flipping the narrative on burnout, we reclaim our power (and our responsibility) to choose how we see the world.

Emily Van

TX - San Jacinto College

Discipline: Social Sciences

Authors:
#1 Emily Van

Abstract Name: The Complexities of Online Gambling Addicitons

Gambling has been around for centuries in various cultures and societies, from playing poker to betting on horse races. In this new technological age, gambling has diversified and become more accessible by expanding to online platforms. Unfortunately, online gambling takes the complexities that come with gambling addictions. It essentially amplifies it by taking an intrinsically addictive behavior, gambling, and putting it on an addictive platform, the internet, for even more people to access. Gambling in itself is extremely addictive, and so is participating in activities over phones and computers. The convenience and design of gambling sites and apps are intestinally made so users can easily access wagers and are enticed to do it more often. Regulations on online gambling platforms are not nearly as regulated as casinos or other locations for in-person gambling which introduces the risk of allowing extremely inebriated individuals and minors to access to participate in wagers and bets. The internet permits individuals to anonymously gamble wherever and whenever if they have Wi-Fi and an electronic device. When one gambles at home, they are not being monitored, so they can gamble heavily under the influence of drugs or alcohol which impedes their decision-making skills and emotional regulation. Also, minors are prohibited from doing things such as buying lottery tickets, entering casinos, and more because adults and security are verifying ages and checking IDs. While online gambling sites do check for ages, verification checks online can be easily bypassed so that minors can partake in gambling. All the factors above make gambling even more addictive, but it also is more accessible and appealing. Overall, online gambling raises concerns that deserve more attention because it has the potential to majorly affect the newer generations in a way traditional gambling has before.

Brock Van Alfen

UT - Weber State University

Discipline: Natural and Physical Sciences

Authors:
#1 Brock Van Alfen
#2 Sydney Johnson
#3 Kendal Beazer
Sydney Johnson

Abstract Name: Reducing Pathogenicity of Candida auris Through Biofilm Disruption

Candida auris is an emerging multi-drug resistant hospital acquired pathogen. Candida species are the third most common cause of healthcare related bloodstream infections, with a mortality rate of 30-60%. Candida albicans was previously thought to be the most pathogenic species of its genus. However, new studies have shown that C. auris produces biofilms at 10-fold greater burden than C. albicans on cutaneous surfaces, and exhibits a unique stress resistance profile allowing it to adapt and survive in the skin niche more effectively than other Candida species. Prior work has shown that both filastatin and taurolidine can inhibit C. auris biofilms. In a clinical setting C. auris has shown a strong resistance to fluconazole due to the biofilm the organism produces. In this study porcine skin cultures will be used to test the efficacy of these drugs in inhibiting biofilm formation and possibly cutaneous infection. Biofilm production, as well as infection severity, will be assessed through measuring colony counts and performing electron microscopy. Furthermore, susceptibility testing will be performed using broth dilutions to evaluate if taurolidine and filastatin increase the efficacy of fluconazole. We expect that the use of an intermediary substance which weakens the biofilm, combined with an antimicrobial, will kill the fungus more effectively than an antibiotic

agent alone. We hypothesize that the use of taurolidine and filastatin will inhibit biofilm production and allow fluconazole to inhibit the organism.

Alicia van de Bor

CA - University of the Pacific

Discipline: Visual and Performing Arts

Authors:
#1 Alicia van de Bor

Abstract Name: Women in History Ceramic Dishware

My name is Alicia van de Bor and I am a visual artist. I am making handmade ceramic dishware that celebrates women's achievements throughout history. The feminist movement inspires this body of work, the ongoing struggle for gender equality, and the lack of representation of women in history and the arts. American feminist artist Judy Chicago and her installation The Dinner Party, 1974–79 inspired my work. Each dinnerware set is used as a canvas to depict an inspiring woman and highlight her achievements. I use a red earthenware clay on the pottery wheel, a white slip, and sgraffito an image of each woman. Each piece uses only one color that relates to either the woman or the work she has done. In determining who to research, I ask my audience to provide the name of an inspiring woman in history or the present day. I then researched the proposed woman to learn about her origins and the impact she made. During my research, I have spoken with immigrants and learned about inspiring women from their native countries. For future pieces I plan to create and display a Q.R. code that allows viewers to submit women's names. My plan for this work is to expand the number of women depicted and show them as an installation piece during Women's History Month at the Women's Museum of California in San Diego, California, and the National Museum of Women in the Arts in Washington, D.C. My goal as an artist and with this body of work is to inspire others to learn more about the lives and accomplishments of women throughout history.

Abigail Van de Water

CA - University of the Pacific

Discipline: Natural and Physical Sciences

Authors:
#1 Abigail Van de Water
#2 Skylar Carlson

Abstract Name: Building an Aquatic Actinomycete Library: Identification and Secondary Metabolite Profiling

Actinomycetes are a group of gram-positive bacteria that have an array of genes in their genome that are devoted to constructing metabolites. While they are classified as bacteria, their morphology resembles fungi as they form aerial hyphae or spores which are smaller than those of fungi. Actinomycetes have been found in both terrestrial and aquatic (saltwater and freshwater) habitats. Aquatic actinomycetes really shine because their genome is specifically encoded to create a variety of secondary metabolites not seen from terrestrial species. Secondary metabolites, or the small molecules produced by bacteria, have been used by humans extensively as antibiotics, herbicides, immunosuppressants. The most well-known FDA approved drug from actinomycetes is streptomycin which was discovered in 1943. The Carlson lab has been hard at work isolating novel actinomycete strains. I am interested in fully cataloging, identifying (via 16s rRNA),

preserving, and extracting the secondary metabolites from these strains. I also plan to use multiple media types to see if we can elicit more compounds from the bacteria by altering the carbon and nitrogen sources in the media, this is known as One Strain Many Compounds or OSMAC approach. In the laboratory, we will test for any antimicrobial compounds present and look for biofilm inhibitors, specifically E. coli, Staphylococcus aureus, Bacillus subtilis, and a collection of marine Vibrio spp.

Kathryn Van Dusen

PA - Villanova University

Discipline: Social Sciences

Authors:
#1 Kathryn Van Dusen
#2 Deena Weisberg

Abstract Name: Learning from Anthropomorphic Stories: Teaching Preschoolers Acquired vs Inheritable Traits by Varying Character Realism

Nearly all children's education media contains at least one fictional aspect. When trying to teach a scientific lesson, the fictional element could blur the lines between what is real and what is fantastical. To test the influence of fantasy on the ability to learn a scientific lesson, we read to children ages 4-6 years old with stories that varied by having human or kangaroo main characters and realistic or anthropomorphized target animals. The text for each story was consistent, with the main characters teaching about the difference between inheritable and acquired traits between parent-child target animal pairs. Each child's independent preference for fantasy or realism in their media consumption, play style, and educational activities was recorded through a parent questionnaire, determining if an interaction between their fantasy preference and their ability to learn from different materials had any correlation. The goal is to determine if there is an ideal amount of fantasy to include in a story to capture the child's attention while not interfering with the educational information. We expect to find that moderate inclusion of fantasy elements would have the most positive effect on learning about traits.

Rhodes Van Houten

WA - Central Washington University

Discipline: Health and Human Services

Authors:
#1 Rhodes Van Houten
#2 Fernanda Colen Milagres Brandão
#3 Ana Paula Coelho Figueira Freire
#4 Daniel Barreto Rabelo
#5 Sabrina Oliveira Melo
#6 Mario Efraín Recinos Mastahinich
#7 Roberto Zambelli
#8 Thales Souza
#9 Rafael Zambelli Pinto

Abstract Name: Body Mass Index is a Poor Prognostic Factor for Function in Individuals with Plantar Fasciopathy: A Longitudinal Observational Study

Research Context: Plantar fasciopathy (PF) is a condition most common in athletes, characterized by pain and tenderness of the calcaneal region. In non-athlete cases, higher body mass index (BMI) has been observed as a potential risk factor for developing the condition due to increased mechanical load on the plantar fascia.Central Aims: The aims of this study are to investigate if BMI influences the performance of clinical tests and clinical presentation of individuals with PF, and to determine whether BMI and clinical tests predict the clinical course of PF over a 3-month follow-up period.Methodology: 52 individuals with PF were grouped according to the median BMI, into low and high BMI. Participants showed a mean age of 49.4 ± 12.0 years, and a mean BMI was 28.1 ± 4.5 kg/m2. At initial assessment, assessors evaluated eligibility criteria and demographic and anthropometric data were collected, including sex, age, education level, height, and weight for the calculation of BMI. Pain intensity and function were measured at baseline and at the 3-month follow-up via Ankle dorsiflexion Range of Motion (ROM), Navicular Drop Test, Heel Rise Test, and Step-Down Test.Results: We found that the low BMI group showed better function (Mean Difference (MD) = 11.8; 95%CI: 1.9; 2.16) and lower pain intensity (MD = -1.5; 95%CI: -2.6; -0.3) than the high BMI group. In the multivariable regression model, higher BMI predicted lower function (Beta coefficient = -1.20; 95%CI: -2.3 to -0.3).Conclusion: Individuals with PF with higher BMI reported higher pain and lower function compared to those with lower BMI. Although BMI was found to influence PF clinical presentation, it was considered a poor prognostic factor for function in individuals with PF.

Anneke van Oosterom

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Sydney Nelson
#2 Anneke van Oosterom
#3 Laura Gilchrist
#4 John Pellegrini
Sydney Nelson

Abstract Name: Assessing Neuromuscular Fatigue in Childhood Cancer Survivors

As a result of remarkable progress in oncology, over 80% of children diagnosed with cancer are expected to be long-term survivors. Unfortunately, chemotherapy side effects are significant and may involve life-long consequences. Specifically, the drug vincristine can cause peripheral neuropathy (nerve damage). While sensory impairments due to neuropathy have been well documented, we aim to know more about its effects on motor function. One previous study found that within months of completing vincristine treatment, children walked slower than age-matched controls and kept their forefoot in contact with the ground for a longer time during each step. We hypothesize that this finding reflects susceptibility to fatigue brought on by neuromuscular damage and want to determine if such deficits persist long-term. We recruited recovering pediatric oncology patients and age-matched controls, having them complete surveys assessing subjective experiences of daily fatigue, clinical tests of nerve function, and a six-minute walk test. Additionally, we measured strength and muscle fatigue in their hands and feet. During fatiguing trials (40 sequential repetitions of a 3-second maximal contraction and a 3-second rest period), we recorded electromyograms (EMGs) to measure muscle activity while using dynamometers to test hand grip and dorsiflexion forces. At present, we have tested five cancer survivors who received vincristine therapy (age range = 12-22 years; average age = 18.2 years; average time since treatment end = 5.7 years) and 33 control participants (average age = 18.0 years). While we plan to recruit more participants, our preliminary results suggest that even more than 5 years after finishing chemotherapy, survivors continue to experience more daily fatigue, cannot produce as much hand grip force, and have reduced gait speed. These findings suggest health care providers should conduct long-term follow-ups on the neuromuscular function of cancer survivors administered vincristine.

Alexander van Vliet

PA - Villanova University

Discipline: Engineering and Architecture

Authors:
#1 Alexander van Vliet
#2 Calvin Li

Abstract Name: EXPERIMENTAL INVESTIGATION OF WATER EVAPORATION ON POROUS MEDIA WITH METALLIC OXIDES COATINGS BY ATOMIC LAYER DEPOSITION

Porous media, such as polypropylene (PP) and carbon foam, have been previously studied for enhancing water evaporation by their strong capillary forces and capabilities of heat localization when being exposed to solar radiation. Meanwhile, it is reported that enhancing hydrophilic properties of a porous surface allows greater water evaporation rate than untreated porous surfaces. For example, the contact angle of water on nitric acid-activated PP is decreased from 110˚ to 66˚ and 76˚, and the total water evaporation rate on a bare PP membrane is more than doubled from 250 L h-1 m-2 bar-1 to 487 - 509 L h-1 m-2 bar-1. We would like to propose a treatment of porous metal media by atomic layer deposition (ALD) of metallic oxides, including titanium dioxide (TiO2) and aluminum oxide (Al2O3), to induce superior hydrophilic properties and investigate the water evaporation enhancement on the treated porous media. This work will focus on establishing a quantitative correlation between various ALD coatings and the enhanced water evaporation on porous media that are exposed to various heating. It is expected that a greater thermal efficiency of metal porous media will have a better heat transfer to support the water evaporation than that on non-metal porous media, and a hydrophilic ALD coating will yield a smaller contact angle and greater water evaporation flux due to the combined effects of enhanced hydrophilicity on the surface of porous media and heat transfer in the skeleton of porous media by more than two times of that on untreated porous media when being exposed to the same heating conditions.

Ananda Van Wie

WI - University of Wisconsin-Stout

Discipline: Visual and Performing Arts

Authors:
#1 Ananda Van Wie

Abstract Name: Design of Pressure Device to Aid in Alleviation of Anxiety Symptoms

How can wearable devices be used to offer support to those who suffer from moments of anxiety? The number of people diagnosed with anxiety has been on the rise; it is currently the most diagnosed mental illness. With this, many people with said diagnosis say that pressure helps alleviate moments of anxiety. Furthering that, there are pressure points in the human body that, for centuries, have been used to control feelings and sensations within the body—including feelings of anxiety. This project focuses on creating a wearable device that utilizes applied pressure to bodily pressure points to alleviate anxiety. The physical product works alongside a Bluetooth connected phone app. Through the app, device wearers can set the device to their preferred preferences, track triggers of anxiety, and find resources for greater support. Especially when in public, it is crucial not to call attention to the fact that the user is currently having an episode of anxiety. The design of this product makes it appear more similar to a jewelry piece than a medical device. Visual language is largely inspired by the work of James Jean. This, combined with normalized phone use allows for discrete and non-stigmatized activation and use case scenario. This project uses research conducted through secondary data analysis; individuals' personal anecdotes is considered as well; the

traditional Industrial Design development process is fundamental to the creation of this project. Included in this process is intensive sketching, CAD modeling, 3D printing and user comfort testing. Through findings and development, it is expected that the combination of pressure and pressure points will help to minimize some feelings of anxiety. This development could allow for a healthy way to momentarily alleviate symptoms of anxiety is a discrete way.

Caroline Vanderburgh

AL - University of Alabama

Discipline: Social Sciences

Authors:
#1 Caroline Vanderburgh
#2 Smitha Achuthan
#3 Paula Argueta
#4 Rajesh Kana

Abstract Name: Thalamo-cortical functional connectivity in developmental disorders

One of the earliest neurobiological findings in autism has been the differences in the thalamocortical pathway connectivity, suggesting the vital role the thalamus plays in human experience. Since then, studies on thalamic connectivity have been sporadic and especially rare in comparing disorders like autism and attention deficit hyperactivity disorder (ADHD). The thalamus is implicated in relaying sensory information, monitoring and maintaining mental constructs, and executive functioning, among other cognitive functions. Hence, any neurological or neurodevelopmental condition associated with structural and functional differences in the thalamus may accompany alterations in neurocognitive abilities. The present functional MRI study investigated resting-state functional connectivity of the thalamus in 49 (autistic, ADHD, and neurotypical) young adults. All participants underwent structural MRI and eyes-open resting state functional MRI scans on a Siemens 3T Prisma scanner. After preprocessing the resting fMRI data using Conn's connectivity toolbox, a seed-based functional connectivity analysis was conducted using the bilateral thalamus as primary seeds. The main findings demonstrate extensive functional connections of the thalamus to a diverse range of cortical areas. Autistic participants showed stronger thalamic connectivity, relative to ADHD and neurotypical participants, between the right thalamus and various cortical regions, including the somatosensory cortex, motor cortex, and SPL, as well as the left thalamus and the right precentral gyrus. Furthermore, regression analyses revealed a significant relationship between autistic traits and left thalamic-precentral connectivity ($R^2 = 0.1113$), as well as between autistic traits and right postcentral gyrus and RSPL connectivity ($R^2 = 0.1204$). Autism and ADHD often co-occur with overlapping symptom profiles. This study is unique as thalamic connectivity profiles of autistic and ADHD participants are compared, which can be utilized to differentiate neurobiological mechanisms underlying autistic traits. Ultimately, these findings provide significant insights into the role of the thalamus in coordinating neural information processing and its alterations in neurodevelopmental disorders.

Mackenzie VanDixhorn

VA - Liberty University

Discipline: Humanities

Authors:
#1 Mackenzie VanDixhorn

Abstract Name: The Life of Women on the Oregon Trail

The Oregon Trail in the years 1840 to 1867 symbolized the desire for many to gain access to a better life and wealth. These individuals headed West in search of gold, land, and opportunity. However, getting west required a long and treacherous journey. These pioneers traveled hundreds and thousands of miles through great danger to reach their idea of the West. Groups that traveled often included families, women, and children. The covered wagons housed the entirety of a family's belongings.The reality of this journey included sickness, disease, and often a lack of food. Partaking in such a journey, especially for young children, required a level of toughness and grit. These families trudged through the wilderness and fought for survival. Some families used covered wagons, while others pulled carts on foot. Many families faced death and starvation from the conditions. In addition, there were great safety concerns for these families. Either way, the journey through tough terrain and wilderness were difficult and grueling. This treacherous journey along the Oregon Trail provided many challenges for women, whether this included leaving behind their families, homemaking along the trail, and partaking in chores that would have previously been understood as unladylike. Many of these families embarked on this journey in the hope of the opportunity given by the West. While women were allowed to act more independently and to learn new skills, the jobs women accumulated along the Oregon Trail were often exhausting and difficult in labor.

Caroline Vanegas

CA - California State University - San Bernardino

Discipline: Natural and Physical Sciences

Authors:
#1 Caroline Vanegas
#2 Cindy Ramirez
#3 Cody Atkins
#4 Laura Newcomb

Abstract Name: NP-PB2 Interaction as a Viable Target to Inhibit Influenza Replication

The influenza virus continues to hold pandemic potential. Antiviral treatments are important to stop novel emerging influenza viruses, fueling the need to investigate essential viral protein interactions as a first step in developing new antivirals. Influenza nucleoprotein (NP) is essential for viral gene expression and highly conserved across influenza viruses. We previously reported alteration of 5 amino acids of NP to glycine, termed NPbd3, results in no viral RNA expression but maintains oligomerization and RNA binding. Here we use sucrose gradient ultracentrifugation to demonstrate wild type NP and PB2 co-sediment when expressed alone in 293T cells, but altered NPbd3 does not, evidence NPbd3 cannot interact with PB2. To investigate disruption of NP-PB2 interaction as an antiviral target, we engineered DNA to express a small NP peptide encompassing the 5 amino acids identified. Transient transfection of 293T cells reveal expression of wild type NP peptide followed by influenza A virus infection results in little cytopathic effect (CPE), while expression of NPbd3 peptide domain results in CPE. This supports wild type NP peptide binds PB2 to block NP-PB2 interaction and inhibit influenza infection while NPbd3 peptide cannot interact with PB2, does not block NP-PB2 interaction, and does not inhibit influenza infection. To build on these findings we engineered single integration lentiviruses to integrate the gene to constitutively express the NP peptide fused to GFP to monitor NP peptide expression and location. Clonal populations will be propagated and the resulting NP peptide expressing cell lines will be infected with influenza A virus. We hypothesize engineered cell lines expressing wild type NP peptide will be protected from influenza infection while NPbd3 expressing cell lines will not. This research defines the domain of NP involved in an essential NP-PB2 interaction and validates disruption of this interaction as a viable target to develop new antivirals.

Naturelle Vang

MN - St. Catherine University

Discipline: Natural and Physical Sciences

Authors:
#1 Naturelle Vang
#2 Ya Yei Xiong
#3 Rahul Roy
Ya Yei Xiong

Abstract Name: The Effect of Sodium Chloride Stress on Floral Nectar Sugar Concentrations and Nectary SOS1 Gene Expression in Brassica

Nectar is a nutrient-rich solution produced by the nectary glands of flowers to attract pollinators such as bees and hummingbirds. Nectar is primarily composed of sugars (sucrose, glucose, fructose) and other metabolites such as amino acids, lipids, proteins and metal ions. Plants uptake nutrients and water from the soil, but excessive salts such as sodium chloride (NaCl) can stress them. Road salt, containing NaCl, is used in the winter to mitigate icy roads, which infiltrates the soil and is absorbed by plants. This raises concerns about its impact on nectar production and pollinator interactions. Our research focuses on the effect of NaCl on floral nectar production. Our hypothesis is that increasing NaCl will alter nectar sugar composition and nectary gene expression of the salt membrane transporter, SOS1 (Salt-Overly Sensitive 1). Brassica rapa plants were grown in a hydroponic system (with no soil) with added NaCl and nectar sugar composition was analyzed. We optimized growth of Brassica rapa (Wisconsin Fast Plants) on two different hydroponic solutions, Masterblend and Floragro, with or without NaCl. Masterblend exhibited better plant growth, leading to further experimentation with increasing NaCl treatments (0, 0.5 and 1%) in a similar setup. Nectar from flowers of each treatment were collected for sugar composition analysis using the Megazyme Sucrose/D-Fructose/D-Glucose Assay Kit. Our results suggest temporal changes in nectar sugars with an increase in hexoses (glucose and fructose) in salt-stressed plants. SOS1 gene expression from the nectary glands is in the process of qRT-PCR analysis. Changes in nectar composition due to salt stress could negatively impact plant reproduction and pollinator food sources. Hence this research can better inform road salt usage patterns.

Salma Vargas

MA - Smith College

Discipline: Humanities

Authors:
#1 Salma Vargas

Abstract Name: Re-Mourning Slavery's Memory: Agency, Grief, & Desire in Beloved

My research examines Beloved, a novel where a formerly enslaved woman named Sethe is haunted by the child she murdered to avoid its enslavement. The novel explores the grief Sethe for the loss of her child which is a metaphor for African American grief towards the familial losses incurred as a result of slavery. In the discourse of literary criticism, Beloved is often examined using a psychoanalytic framework which categorizes the novel as a melancholic text. The psychological understanding of melancholia comes from Sigmeund Freud who described the state as a pathological condition where an individual experiences unresolved long term grief. However, in the novel, it is precisely through grief that Sethe channels the energy to move forward rather than stay in her misery. Thus, my work pushes back against the long standing view that grief is pathological. I argue that psychoanalytic terminology is insufficient for understanding the transformative qualities of grief and hinders our understanding of how melancholia can be useful. I present the term “re-mourning” to bridge this theoretical gap in the language and demonstrate that in order for a

grieving subject to move forward, they must draw motivation from their loss. Through close reading, I examine how characters who are psychologically and physically debilitated by their memory of slavery find a way to transform this unresolved grief into a source of power to enact change in their life. My questions include: how do the characters develop a “healthy” relationship the past without completely abandoning the it either? And, if grief becomes a source of power, what are its dynamics and manifestations? The importance of this work is that it grants the current discourse a new theoretical lens to understand the role that grief plays in relation to the memory of historical devastation.

Angel Varghese

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:
#1 Angel Varghese
#2 Andrew Hardaway
#3 Sonja Virkus

Abstract Name: Immunohistochemical Detection of GLP-1 in the Mouse Hindbrain

Obesity, eating disorders, and type 2 diabetes are health concerns that can be fatal if left untreated. Pharmacotherapies targeting the body’s GLP-1 system promote insulin release, reduce appetite, and promote gastric emptying. In the brain, GLP-1 is solely produced from neurons in the brain's nucleus solitary tract (NTS). Several studies have established that these neurons are activated by large volume food intake, stress, and the exogenous administration of gut satiety peptides like cholecystokinin; however, there is still much we don’t know about how the NTS GLP-1 system is recruited by different behaviors or drugs. Therefore, we piloted a protocol using immunohistochemistry techniques to label GLP-1-expressing cell bodies and fibers in the NTS of mice brains. The primary antibody (1°) used in 1:2000 concentration (1°: PBS) was rabbit & anti-GLP-1, which adhered to present GLP-1 proteins. 0.1% sodium borohydride allowed for better visualization. The secondary antibody (2°), donkey & anti-rabbit, was used in a 1:1500 concentration (2°: PBS); this adheres to the primary antibody with its red fluorescence. The sections were microscopically analyzed and revealed GLP-1 proteins in the NTS. Our work contributes to an improved protocol for IHC to locate GLP-1 proteins in the NTS. We will use this protocol combined with Fos immunolabeling (double IHC) to look at the activation of NTS GLP-1 neurons in response to other stimuli. Also in the future, we can measure changes in GLP-1 protein after different chronic manipulations like high-fat diet, chronic stress, or manipulations of the NTS GLP-1 system.

Peter Vartanian

CA - Occidental College

Discipline: Social Sciences

Authors:
#1 Peter Vartanian

Abstract Name: Incubator of Evil: On Historical, Post-Nazist, and Digital Right-Wing Extremism in Austria

This research project delves into the deep-rooted history of right-wing nationalism and authoritarianism in Austria, seeking to understand its connection to modern-day politics and collective memory. While Nazism and its deleterious legacy are often the lodestars of discussions on Austrian — if not European — political

history, this project aims to uncover the centuries of conservative politics that have contributed to the development of reactionary ideologies in the country.Austria's position as a unique locus between competing European powers has fostered a distinct form of nationalism, based on a vaguely Alpine-Danubian culture and Catholic religion rather than a historically grounded "we-feeling." The multi-ethnic and multi-lingual makeup of the Austro-Hungarian Empire has added another layer of complexity to the development of this nationalism, laying the groundwork for a virulent strain that persists to this day.Through archival research, political theory, sociological analysis, and discursive analysis, this research examines the connections and continuities between historical right-wing movements in Austria and their modern-day incarnations. It also includes interviews with passers-by, academic scholars, and persons affiliated with the Austrian government, providing a multifaceted understanding of this understudied facet of Austrian history.Ultimately, this project sheds new light on the complicated history of Austria and its political landscape, offering insights into the development of nationalism and authoritarianism in the country. By situating developments like pan-Germanism, Austrofascism, and the Neue Rechte (New Right) in their specific Austrian context, this endeavor analyzes connections and continuities between historical right-wing movements and their modern incarnations. Through a thorough deconstruction and internalization of this history, the international community can gain a deeper understanding of contemporary Austrian politics and collective memory in the post-World War II era of Austrian statehood. This project is essential for anyone seeking to comprehend the complex and nuanced nature of Austrian politics and nationalism.

Peter Vartanian

CA - Occidental College

Discipline: Business and Entrepreneurship

Authors:
#1 Peter Vartanian

Abstract Name: “Austrians” in Austria: On the Origins, History, and Survival of the Austrian School of Economics in Contemporary Austria

The Austrian School of Economics has long been a critical player in the world of economics, with its heterodox beliefs and laissez-faire ideology. However, its operational validity and rejection of mathematical models, econometrics, and macroeconomic analysis have been the subject of scathing scholarly critique. Through an extensive archival research project, this study aims to explore the origins, history, and survival of the Austrian School of Economics in contemporary Austria.This research delves into the archives of the Austrian National Library, the Austrian State Archives, and the University of Vienna, where the likes of Ludwig von Mises, Friedrich Hayek, and Carl Menger have a long history. Through this exploration, it becomes evident that Austrian policy-makers and politicians have widely cited the Austrian School's theories to justify their rejection of Eurobonds, so-called "corona bonds," and debt mutualization.The findings of this study reveal the Austrian School's significant impact on the current conservative fiscal policies of the modern Austrian state, leading the country to be a part of the Frugal Four, an informal cooperation of four fiscally conservative EU countries. The study also reveals the Austrian policy-makers' strong adherence to the EU's Stability and Growth Pact (SGP) and a one-percent-maximum budget contribution to the European Union.This study's main contribution is to highlight the continuity of theory and policy in Austria, where policy-makers and politicians have established an asynchronously continuing "Austrian tradition." The study shows how the Austrian School's theories have found usage in justifying Austria's fiscal decisions, which yield significant implications for the world economy.Overall, the Austrian School of Economics played a central role in shaping the current fiscal policies of the Republic of Austria. This project offers insights into the Austrian School's origins, methodology, and business cycle theory (ABCT), whilst highlighting the significance of theory-policy continuity in shaping economic policies.

Jerryl Varughese

IL - University of St. Francis

Discipline: Business and Entrepreneurship

Authors:
#1 Jerryl Varughese
#2 Sudipta Roy

Abstract Name: Financial Literacy, Risk Perception, and Risk Taking among College Students in America

The current study investigates the relationship between financial literacy, risk perception, and risk-taking among undergraduate students at a small midwestern university in the United States. It contributes to the broader literature on the determinants of financial literacy among college students. Data were gathered using a survey that contained questions on financial literacy, risk perception, and risk-taking, along with proxy questions to assess prior financial knowledge, financial knowledge gained through life experiences as a college student, and financial knowledge learned from classroom instruction. The average level of financial literacy among college students is found to be low. Furthermore, financial literacy among the four student levels is not statistically different, indicating that undergraduate students' life experiences do not significantly contribute to their financial literacy. We find that financial literacy among students who reported taking a high school finance course is no different from those who reported not taking one. However, taking at least one college level finance course is found to significantly improve financial literacy, indicating that some financial knowledge is learned. Our findings are similar to those reported in prior research and indicate that a mandatory college-level personal finance course may benefit all students. We also analyze the relationship between financial literacy and risk perception, and risk perception and risk tolerance. We find that financial literacy contributes to better risk perception and that students, in general, are risk averse. Existing literature notes that financial literacy leads to better financial outcomes; our findings underscore the importance of reinforcing financial education at the college level when students make their first financial decisions.

Shridhar Vashishtha

MN - University of Minnesota - Twin Cities

Discipline: Mathematics and Computer Science

Authors:
#1 Shridhar Vashishtha

Abstract Name: Multi-Modal Brain Tumor Segmentation Model to solve Mutual Inhibition between Modes

Medical image segmentation has become a key research area in the machine learning community, with brain tumor segmentation being one of the most challenging problems in the field. Utilizing machine learning models for brain tumor segmentation can aid in the diagnosis, treatment, and monitoring of brain tumors, significantly improving the medical care of patients. Magnetic Resonance Imaging (MRI) can generate images of the brain by altering the influencing factors of the signals, providing multiple modalities. These multimodal MRI images can be used to train machine learning algorithms, including those developed by authors in the field, such as the Siamese self-supervised learning framework and 2D convolutional neural network, to segment brain tumor images. In this work, a 3D U-net architectural neural network was developed on the BraTS 2019 dataset (provided by the Perelman School of Medicine at the University of Pennsylvania) of multi-modal brain tumor images to segment brain tumors. The BraTS 2019 dataset comprises 335 MRI scans of low-grade and high-grade brain tumors, manually annotated into tumor core, enhancing regions of the tumor, and edema regions. The 3D U-net model was developed to accurately segment these regions of the brain tumor. The 3D U-net model was trained, tested, and validated on the BraTS 2019 dataset by dividing it into appropriately sized chunks. This model was then evaluated based on

accuracy, precision, sensitivity, specificity, and dice coefficients. In conclusion, the 3D U-net model performed well on the BraTS 2019 dataset, successfully predicting the tumor core, edema regions, and enhancing tumor regions with high accuracy. Thus, this brain tumor segmentation model can help automate the medical diagnosis of brain tumors with high accuracy. Future work could include developing models for other types of cancer.

Tomas Vasquez

WI - University of Wisconsin-Milwaukee

Discipline: Social Sciences

Authors:
#1 Tomas Vasquez
#2 Natasha Basu
#3 Gabriela Nagy

Abstract Name: The Characterization of Mistrust in Native American Communities

Adverse mental health outcomes such as depression, anxiety, and suicide have disproportionately affected Indigenous Peoples, due to a legacy of historical and ongoing systematic oppression; this has resulted in less access to formal quality healthcare services (CDC). A potential mechanism for these persistently high rates may be attributed to the high levels of mistrust (Goetz et al., 2023). Mistrust/distrust is the idea that the source being trusted will not act in one's best interest and/or act against their best interest (Williamson and Bigman., 2018). The present study aims to characterize the mistrust that Native Americans have for mental healthcare services and provide recommendations to increase engagement in mental healthcare for Native Americans. We seek to conduct a rigorous narrative review of the scientific literature published in English within the last 20 years on various reputable databases: PubMed, PsycINFO, and Web of Science. Search terms included, and were related to: American Indian, Mental Health, and Mistrust. The research returned 88 results. Taking into consideration the criteria established, 77 articles were excluded because they were not empirical, unrelated to mental health or mistrust, or not focused on Indigenous peoples in the United States. A preliminary qualitative synthesis of 11 articles indicated the following themes: historical loss was positively related to mistrust, culturally competent care reduces mistrust, and barriers to healthcare leads to actively putting off treatment. This narrative review will improve our understanding of mistrust as it relates to indigenous peoples and is part of a larger project to identify facilitators and barriers to mental health services. Based on the narrative review, recommendations will be made to improve trust through an increase in cultural competency among healthcare providers and increasing community-centered approaches.

Fernanda Velasco

CA - Irvine Valley College

Discipline: Engineering and Architecture

Authors:
#1 Fernanda Velasco

Abstract Name: Restricting Ice Formation Under Isochoric Conditions

When it comes to cryopreservation, the threat of ice formation during both cooling and rewarming has been an ever present obstacle, causing damage and decreasing viability rates from cells to organisms. A new perspective was taken to restrict ice formation by enclosing cryogenic solutions in a constant-volume

(isochoric) chamber (Powell-Palm et al. 2020). As water's nature is to expand when transitioning from liquid to solid, the isochoric chamber inhibits this complete phase change. In this work, we present the design and development of a new isochoric chamber with the addition of sapphire windows to be able to visualize the behavior of cryogenic solutions and their phase changes. The chamber consists of the cylindrical main body, screw-in covers, and an o-ring seal to maintain pressure to truly make the chamber isochoric. We tested the chamber by introducing DI water inside and submerging it in liquid nitrogen, where a partial freeze of the water was observed. While an ice ring formed on one of the chamber windows, the remaining liquid water was prevented from freezing even in subzero conditions. This implies that inhibiting ice formation via isochoric means might be a prospective outlook to cryopreservation. In future work, Interferometric Digital Holography Interferometry (DHI) will be utilized to further analyze the visual changes we can currently observe.

Fabiola Velasco

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Fabiola Velasco

Abstract Name: Sensory Design Features for Glaucoma

Creating a home that caters to the specific needs of a family with members diagnosed with glaucoma requires careful consideration of various elements. Glaucoma is an eye disease that can cause impaired vision due to damage to the optic nerve. This eye disease alters vision perception by creating a tunnel with floating black specks at the center. When concluding research, it was necessary to help with issues which are contrasting colors due to contrasting sensitivity, round edges for furnishings, abundance of lighting, and reducing slippery materials and furnishings. The residence incorporates accessibility features such as cove lighting in the entrance, diverse ceiling heights for spatial orientation, textured walls for wayfinding, under-cabinet lighting for task areas, and contrasting colors for clear differentiation. The furnishing with lightweight and rounded edges was selected for prioritizing comfort and safety. The fireplace is a bespoke design with a smart device controlling the TV's visibility, minimizing potential disturbances for a toddler with glaucoma. A custom round bookshelf is incorporated, to provide a designated spot for their book collection and reduce the risk of accidents. The mudroom is custom-built with contrasting colors, aiding in identifying different storage areas. By combining custom furniture, innovative lighting solutions, and tactile design elements, this home caters to the unique needs of a visually impaired family. The emphasis on rounded shapes and contrasting colors enhances safety and ease of navigation. The thoughtful integration of technology, such as the smart fireplace, reflects a commitment to creating a comfortable and accommodating environment for this family, ensuring their home is both functional and aesthetically pleasing.

Emma Velazquez

WI - University of Wisconsin-Eau Claire

Discipline: Health and Human Services

Authors:
#1 Emma Velazquez
#2 Sebastian Javier
Sebastian Javier

Abstract Name: An Analysis of Youth in an Upward Bound Program

The focus of this research project is on the lived experiences of high school-level youth enrolled in Upward Bound—a federally funded program in the midwestern region of the United States. This program at the University of Wisconsin-Eau Claire provides academic and social support to students from racially and economically marginalized groups with the overarching goal of preparation for the pursuit of post-secondary education.The role of the researchers was to utilize both qualitative and quantitative approaches to data collection. The researchers initiated this process via a semi-structured interview protocol which includes questions about home life, school environment, and residing neighborhoods. Participants were then asked to create a personalized ecomap to visualize their communal support, a genogram to describe their family structure, and a timeline to showcase meaningful life events. In addition to this, researchers chose to distribute a strengths-based paradigm to participants which focuses on their assets and resources rather than strictly focusing on problems and deficits.Sixteen high school students, primarily freshmen and sophomores, participated in the research conducted during the summer of 2023. After data analysis, themes and patterns across the participants were identified. Some of the emergent key themes include how participants perceive themselves versus how others view them, the complexities of navigating social relationships, and the impact that school personnel have on connectedness within academic settings.

Connor Veldman

MN - College of Saint Benedict/ Saint John's University

Discipline: Natural and Physical Sciences

Authors:
#1 Connor Veldman
#2 Kevin Stark-Haws
#3 Lydia Hoffman

Abstract Name: Hippopotamus (Hippopotamus amphibius) Aggressive Interactions During Daily River Pool Use; Is Time of Day Important?

Hippopotamuses (Hippopotamus amphibius) are known to forage on land during the night and spend the daytime in shallow pools to thermoregulate and to protect their skin from UV radiation. Daily use of pools may lead to competition for space and facilitate aggressive interactions between hippopotamuses. In this study, we looked at the difference in occurrence of aggressive behavior in the morning and evening hours between hippopotamuses (hippos). We hypothesized that hippos would be more aggressive at different times of the day, and we predicted that the higher aggressive activity would be in the morning hours, as hippos return to the pool. Our data was collected at the Retima Hippo Pool, Orangi River, Serengeti National Park, Tanzania in May 2022. Aggressive behaviors were counted and recorded using transect methodology (six pairs of observers watched a transect across the pool and recorded at pre-set times). We defined aggressive behavior based on previous publications. Results showed that hippos were more aggressive during evening hours as compared to the morning (96 and 54 aggressive behaviors, respectively). Based on these results, our hypothesis was not supported. A potential explanatory factor might be that the annual spring rains did not occur in 2022, so the pool level was extremely low. This could have increased concentration of both hippos and fecal matter, and this may have altered when and how often aggressive behavior occurred. If we repeated this observational experiment, we would extend the study period to include more than one season.

Aditi Velgekar

TX - Rice University

Discipline: Social Sciences

Authors:
#1 Aditi Velgekar
#2 Fernanda Morales-Calva
#3 Michelle Sekili
#4 Stephanie Leal

Abstract Name: Development of a Memorability-Based Mnemonic Discrimination Task

The intrinsic ability of certain elements to be better remembered than others is known as memorability. Memorability can explain a large amount of variability in memory performance and appears to be an inherent feature of episodic memory. Episodic memory, or memory for personal events and experiences, relies on the hippocampus and surrounding brain regions. The hippocampus can perform pattern separation, or the ability to discriminate among similar experiences and store them as non-overlapping representations. It has been hypothesized that pattern separation could explain memorability variation; however, no study has investigated this interaction. To this end, participants were shown a series of images ranging in memorability (memorable and forgettable). Participants' memory was tested either immediately or 24 hours later. Participants were asked to identify new and repeated items among images that were similar but not identical to the images shown previously ("lures"), completely new images, and repeated images ("targets"). This provides two measures of interest: target recognition - one's ability to recognize a previously seen images and lure discrimination - one's ability to distinguish between stimuli with overlapping features and it is thought to tax hippocampal pattern separation. We found that memorable items were better remembered than forgettable ones across memory measures. However, memorability's impact on lure discrimination was present immediately but lost after 24 hours. These findings suggest that memorability's impact on episodic memory may not apply to all types of memory, in which memorability may not be predictive of more naturalistic memory conditions (e.g., memory at a delay and memory for details).

Arabella Velleux

MN - Augsburg University

Discipline: Business and Entrepreneurship

Authors:
#1 Arabella Velleux

Abstract Name: Impact of Designated Players on Major League Soccer Attendance

Since the development of Major League Soccer (MLS) in the United States, the popularity of soccer has steadily increased. When the designated player (DP) rule, allowing teams to sign superstar players to contracts above the salary cap, was implemented in 2007, the MLS saw a turning point in attendance. In the league's first five years, there was an estimated loss of $250 million. Approximately 80% of revenue in the MLS occurs on gameday, meaning that attendance plays a significant role in financial success (Bradbury, 2020). Understanding the benefits of the implementation of the DP rule on MLS attendance is important to ensure the MLS does not dissolve like its predecessor, the North American Soccer League (NASL). We employed linear regression analysis using data from worldfootball.net, MLS Player's Association, and other sources to analyze the relationship between both player- and club-level variables on season attendance for teams in the MLS. Preliminary results show that the COVID-19 pandemic and the age of the MLS club are important variables in determining season attendance. Continuation of the definition of variables will help achieve the most accurate results. In addition, this study looks at the variation of population makeup near the home fields of MLS teams and how that may affect attendance.

Emily Veloz

CA - Chapman University

Discipline: Social Sciences

Authors:
#1 Emily Veloz

Abstract Name: The Pride Pipeline: Violent Nationalism in the United States

A striking rise in American Nationalism has emerged due to varying factors; however, a particular selection of identities have acted as primary contributors to this phenomenon. This piece navigates the increasing application of violence in the political arena in tandem with the impacts of racial, socioeconomic, and social factors that have fueled this collective aggression. Previous research points toward the hyperpolarization that has been perpetuated by political figures and media outlets, the augmentation of a psychological us-vs.-them mentality, and the perceived threat to American hegemony across the globe. Through an analysis of data provided by the 9th edition of the Chapman University Survey on American Fears in addition to a selection of the 6th edition, this phenomenon is dissected further. Extracting the responses to a given respondent's partisan affiliation and their individual consensus regarding the use of force to restore political power, this piece amplifies the present beliefs of scholars, adding the significance of recent resurgences in violent movements and extremist political groups. Upon examination of current data, it is proposed that while religious and social factors intersect uniquely to contribute toward the presence of violent patriotism, the most prominent factor is the growing belief of white supremacy and the perceived threat that marginalized groups pose to their ideal nation.

Lavanya Vemuri

VA - Virginia Commonwealth University

Discipline: Humanities

Authors:
#1 Lavanya Vemuri

Abstract Name: Bollywood the Underdog

Asian Americans stigmatization has long been established to disparage their cultures while uplifting America in the process, especially through film and media and it continues to adhere to that antiquated pattern today. "There is a greater flow of information from first to third world countries" like America to India "but very little representation" vice versa (Ramasubramanian 245-246). This information imbalance displays the problem of representation from India to America, specifically analyzing Bollywood and Indians and their representation in American media and Hollywood. Bollywood has increased its income and prestige to Hollywood's level and is a market that Hollywood has sought to pursue for years, but regardless of Bollywood's popularity, its recognition in America has been distorted. With the survey I conducted analyzing American perceptions of Bollywood at Virginia Commonwealth University, I came to the conclusion that Americans who were unaware or had misconceptions of Bollywood, were so due to their reliance on the media for such definitions. The progression of Bollywood's identity has stayed constant over time, showing a lack of growth and development. There is also a lack of research regarding this topic of Bollywood and Indian representation in general as sources date back to nearly 20 years ago. Why is there a lack of representation of Bollywood in American media and Hollywood and how should we address this issue? American media as well as Hollywood, create misrepresentation or under-representation of Bollywood and Indians, thus creating a divergence of the world through the media versus reality, affecting Indians through restricting their behavior, shaping their acceptable conformities, and treatment everyday. Hollywood's

priorities should align with diversity and inclusion rather than wealth and dominance in order to accept Bollywood and Indians for their true selves so as to depict a truly universal audience and maintain its throne as a world superpower.

Jonathan Venable

FL - Jacksonville University

Discipline: Natural and Physical Sciences

Authors:
#1 Jonathan Venable
#2 Jeffrey Krause
#3 Shayna Sura

Abstract Name: Epiphytic diatom production on the seagrass (Thalassia testudinum) in northern Gulf of Mexico

Seagrass provides coastal protection, habitat and food resources for many economically important marine organisms (e.g. fish larvae), and sequesters considerable carbon (i.e. a“bluecarbon” system). Seagrass epiphytes (e.g.microalgae, vascular plants) provide food for marine organisms. Some epiphytes, e.g. diatoms, play a role insystem carbon cycling. For example, in Ruppia maritima and Halodule wrightii seagrass beds in the northern Gulf of Mexico, seagrass-associated diatoms were shown to contribute 70-80% of benthic net community production (NCP). For other regionally-important seagrass species, e.g.Thalassia testudinum, there are nodata reporting the epiphytic diatom contribution to NCP. Building on these earlier studies, we aimed to answer the question:what is the importance of epiphytic diatoms to Thalassia testudinum NCP? During the summer 2023, seagrass was collected from Pensacola, Florida (United States) and transported to Dauphin Island Sea Lab (160 km away) where experiments were run in an outdoor mesocosm. Germanium (Ge) was used as a diatom-specific inhibitor to quantify the NCP and compare it to unamended (no Ge) controls, thus allowing us to quantify the difference in contribution to NCP due to diatoms. During three experiments over four weeks, NCP decreased with time, potentially due to increasing nutrient limitation.The epiphytic diatom contribution was resolved in one experiment (which had the highest ammonium concentrations) to be ~20%. Our results demonstrate that, at times, epiphytic diatoms can be significant for Thalassia testudinum NCP, although this contribution was not as high as reported in previous studies for other seagrass species. Also, the rapid shift in epiphyte assemblage productivity (diatoms as significant producers toward insignificance over 4 weeks) may affect the local seagrass food webs, specifically grazers which rely on epiphytes for nutrition.

Grace Venatta

PA - Slippery Rock University of Pennsylvania

Discipline: Humanities

Authors:
#1 Grace Venatta

Abstract Name: Cold War Era Cultural Exchange: How Ballet Lifted the Iron Curtain on and off the Stage

Throughout the mid and late twentieth century, the United States was knee deep in confrontation with the Soviet Union. In response to the growing tensions, the two nations signed an agreement allowing for an exchange of cultures with the hopes of opening lines of communication and understanding. Ballet was only one of the many cultural components that participated in the exchange, and this participation not only aided in the foreign relation objectives, but it also changed the trajectory of ballet history. American and Russian ballet companies toured each other’s cities on numerous occasions, even amidst some of the most major crises of the Cold War. This research analyzes the artistic and political impacts of the international tours and is supported by the historic examination of ballet during the war by dance scholars such as Anne Searcy, in

addition to the political outlook of the Cultural Exchange by scholars such as Yale Richmond. This paper centers around the question of how ballet affected the political atmosphere of the Cold War within both the United States and the Soviet Union, in addition to the affects of the Cold War politics on the artistic atmosphere of ballet. Through this research, it can be argued that the exchange forged a unity between the arts, resulting in an easing of harsh tensions and contributing to the future relationships of the nations following the war. In the world of ballet, it can be argued that the sharing of cultures allowed for insight into differing artistic values and approaches, opening doors to deeper creativity, and allowing for shared experiences to bleed into future works – uniting these cultures in unique ways. These events are a significant part of dance history because of the way that ballet was used diplomatically to facilitate transnational communication and relationships.

Thomas Venegas

CA - California State Polytechnic University - Pomona

Discipline: Engineering and Architecture

Authors:
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#2 Laila Quezada
#3 Pablo Benalcazar

Abstract Name: Techno-Economic Optimization of a Hybrid Energy System that Prioritizes Energy Resiliency: A Case Study in Puerto Rico

Puerto Rico has an energy system that often experiences interruptions and outages. This is due to Puerto Rico's location in the Caribbean, which makes this U.S. territory susceptible to extreme weather events such as hurricanes, tsunamis, and tropical storms. Power outages can be detrimental to quality of life, particularly for those living in more isolated rural areas, since these areas typically take longer to be reconnected to the power grid. Therefore, there is a need for more resilient energy sources in remote areas that can provide reliable energy in the event of extreme weather conditions. Recently, a popular approach towards providing electricity to remote regions has been the implementation of Hybrid Renewable Energy Systems (HRES). Hybrid Renewable Energy Systems are power generation systems that utilize multiple energy sources. They typically include a conventional energy source such as a diesel generator, renewable energy sources such as PV and wind turbines, and an energy storage device. The primary objective of this research is to assess the feasibility of deploying a hybrid renewable energy system in Puerto Rico using mathematical modeling. Furthermore, this work aims to determine the optimal configuration and hourly dispatch of the energy system considering the resiliency and quality of the power supply. There is limited research on hybrid renewable energy systems in Puerto Rico; therefore, this work seeks to fill the gaps in this field and advance the understanding of energy resilience in extreme weather conditions. The results of this study may be applied to other regions that struggle with similar energy challenges.

Nikhil Venkat

IL - University of Illinois at Chicago

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Role of Galactosylceramidase (GALC) of the Manifestation of Parkinson Disease

Deficiencies in the lysosomal galactosylceramidase enzyme (GALC) activity lead to GALC failing to metabolize psychosine and galactosylceramide, resulting in severe breakdown of myelin in the central and peripheral nervous system, triggering Krabbe Disease (KD). In addition, KD brains from either animal models or patients exhibit a marked aggregation of α- synuclein, the main pathological hallmark of Parkinson Disease (PD). Interestingly, our lab has previously shown that α-synuclein aggregates directly when it interacts with psychosine, and importantly, genetic restoration of GALC entirely eliminates the formation of α-synuclein aggregates. Noteworthily, although glycosphingolipid metabolism deregulation has been reported in several cases of PD, it is unknown whether there is an interrelationship between glycosphingolipid metabolism and the pathogenesis of PD. Thus, in this work, we will challenge our hypothesis that an absence of GALC impairs α-synuclein degradation, and promotes the manifestation of PD. Through immunofluorescence, western blotting and biochemical approaches, we found a decreased number of TH neurons, and decreased levels of dopamine in TWI brains. Specifically, lesser levels of DOPA decarboxylase were found, whereas Tyrosine Hydroxylase was hyperactivated, suggesting an alteration in dopaminergic synthetic pathways. Next, we will attempt to evaluate the cell-specific effect of GALC deficiency on PD onset by employing our TH-Cre-ERT2/GALC-flox transgenic mouse. Therefore, this study will lead to further understanding of the relationship between psychosine, α-synuclein, and the GALC gene, in the impact of dopaminergic neurons and the manifestation of PD.

Harini Venkatesan

VA - Virginia Commonwealth University

Discipline: Business and Entrepreneurship

Authors:
#1 Harini Venkatesan

Abstract Name: Unveiling Inclusivity Disparities in the Fashion Industry: A Closer Look at Affordability and Representation

More than half of Black consumers grapple with the arduous task of sourcing beauty products that authentically mirror their distinct skin tones. This glaring disparity highlights a pervasive lack of inclusivity. Similarly, Muslim women find themselves financially burdened in their pursuit of modest clothing, navigating a market where the price tag for such attire is twice as high as mainstream alternatives. This economic barrier raises questions about the true accessibility of inclusive fashion and the equitable representation of diverse religious and cultural attire. By meticulously investigating the scope of the fashion industry, economic disparities are noticed as there is a markup or lack of goods marketed to more ethnic individuals. Despite the American narrative promoting its rich cultural mosaic, inclusivity in fashion remains exclusive for many, prompting a reevaluation of Western fashion as a representative amalgamation of diverse cultures. The research discusses the evolution of beauty standards within the past few years. Specifically, a discernible shift has occurred, challenging the traditional norms that predominantly favored paler tones. Despite the fashion sector seeking to embrace a broader spectrum of skin colors, the study reveals that the inclusivity momentum has not fully translated into equitable representation with affordability in mind for all. The findings aim to highlight the challenges faced by minority communities within the intricate tapestry of the fashion industry. It is imperative for the industry to recalibrate its practices, ensuring that it authentically reflects the cultural richness inherent in the diverse fabric of American society. There needs to be a paradigm shift within the fashion landscape—one that prioritizes inclusivity and affordability for underrepresented communities, while also aligning with the evolving and more inclusive beauty standards of the contemporary

era.This study aims to highlight the challenges faced by minority communities within the intricate tapestry of the fashion industry.

Chaitanya Venkateswaran

DC - American University

Discipline: Social Sciences

Authors:
#1 Chaitanya Venkateswaran

Abstract Name: Moderates, Radicals and the Making of Indian Anti-Colonial Narratives in post-World War I United States

The purpose of this research paper is to analyze the discourses surrounding the Indian anti-colonial movement in the United States directly after World War I, as a means of understanding how ideological differences among activist groups like the India Home Rule League of America (IHRLA) and Friends of Freedom for India (FFI) were reflected in the language and methods adopted by them to garner support for the cause of Indian independence. While previous scholarship on anti-colonial activism focuses on the interactions of these activist groups with the government, courts, and security apparatus, this paper examines how these activists engaged with various sections of the American public. Their discourses made comparisons between India's struggles and aspirations and American history, society and freedoms. Within the discourse analysis methodology, this paper uses thematic coding and typological analysis to categorize the narratives of anti-colonial organizations based on their nationalist or internationalist approaches, and their stances on issues like labor rights, fiscal freedom, race/caste movements, and political liberties. The main sources of these narratives are editions of Young India, a monthly magazine published by the IHRLA between 1918 and 1922, pamphlets, articles and essays from the FFI, and public-facing media distributed by the anti-colonial movement on the eastern coast of the United States. Findings suggest that the IHRLA and activists with moderate views adopted a more internationalist approach to anti-colonial activism – such as calling on other countries to apply pressure on the British Empire - while the FFI and more radical activists adopted a nationalist approach that prioritized autonomous struggle and believed less in the ability of international forces or diplomacy to change India's colonized state. These findings add a valuable historical perspective to the literature on diaspora activism and the internationalization of regional movements, which is an ever expanding field in today's globalized world.

Andrea Ventura

MA - Boston University

Discipline: Humanities

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#2 Thomas Whalen

Abstract Name: 1984: The Story of How Larry Bird and Magic Johnson Saved the NBA

Before 1984, the National Basketball Association (NBA) had struggled to gain momentum. For one, in the 70s and early 80s, the league's image suffered from allegations of widespread drug use among players. The LA Times had estimated that 40-75% of players were using cocaine. Financial problems also plagued the NBA, and players' unanswered demands for more economic freedom placed the league's future in jeopardy.

But in 1983, just days before a planned players' work stoppage, the NBA and players union agreed on a revenue-sharing plan, avoiding the strike and setting the stage for the league's success. That same year, the NBA Drug Act was introduced, formally penalizing players who engaged in drug use. But more than anything, it was the face-off between the Boston Celtics and Los Angeles Lakers during the 1984 NBA Finals that would transform and ultimately save the NBA. During a time when racial tensions were high, particularly in the aftermath of Boston's busing crisis, the teams somewhat personified the racial dynamic of the time. The Celtics's overwhelmingly white team contrasted with the Lakers, who, like the rest of the NBA, were predominantly Black. This contrast was further reflected in the demographics of their fan bases, adding a racial dimension to the Celtics-Lakers rivalry. Additionally, the ongoing duel between legends Larry Bird and Magic Johnson captivated American audiences across the country. The present research seeks to analyze the widespread interest generated by their rivalry, which helped transform the NBA from a minor sports league with poor attendance, low television ratings, and drug scandals at the start of the 1980s into a popular global brand by the end of the decade.

William Venvertloh

IA - Iowa State University

Discipline: Engineering and Architecture

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Abstract Name: Computer vision-aided electronic skin

Carbon black-based pressure sensor has been widely used in robotic sensing. However, most sensors on the market are customized to either flat surface or point touch. There is a lack of flexible sensors that fit irregular surface areas such as finger tips. Furthermore, to generate standardized electrical signals, most sensors contains layers of electrodes, thereby are hard to customize. The development in machines learning makes it possible for computer to understand non-standardized electrical signals in complex environment. This project intends to utilize economical materials on mass market to produce non-standardized flexible sensors to facilitate robotic hand tasks, such as grasping, holding and manipulating objects. The precision of motion is controlled through computer vision and machine learning models. Existing studies have explored the use of carbon black materials for pressure sensing, establishing their composition, functionality, and limitations, addressing challenges in testing procedures to properly evaluate foundational information and maintain consistency. Current research hurdles include limited resource availability, ensuring consistent durability and quality, and effectively integrating the sensor with robotic systems. Our methodology includes a series of tests designed to evaluate the sensor's properties and performance. These tests include the multipoint probe measurement for assessing resistivity and conductivity, sheet resistance measurement to determine resistance per unit area, mechanical compression test for analyzing the material's response to varying pressure levels, and durability testing to evaluate long-term stability under repeated pressure cycles. The ultimate aim of this research is to create a low-cost, carbon black-based sensor capable of moderate pressure sensing in robotic arms. Such a design will benefit robotic enthusiasts to pursue cost-effective automation. Future research directions may involve exploring software solutions to leverage sensor data for more refined control of the robotic hand, thereby advancing the field of robotics in laboratory environments.

Aditya Vepa

CO - University of Colorado at Boulder

Discipline: Engineering and Architecture

Authors:

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#3 Robert Davis

Abstract Name: Experimental and Numerical Analysis of Droplet Motion Within Rectangular Microchannels

Droplet-based microfluidic systems are involved in numerous applications, including medical diagnostic devices, microreactors, lab-on-a-chip devices, and high-throughput cell screening. Imperative to designing these systems is an understanding of droplet dynamics, especially within rectangular microchannels. Important parameters affecting droplet dynamics and microfluidic flow include the Reynolds number (Re), capillary number (Ca), viscosity ratio between drop/bulk phases (λ), channel geometry, and drop-to-channel size ratio. This investigation replicated microfluidic droplet behavior in an experimental flow cell, which has been scaled up macroscopically while preserving nondimensional parameter values and density-matching fluid phases. These experiments are compared to in-house numerical simulations, which employ a boundary-integral algorithm with a moving frame that reduces computational intensity for simulating viscous droplets in channels. Results indicate good qualitative and quantitative agreement between experiments and simulations. Increasing Ca results in more deformable drops that move faster, while increasing λ results in more deformable drops but with slower motion. Increasing drop size interestingly has different effects on steady-state velocity depending on λ. High λ droplets go slower as drop size increases, while very low λ droplets speed up with increasing drop size. Increasing channel aspect ratios predictably result in slower-moving droplets due to a lower maximum velocity of the Boussinesq flow profile. We also found that increasing the drop size leads to more deformation. Our findings suggest that it is possible to accurately replicate microfluidic phenomena on a macroscopic scale, making it easier and more cost-effective to prototype microfluidic systems.

Ashrit Verma

NC - Duke University

Discipline: Natural and Physical Sciences

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Abstract Name: Progress Towards Three-Node Ion Trap Quantum Network

Quantum networking enables scaling of ion-trap-based quantum computers, where individual ion chains in separate traps can be entangled via photonic interconnects. Here we report our progress towards a quantum network consisting of three multispecies ion traps in separate vacuum chambers. Each node of the network contains barium ions for remote entanglement generation and nearby ytterbium ions for quantum memory. Using different species avoids crosstalk between communication and memory qubits and allows us to benefit from individual strengths of each ion species. Barium is well-suited for communications since it emits single photons in the visible range of the electromagnetic spectrum. Ytterbium features long coherence times allowing for long-lasting quantum memory. This approach offers potential for the creation of larger quantum networks for quantum computing scaling, quantum communications and other applications of quantum technologies.

Ryan Vermulm

IA - Iowa State University

Discipline: Engineering and Architecture

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Abstract Name: The Evolution of Architectural Skin - Adaptive & Reactive Architectural Facade

How can architecture employ modern technologies to adapt and react to its local climate? How can the complex evolution of various animal skins inform the design of an adaptable architectural skin?For centuries architects have strived to design structures that resist the environment. Many of the structures we observe today act as a seal between the two diverse environments (Exterior & Interior) and rely solely on mechanical systems to create this artificial environment. This artificial environment comes at a high energy and emissions cost. As a result, the built environment is responsible for 25% of global emissions; 18% of which comes from mechanical conditioning. Therefore, there is an extraordinary opportunity to create a global impact by exploring designs that dramatically reduce thermal conditioning demands.The research aims to first understand the complexity of the cross sectional and surface qualities of certain animals' skin; specifically, those that thrive in harsh environments. Through this process knowledge and inspiration for an adaptive facade system will be extracted. The research will then focus on looking into evidence-based adaptive facade systems to understand what has been done and is truly successful. Having these diverse research contributors will then lead to an intersection of design, balancing between what existing systems currently are and what they could become. Lastly, a model will be built and tested against a typical facade design / assembly. I expect to discover an opportunity for the evolution of architectural skins within this design process. An opportunity to leverage modern technology to reduce our dependency on mechanical systems and artificially manufactured environments. The severity of energy consumption globally suggests that even a marginal difference could have a dramatic impact on the world. In conclusion, the design of architectural skin has become complacent, and we must strive to manufacture a system that brings architecture to life.

Taleigh Verrault

NC - Western Carolina University

Discipline: Humanities

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Abstract Name: A Lesson on Sexism: Saunder’s Unintentional Gender Discrimination in Liberation Day: Stories

George Saunders is one of the most influential U.S. short story authors of the 21st century. His short stories often examine and criticize aspects of modern society, and his collection Liberation Day: Stories is no different. Throughout these short stories, he comments on technology, politics, conflict, morality, and income equality. Even with the inclusion of so many modern problems, the collection of short stories curiously avoids any comment on issues of gender and sexism. However, two of his stories with female protagonists seem to include a gender bias: “The Sparrow” and “The Mom of Bold Action.” Interestingly, while having a female lead, each story views the woman as inferior due to an inadvertent gender bias written in by Saunders.

In each story the secondary character, a man, overshadows the main character while the woman conforms to gender stereotypes. The female and male characters are divided by their gender in numerous ways throughout the story. Their names and titles, the types of relationships they hold with characters of the opposite gender differ, and their general roles throughout the story are all influenced by gender roles and stereotypes. Both follow the same pattern of the female character's unique identity and characteristics being overshadowed by the man regardless of their significance in the story. Their career goals, the way society describes them, and even their own names are given less importance than those of the male character. While each story contains its own intended societal commentary, there is an underlying lesson on sexism and gender roles to be found beneath the surface.

Samantha Vertucci

CT - Eastern Connecticut State University

Discipline: Humanities

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Abstract Name: Violence Against Women In Early Modern Drama: A Present Problem

When analyzing four plays from the early modern period, certain patterns of violence against women become apparent. The different violence typologies at play in these works reveal that the female body is perceived as a dangerous weapon that must be policed and trafficked to uphold patriarchal worldviews at women’s expense. The violence that these female characters experience exemplifies the oppression of patriarchal systems, many of which are still relevant today. Then and now, it is evident that the traffic and desecration of female bodies act as outlets for male anxiety about female agency and sexuality. In my research, I argue for alternative staging practices that either emphasize the pain the victims went through or elevates the irony of the men focusing on their emotions in the face of women’s dismemberment and death.

Amrutaa Vibho

VT - Norwich University

Discipline: Natural and Physical Sciences

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Abstract Name: Development of a method for the detection of U(VI) using an affordable light-emitting diode spectrophotometer

Uranium is a radiologically and chemically toxic element that occurs naturally in water, soil, and rock at low levels, but additional uranium can leach into groundwater sources as a result of mining operations, including uranium mining and processing for nuclear power, and improper nuclear waste management. Over the last few decades, a variety of methods for the detection of uranium have emerged, however, most of these techniques require skilled scientists to run samples on expensive instrumentation for detection or require the pretreatment of samples in complex procedures. With an increase in reliance on alternative power methods, including nuclear power, it is essential that a facile test for uranium contamination which can be completed

by a layperson be developed. In this work, a Schiff base ligand (P1) is used as a model system for the use of a simple spectrophotometric method on an accurate and affordable LED spectrophotometer for the detection of uranium (VI). Analysis of the data was performed with polynomial regression to test the fit of acquired calibration curves using a Python program on a Raspberry Pi. Herein, we report a line of best fit and equation for the prediction of uranium (VI) concentration for several prepared "unknown" absorbance values with acetonitrile (MeCN) as our solvent. Moving forward, we will be attempting to obtain a similar protocol and linear fit in a system with water as solvent, with the end goal of being able to replicate this detection with uranium present in a given sample of well water.

Beverlly Victoria Bolivar

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Discipline: Natural and Physical Sciences

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Abstract Name: Social Status Scuffle: Aggressive Behavior Used to Establish Dominance Between Male Lythrypnus dalli

Species that live in a linear social hierarchy use a combination of visual and violent aggressive behaviors to gain and emphasize status within a group. In the sexually plastic fish, the bluebanded goby, Lythrypnus dalli, three aggressive intensities are displayed by all fish in groups of two males and one female. Low and medium intensity aggression may include the use of sexually dimorphic traits such as dorsal fins and size to emphasize dominance, whereas high intensity aggression may include physical contact interactions. We investigated the impact of each aggressive intensity in groups of two dominant males and one female, all size mis-matched, on Days 1, 3, and 5 of the Dominance Phase during hierarchy resolution. We used the software KINOVEA to analyze 10-minute videos to reduce speed of movement and zoom in up to 600%. Fish of each status performed different proportions of each aggression type. There was a positive relationship between duration and rate of dorsal fin raise. Medium intensity aggression was a good indicator of status, as in previous studies. Males that won the dominant position in their groups displayed higher rates of high intensity aggression on Days 1, 3, and 5 compared to males predicted to change sex into females. This is an indication that physical contact aggression drives hierarchy resolution in this social context.

Nathaniel Victoriano

TX - Lone Star College

Discipline: Natural and Physical Sciences

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Abstract Name: Physarum Polycephalum: Solving Houston’s Traffic Problem with Cellular Intelligence

This research analyzes how to optimize Houston’s public transportation systems using the slime mold Physarum polycephalum and its efficient and replicable growth patterns. The World Bank reveals that, despite Houston and Tokyo’s similar area and commute times, Tokyo’s transportation systems can support a

population density eight times that of Houston. Using a simple food source such as oatmeal flakes, Physarum polycephalum is able to create optimal pathways between multiple points in linear time and expedites urban planning processes while accounting for possible variation, a goal valued by urban planners. Atsushi Tero, head of mathematics at Kyushu University, utilized Physarum polycephalum's evolutionary path-finding capabilities to recreate Japan's Railroad system. Tero's foundational literature established three benchmarks for Physarum polycephalum systems: minimum distance between high population densities (efficiency), amount of road used (cost), and ability to prevent isolation when a connection breaks (fault tolerance). Subsequent literature led by Masashi Aono has utilized Tero's benchmarks for Amoeba TSP, a computer interface containing slime mold to solve optimization problems. The proposed experiment starts with a to-scale topographical agar plate of Houston, Texas. Oatmeal nodes, representing the food source, are placed to simulate high population densities, and LED lights, which repulse the mold, are used to represent barriers to avoid. Physarum polycephlum will produce a thin film of tendrils accessing the most efficient routes between nodes. Over seventy-two hours, the most efficient routes will become prominent tendrils and the resulting tendril array will be placed onto a current road map of Houston. Comparing Houston's current road infrastructure to the pathways made by the Physarum polycephalum, urban planners will be able to balance optimal efficiency, cost, and fault tolerance for the system. Possible outcomes include a customized transportation network and replicable algorithm to determine expedited escape routes in disaster events and optimize roadways in underdeveloped areas.

Charles Victorio

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Discipline: Mathematics and Computer Science

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Abstract Name: Investigating Numerical Methods for Integration Problem Resolution: A Comparative Analysis of Nonanalytic Techniques and Assessing Each Methodology and Identifying their Applicability in Real-World Scenarios.

Since integrals appear throughout academia and industry, the task of solving them is of paramount importance. Although integrals taught in introductory calculus classes can be easily solved, evaluating definite integrals of functions is challenging when either their antiderivative does not exist or is too computationally intensive for practical use. Many algorithms have been developed to numerically compute integrals; however, these results are imprecise and have tradeoffs between accuracy and speed. The differences that each algorithm has (in terms of precision as well as efficiency) dictate when they are useful in different situations. This study will investigate various techniques such as Newton-Cotes formulas and Monte Carlo methods, as well as techniques from differential equations like Runge-Kutta methods. Comparing this variety of formulas will help determine which methods are effective in their respective scenarios, allowing for gaps in effectiveness to become evident. From a computer programming perspective, the finite bit representation of numbers in computers makes it difficult for most calculations to be exactly represented, leading to the need for rounding (Goldenberg). This inherent rounding error in floating-point computation is a defining feature of numerical calculations, affecting their accuracy and reliability. To mitigate this type of error, strategies such as grouping multiplications and divisions before additions and subtractions and adding

smaller numbers together before adding them to larger numbers have been developed to create more accurate results. We evaluate the technical implications of each method while considering the complications of floating-point arithmetic; the research will highlight errors, numerical stability, and trade-offs between speed and accuracy when using float, double, and arbitrary precision arithmetic. Knowledge of the nuances of different algorithms, and different implementations of the same algorithm, helps applied mathematicians find the most suitable tool for any particular situation.

Charlotte Vierling

PA - Lafayette College

Discipline: Business and Entrepreneurship

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Abstract Name: Hemp's Growing Potential: Analyzing the Environmental and Socioeconomic Dimensions of National Hemp Production Post-Farm Bills

In the context of accelerating global climate change, stakeholders and institutions often undervalue the potential of industrial hemp. However, this underestimation disregards the thousands of possibilities that hemp can and has historically offered. Recognizing this, the United States' 2014 Farm Bill granted higher education institutions the right to cultivate and jumpstart research on hemp. In 2018, the Farm Bill removed hemp from the Controlled Substances Act given its minimal content (below 0.3%) of the psychoactive tetrahydrocannabinol (THC), effectively legalizing it as an agricultural commodity. The passing of these legislative benchmarks, driven by a more positive public perception, has sparked enthusiasm and capital investments in the wide-ranging applications of hemp, from pharmaceuticals to construction, textiles, biofuels, environmental cleanup, and climate change mitigation. Nevertheless, misinformation, bias, data inconsistency, and a lack of research have hindered the progress of hemp utilization. This paper will provide an improved exploration of the direct social, economic, and environmental impacts of hemp production in light of the 2018 Farm Bill and the approaching 2023 Farm Bill. By quantifying the various facets of hemp, this research examines the market and non-market values of hemp to develop a cost-benefit framework. This study draws data from the United States Department of Agriculture, the National Institute of Health, and the United Nations Office on Drugs and Crime to question if hemp's strengths and market promise are greater than its demonstrable costs and challenges. By comprehensively analyzing the net effects of increased industrial hemp funding and legalization, this paper offers valuable insights for stakeholders and institutions to consider when developing agricultural initiatives and policies.

Brenda Villa

GA - Kennesaw State University

Discipline: Education

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Abstract Name: Pre-Columbian Art and Symmetry: An Experiment with Culturally Relevant Lessons

This study focuses on the understanding about symmetry young Latinx children develop using pre-Columbian art. The authors introduced Incan, Mayan, and Aztec art (as well as other cultural aspects), as an avenue to teach geometry and support the children's mathematical discourse. Authors explored how seven and eight-year-old Latinx children who were participating in a literacy summer program can demonstrate a deeper mathematical understanding of the topic, using Latinx culture to support the development of that knowledge. The questions guiding this study are: What are the early understandings about symmetry that Latinx children demonstrate before receiving any instruction on the topic? How do culturally relevant lessons revolving around Aztec, Inca, and Mayan art support the development of understanding of symmetry by those students? Data from 20 Latinx children was analyzed. The authors found that 85% of them created an almost symmetric design by the end of the intervention (up from 60% mid-intervention). But only 71% of those kept symmetric "halves" the same size (up from 67%). 65% of the children who created the almost symmetric design did discuss the need for there to be 2 parts that had to be "the same" or "equal". Finally, 53% of those children could also identify corresponding symmetric points on their designs. In addition to that, anecdotal data showed that children enjoyed learning about pre-Columbian cultures. They continued to mention them throughout the interviews, especially Mayan culture, when they described their designs. They claimed it was important for them and others to learn about these Incans, Mayas, and Aztecs and demonstrated pride in their connection to those pre-Columbian cultures. Classroom observation data is still being analyzed.

Mia Villaron

WI - University of Wisconsin-Madison

Discipline: Health and Human Services

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Abstract Name: How Can Genome Testing Help Save the Lives of Newborn Babies in the NICU?

What if there was an effective way to keep critically ill newborns out of the neonatal intensive care unit (NICU)? How may medical professionals determine which neonates require more attention than others? What if I told you that there is already a way to accomplish this? Let's talk about genome testing. The NICUs represent the principal application area for genomic medicine. Genome testing allows for parents to be assured that doctors have properly diagnosed their child and have the right course of action for treatment. Studies and research have demonstrated the benefits of using genomic medicine. By incorporating genome testing into best practices for NICUs and leveraging implementation science and quality improvement, a Genomic Learning Healthcare System may be put into place to assist reduce the incidence of neonatal and infant deaths. Early diagnosis and treatment of such illnesses can lead to a number of benefits, including improved health outcomes and the potential to avert severe, lifelong disabilities. Although parents who signed their child up for a genome sequencing randomized controlled trial were aware that there was a psychological risk associated with the procedure, they often had positive views toward genome testing and believed the advantages exceeded the risks. Scientists thought that genome testing would be extremely beneficial in the NICU, assisting physicians in prioritizing patients who needed the most care.

Kaitlyn Villatoro

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

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Abstract Name: Age-Dependent Alternative Splicing of Mapt in the Developing Mouse Cerebellum

The MAPT gene encodes the tau protein that is responsible for the assembly of microtubules and axonal stability in neurons. MAPT mRNA is extensively regulated by alternative splicing; splicing of exons 2 and 3 give rise to tau isoforms with 0 (0N), 1 (1N), or 2 amino-terminal repeats (2N), and splicing of exon 10 give isoforms with 3 (3R) or 4 microtubule-binding repeats (4R) in the carboxy-terminal of tau. Our early study demonstrated that in the mouse cortex/hippocampus, 3R variant was detected only at postnatal day (PN) 0 and 7 while 4R appeared at PN7 and was exclusively expressed by PN14. Concomitant with the age-dependent inclusion of exon 10, mRNA levels of two Mapt exon 10 excluders, splicing factor, suppressor of white-apricot (Sfswap) and RNA-binding motif protein X-linked (Rbmx), decreased a week after birth. In the current study, we aim to determine if the developing mouse cerebellum shows similar age-dependent changes in Mapt splicing and expression of splicing regulators required for processing Mapt transcripts. To address this, we have extracted RNA from the cerebellum of male and female C57BL/6J mice at PN0, 7, 14, and 21 days. Using RT-PCR, we first found that the developing cerebellum expressed only 3R at PN0 while 3R and 4R (with exon 10) both were present at PN7 and PN14. By PN21, only 4R was detected in the cerebellum. The developmental transition of 3R to 4R seems to last longer in the cerebellum than the cortex/hippocampus. In addition, 0N transcript was dominantly present throughout the first three weeks after birth, and traceable 1N and 2N were not detected until PN14. We will next use RT-qPCR to profile the expression patterns of the Mapt exons 2, 3, and 10 as well as the splicing regulators for inclusion of these exons in the developing mouse cerebellum.

Mariana Villegas

CA - California State University - Long Beach

Discipline: Humanities

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Abstract Name: Libertad Estila Villana (Freedom through Villano's Perspective): Exploring Trans* Gender & Sex Politics within Reggaetón

Since its popularization, reggaetón has provided its audience with its amalgamation of music genres, influencing U.S. popular culture, evidenced by a rise of Reggaetón listeners on global streaming platforms. However, much of the vogue was initially propelled by cis-gender men reggaetóneros; however a new generation of women and queer folk are leading representation within the genre. In Hay Espacio Aquí, I explore Reggaetón's beginning stages of popularization with Puerto Rican youth and methods on how the archipelago attempted to remove deviancy, like queerness and sexuality. I explore how gender queerness and sexuality occupies space in reggaetón, focusing on the Puerto Rican transqueer femme musician, Villano Antillano. Their unapologetically queer lyrics and visuals effectively invites the audience to interject the queer experience within a male-dominated music genre. I draw connections with Deborah R. Vargas' queer theory of lo sucio, and Villano Antillano's technologies, emphasizing the importance of bringing intersectional identities of queer, gender and ethnic studies into the forefront of research.

Bryanna Vilnaigre

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Discipline: Natural and Physical Sciences

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Abstract Name: Differential effects of beta-amyloid deposition and diagnostic status for changes in hippocampal subfield volume across Alzheimer's disease continuum

Alzheimer's disease (AD) is a neurodegenerative disorder characterized by cognitive impairments co-factored with beta-amyloid (Aβ) plaques, neurofibrillary tangles, and atrophy in medial temporal areas of the brain—such as the hippocampus. The hippocampus is a brian structure relevant for learning and memory and consists of subregions (subfields). Whether and how hippocampal subfields are differentially affected by Aβ levels remains elusive. In addition, it remains unknown whether such relationships differ with diagnostic status across the AD continuum. This work investigates volumetric changes in hippocampal subfields and their relation to Aβ positivity status across the AD continuum. We evaluated 281 participants (ages 57-94 years) from the Alzheimer's Disease Neuroimaging Initiative Year 2 (ADNI-2) dataset. ADNI-2 is a longitudinal study developed to analyze the effects of cognitively normal (CN) aging, early and late mild cognitive impairment (EMCI, LMCI), and AD pathologies. High resolution images of the hippocampus were obtained using structural magnetic resonance imaging (MRI) and Aβ presence was detected using positron emission tomography (PET) scans. Statistical analysis of data revealed significant hippocampal subfield atrophy across a range of diagnostic groups. When comparing AD to CN diagnoses, there were significant decreases in the volume of several hippocampal subfields, including CA1 and the entorhinal cortex (ps<0.001). LMCI groups were associated with significantly decreased CA1, CA2, and entorhinal cortex volumes (ps<0.001). Finally, data indicated significant interactions between amyloid positivity and EMCI diagnoses for decreases in right entorhinal cortex and dentate gyrus volumes (ps<0.05). These results show specific relationships between hippocampal subfields and diagnostic status as a function of the presence of Aβ positivity. Assessing volumetric differences in specific hippocampal subfields across the AD continuum could help identify individuals at an earlier stage of AD development and further our understanding of the pathology of this debilitating disease.

Angela Vincent

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: GYNECOLOGIC HEALTH PROMOTION AND DISEASE PREVENTION AMONGST LATINAS IN ALABAMA

The health of a population is influenced by its social and economic circumstances and the health care services it receives. Hispanics/Latinos living in the United States face a variety of barriers to receiving health care services of high quality that lead to consequential health disparities. These include lack of health insurance, inability to receive preventative care, and social and economic factors such as language and cultural barriers. The goal of my service learning project was to aid in the reimplementation of a health outreach program to promote health and wellness among Latinos in Alabama with a focus on women's health. "Sowing the Seeds

of Health" is a program designed by researchers in the UAB Department of Obstetrics and Gynecology to educate and provide health promoters and Latino patients with the knowledge and skills to promote gynecologic health and prevent disease in the Latino community and make a measurable impact on modifiable health behaviors in the Latino community. In partnership with UAB, we implemented programs that educate and provide health promoters with the knowledge and skills to promote health and prevent disease in the Latino community. Additionally, we provided various resources and programs free of cost such as breast and cervical cancer screening events catered to Latinas and information in both English and Spanish to aid them in navigating the healthcare system to get the care they need.

Alana Vinson

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

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Abstract Name: Development of PROTACs to Study Peroxisomal Biochemistry

Peroxisomes are organelles found in most eukaryotic cells. The peroxisome specializes in oxidative reactions that produce reactive oxygen species (ROS). These processes often are similar to mitochondrial oxidative reactions except that instead of oxygen being reduced to two water molecules in a four electron process as the final electron acceptor, peroxisomal processes produce hydrogen peroxide from water in a two electron process. One example of this is fatty acid beta-oxidation which occurs in both the mitochondria and the peroxisome. Despite peroxisomes mirroring many mitochondrial processes that are known to be important to normal cell function, peroxisomes are poorly studied. Our group hypothesizes that this is due to a lack of tools to study the peroxisomes. Thus, we present the synthesis and biochemical characterization of PROteolysis-TArgeting Chimeras (PROTACs)-based tools to study key peroxisomal biochemical processes. We believe that by having more tools to study the peroxisome, we will enable studies that result in a better understanding of the peroxisomes and their role in cellular metabolism.

Daphne Vital

GA - Kennesaw State University

Discipline: Engineering and Architecture

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Abstract Name: Impact of Air pollution Exposure in Latino Communities: An Equity-based framework for Environmental Engineering

Hispanics make up the second-largest ethnic group after whites, yet these communities live in more polluted environments than their white counterparts and have higher rates of poverty. With low-income neighborhoods come unsafe and often hazardous environmental factors that harm the health of their inhabitants. Environmental engineering, a newer branch that combines civil and chemical engineering ideas, could offer a

variety of different solutions to environmental issues relating to air and water pollution. In A Terrible Thing to Waste by Harriet A. Washington, the author discusses the cognitive damage environmental racism can have if left to fester and I will further explore the other effects on this specific group. Previous reports have found strong connections between race and pollution in a neighborhood, but fail to propose solutions to these issues. Purpose: This research examines the effects of environmental racism and how that harms the health of Latino communities, as well as investigates possible solutions that environmental engineering practices can offer. Method: To answer this question, I will gather data from previous relevant studies about environmental health and then analyze and compare to data from a more affluent and predominantly white area.Results and conclusions: The expected conclusions that this research would have include establishing a stronger connection between the environment and sociocultural factors of Latino immigrants and proposing how an exciting new field of engineering can aid in providing solutions to improve the life and wellbeing of these individuals.

Julian Vlad

CA - Chapman University

Discipline: Natural and Physical Sciences

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Abstract Name: Screening for Increased Cyanobacterial Growth in a Mutant Library

Arthrospira platensis (A. platensis) is a species of cyanobacteria that uses carbon dioxide, light, and water to create glucose and oxygen, and alongside an engineered Escherichia coli (E. coli) can be used to create 2,3-butanediol (2,3-BDO), a rocket propellant that can aid in the colonization of Mars. This engineered E. coli uses sugars created by A. platensis and carbon dioxide to create 2,3-BDO. This process is limited by the reduced growth rate of A. platensis in the presence of high glucose concentrations. A. platensis cells and growth media were purchased from University of Texas at Austin Culture Collection (UTEX 3086). A. platensis was grown in nutrient media for seven days under continuous (24-hour) 200 μmol m-2 s-1 light intensity, then was exposed to UV rays (UV-C 254nm, 15W, Philips) for 20 minutes in a sterile petri dish. The UV-irradiated cells were spread on Petri dishes with solid growth media and were grown under continuous light until colonies were formed. Individual colonies were picked and transferred to falcon tubes containing growth media supplemented with 40g/L glucose. The colonies were grown for seven days in falcon tubes and biomasses were estimated using a spectrometer at 680 nm wavelength. Subjecting A. platensis to UV-induced mutations created a mutant library, and we are currently screening the mutant library for strains with enhanced growth rates. Genetic analysis can be performed on mutant strains to engineer a highly productive variant, which can contribute to the sustainable production of 2,3-BDO, which can kickstart sustainable space travel.

Dante Vladimirov

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Abstract Name: Classifying Patient Survival Rate with the Use of Machine Learning Models

In biomedical research and clinical applications, machine learning algorithms play a crucial role in automating analysis and providing better support in diagnostics. This project uses various algorithms to classify patient survival and rank features that determine the most significant risk factors in the Heart Failure Clinical Records dataset from the UCI Machine Learning Repository. This dataset contains the medical records of 299 heart failure patients, including 12 features that document clinical, body, and lifestyle information. Based on comprehensive literature reviews and analyzing the varying accuracy results from different studies, the selected machine learning models are Random Forest (RF), Support Vector Machines (SVM), and Long Short-Term Memory (LSTM) Recurrent Neural Networks. LSTM models can retain important information and long-term dependencies while discarding irrelevant information. Their ability to recognize and respond to such patterns in the dataset enables them to be very effective models. SVM was observed to outperform most models in several other studies concerning cardiovascular diseases and is an ideal model because of its ability to process complex and non-linear data by creating a hyperplane that separates features. Among many research papers, RF was a commonly used model because of its ability to take the average set of decision trees, which helps mitigate the impact of outliers. Each model was evaluated based on accuracy over 100 iterations, with various parameter tuning options for each method. The results of this study showed that LSTM displayed the highest accuracy, with RF displaying the second highest, and SVM had the lowest accuracy of these selected models.

Elena Vlaskovic

FL - Embry - Riddle Aeronautical University

Discipline: Natural and Physical Sciences

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Abstract Name: Cosmic Muon Station for Outer Tracker Module Testing

The Outer Tracker (OT) is an essential component of the CMS High-Luminosity Large Hadron Collider (HL-LHC) upgrade project at CERN, Switzerland. OT module performance measurements typically rely on internal charge injection in lieu of an external source, limiting the extent to which the entire end-to-end system can be tested. By using cosmic muons as a real source of ionizing particles, we fill this gap and assess the synchronous performance of the modules. A cosmic muon station interfaced with simple scintillators / photomultiplier tubes (PMTs) allows us to understand the behavior of the silicon module in the presence of an external trigger and characterize key metrics such as position-dependent efficiency and resolution. The project primarily focuses on the hardware setup (e.g., detector setup, frontend-backend connection, DAQ) and the analysis software (e.g., DAQ, data analysis, script automation) that help utilize cosmic ray muons as external triggers to test the efficiency of OT modules.

Minh Tam Vo

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Abstract Name: Corrosion Studies Of An Additively Manufactured Aluminum Alloy

Additively manufactured aluminum alloy 6061 (A6061-RAM2) in the as-printed and heat-treated conditions were the materials of interest in this study. Test coupons of these materials were exposed to a 3.5 wt.% sodium chloride (NaCl) solution. They were then subjected to electrochemical tests to determine open circuit potential and linear polarization resistance. Potentiodynamic polarization scans were also conducted. As a comparison, conventionally processed aluminum alloy 6061 (AA6061-T6/T6511) was also exposed to 3.5 wt.% sodium chloride (NaCl) solution and tested. The corrosion response of the conventional and additively manufactured alloys will be reported. Insights from this study should be useful for process improvements and materials selection.

Elijah Vogel

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#3 Reina Garcia

Abstract Name: MOLECULAR DYNAMICS SIMULATION FOR THE MECHANICAL PROPERTY OF DNA MOLECULES USING THE DENSITY FUNCTIONAL THEORY

The field of Biophysics is rapidly growing, as physicists have found it to be a new lens through which to view the human body. Molecular dynamics simulations performed on the stretching of DNA molecules have revealed changes in their structure. This research supports our theory that as a DNA strand's length increases, its structure warps and changes will be observed in the backbone, plate, and base-base interactions. The most significant observed change thus far is the rotation of Carbon-5 at many sections along the backbone, occurring more readily at regions of the backbone immediately superior or inferior to a Guanine nitrogenous base.

Thomas-Shadi Voges

IL - North Central College

Discipline: Natural and Physical Sciences

Authors:

#1 Thomas-Shadi Voges
#2 Preethi Korangath
#3 Rob Ivkov

Abstract Name: KPC Mouse Pancreatic Cancer Cells Demonstrate Thermal Sensitivity

Pancreatic cancer is a devastating disease with an extremely low survival rate of 12%. Hyperthermia, a class of treatment using heat, can enhance standard of care cancer therapy and may offer advantages in treating pancreatic cancer. Magnetic iron oxide nanoparticles can be selectively injected into tumors and heated with alternating magnetic fields. When considering this type of therapy for future studies in mice, it is important to know the appropriate thermal dose that inhibits the growth of pancreatic cancer cells. We used water bath hyperthermia and clonogenic survival assays to determine a surviving fraction of KPC cells, a mouse pancreatic cancer cell line, based on their ability to form colonies after exposure at various thermal does, 37, 39, 41, 42, 43, and 44°C for one hour. We found that KPC cells show a median 50% decrease from control in their ability to grow after a thermal dose of 42°C for one hour and a median 99% decrease from control after 43°C for one hour. We conclude that KPC cells are thermally sensitive, motivating future studies with these cells.

Kaylee Voigt

MN - Minnesota State University - Mankato

Discipline: Social Sciences

Authors:
#1 Kaylee Voigt

Abstract Name: In the Middle: Birth Order and Childhood Experience

Background. This cross sectional mixed-methods study collected data from adults (n = 140) about their emotional and cognitive childhood experiences based on birth order. Comparative baseline scores of subjective well-being (emotional and cognitive) (Diener et al. 1985) using the satisfaction with life scale (SWLS) (Andrews & Withey, 1976) were used to see differences between groups. The SWL scale looks specifically at emotional and cognitive outcomes (Diener, 1984; Veenhoven, 1984) which are paramount in understanding childhood outcomes. This study also asked participants to share their most memorable childhood experience. Anticipated Outcomes. With data collection still in progress, this study hypothesizes that there with be statistically significant group difference with the SWL baseline measure. A hierarchical linear regression model will be implemented to determine significant correlations between demographic (independent) variables and SWLS scores (dependent variable). Additionally, this study expects to find qualitative themes related to emotional and cognitive childhood experiences based on demographic variables. Methods and Preparation. This study has IRB approval. Participants are college students recruited in the PI's Fall 2023 and Spring 2024 courses with a hyperlink for the Qualtrics survey. Students in the PI's courses will be offered a minimal extra credit incentive. Additionally, adult participants not affiliated with the PI's Fall 2023/Spring 2024 courses are being recruited via social media platforms (e.g., Facebook). This study recognizes the use of a convenience sample and encourages participants to forward the survey link to applicable families (e.g., snowball sample). Study Progress. This study will stop collecting data by the end of January 2024 and begin data analysis the first week of February, 2024. Discussion and conclusion sections will be completed by early March. Oral presentation preparation will be completed well before the NCUR conference.

Claire Vu

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

Authors:
#1 Claire Vu

Abstract Name: Glitter’s Future – Not As Bright As Its Shine

Glitter is all around. We find sparkle in children’s toys, beauty products, and even within us. The manufactured microplastic averages 200 μm in size and is composed of plastic, a PET core, and aluminum. The product comes in a variety of size, color, and shape combinations which makes each variation and property unique. While having beneficial uses in areas such forensic and veterinary science, glitter causes a slew of problems for the environment, marine life, and human health as it negatively affects different species' nutrient intake and organ systems. Regulation for a similar product has been put into place before in the Microbead-Free Waters Act of 2015, which bans the use of microbeads in wash off beauty products. In order to prevent our future generation from continually being born with plastic already inside of them, the use of glitter in children’s toys must be banned.

An Vu

WI - University of Wisconsin-Stout

Discipline: Mathematics and Computer Science

Authors:
#1 An Vu
#2 Kevin Matthe Caramancion

Abstract Name: Understanding the Role of AI and Large Language Models in Catfishing on Dating Sites: A Multi-Dimensional Study

This research project aims to explore the intricate relationship between Artificial Intelligence (AI) and Large Language Models (LLMs) in the context of catfishing on online dating platforms. The central research question investigates how AI and LLMs are utilized in catfishing activities and the effectiveness of AI-driven solutions in combating this form of digital deception. The study is positioned within the broader scope of AI ethics, cybersecurity, and online social interactions, seeking to make a unique contribution by unraveling the dual role of AI as both a facilitator and a defender against catfishing. The methodology combines qualitative and quantitative approaches. Qualitative analysis involves interviews with victims of catfishing, psychologists, and cybersecurity experts, providing a multi-faceted view of the problem. It seeks to understand the psychological and social consequences of catfishing, as well as the technical nuances of AI involvement. Quantitative analysis entails examining data from dating platforms to identify patterns distinguishing AI-generated fake profiles from genuine ones. In terms of research context, existing studies have primarily focused on the social and psychological aspects of catfishing, with limited exploration of the technological mechanisms enabling it. This study fills this gap by focusing on AI and LLMs' role in this phenomenon, thus offering new insights into the interplay between technology and human behavior in the digital dating arena. The expected results include detailed insights into the operational mechanisms of AI and LLMs in catfishing, an evaluation of the current AI-based defensive measures on dating sites, and recommendations for improvements. Additionally, the study aims to propose guidelines for users to recognize AI-generated catfishing attempts. Findings will be discussed in the context of enhancing online dating safety, AI ethics, and user education, contributing significantly to the understanding AI-facilitated digital deceptions in online dating environments.

Marko Vucelic

MI - Wayne State University

Discipline: Engineering and Architecture

Authors:
#1 Marko Vucelic
#2 Mai Lam

Abstract Name: Investigating Gene Expression of Inflammatory Markers in the Adventitia as Potential Indicators of Early-Stage Diabetic Vasculopathy in a Tissue Engineered Model

Introduction: Diabetic vasculopathy, characterized by the dysfunction and damage of blood vessels due to diabetes, remains a major complication and leading cause of death in diabetic patients. Currently, early detection of diabetic vasculopathy is limited and difficult to achieve. In this study, we investigated the potential of using a selection of associated biomarkers to determine early indicators of diabetic vasculopathy. With the final goal being to develop a viable disease model of the disease.Materials and Methods: The vessels were constructed using our lab's techniques regarding the isolation of patient derived fibroblasts (PtFibs) in addition to the formation and stacking of vascular tissue rings. The vessels were subjected to three varying blood glucose levels, two of which being hyperglycemic conditions and one being a control. For a given time period, media is changed daily and blood glucose measurements are taken to ensure stable test conditions and to monitor cell activity. Afterwards, real-time polymerase chain reaction (RT-PCR) testing is conducted to see if the chosen inflammatory markers are expressed.Results and Discussion: Throughout the given duration in which cells are exposed to the given hyperglycemic and control conditions, blood glucose measurements show the vessels to be in a consistent state of hyperglycemia. In addition, it can be noted that some groups experience an overall drop in blood glucose concentrations as days of exposure increases. This can be indicative that within the vessels, there is a high count of living cells digesting the glucose present within the media.Conclusions: Our study provides novel insight into the molecular mechanisms underlying early-stage diabetic vasculopathy. The creation of a working disease model of early-stage diabetic vasculopathy is essential for the development of pharmaceutical treatment and underlying knowledge surrounding the disease. Our findings are leading to the completion of a working model of diabetic vasculopathy.

Hope Vue

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Hope Vue
#2 Kellie Agrimson

Abstract Name: Editing CDKN1A and RASD1 In a Cell Culture System

As an individual ages, there is a higher incidence of cancer and infertility. Testicular germ cell cancer rates have been rising year after year. According to the American Cancer Society 1 of every 250 males will develop testicular cancer during their lifetime. In this research project, we aim to develop a molecular toolbox to analyze gene function in male germinal cells using a CRISPR/Cas9 cell culture system. This biotechnology allows for the targeted alteration and cutting of specific DNA strands. To achieve this, we will utilize cancer cell lines (SUSA and NT2/D1 testicular cancer cell lines) and knock out two genes of interest: cyclin-dependent kinase inhibitor 1 (CDKN1A) and ras-related dexamethasone-induced 1 (RASD1). Our objective is to investigate the effects of gene knockout on cell proliferation. For this purpose, we designed primers and

single-guide RNAs using bioinformatic databases: Benchling and Chop Chop. The tools we used were employed to amplify human genomic DNA and assess the effectiveness of the guide RNAs through in vitro cutting of our genes of interest, followed by gel electrophoresis observations. Based on the results obtained from these experiments, our next step is to electroporate the guide RNA and Cas9 complex to alter gene function in our cell culture system. Through a better understanding of gene function in testicular cancer cell lines, we hope to inform future therapeutic targets for both testicular cancer and age-related infertility.

Ayati Vyas

CA - San Jose State University

Discipline: Engineering and Architecture

Authors:
#1 Meghana Pavuluri
Meghana Pavuluri

Abstract Name: Parametric Study to optimize Thrust of a Small Scale Dual Rotor Helicopter

Recent work presented at SCCUR-2023 involved investigating the impact of distance between two rotor blades of a toy helicopter on its thrust. A thrust stand was built that consisted of a load cell and sensor to measure the rotational speed of the propeller. The helicopter was attached with a Degraw 5 kg load cell that was attached to a HX711 load amplifier. The thrust stand was calibrated using load weights, and the calibration curve was used to determine the required thrust at varying operating conditions. Initial experiments revealed that the thrust generated varied from 1 to 5 N, as the rotation speed increased from 1000 to 3000 rpm. Higher rotational speed for both rotors produced higher thrust that ranged from 10 to 35 N. The current experiment is now extended to a larger dual rotor helicopter (DEERC-DE51) that is modified to take its input voltage from a power supply. This gave the flexibility of changing rotational speeds without any fluctuations. For this application, a different load cell (CALT DYLY103-S beam load cell sensor) with the capacity to measure up to 50 N is used. An optical bench is used to hold the z-shaped load cell and for the calibration, known weights are being used to operate the load cell in a tensile mode. The signal from the load cell is further amplified by an amplifier and the readings are monitored and recorded on a microprocessor (Arduino). The helicopter design is flexible enough to change the distance between rotors and experiments are being performed to optimize the thrust by varying the blade separation. Preliminary results show promising trends as the separation between blades does impact the overall thrust of the helicopter. New results are being compared with the previous optimization data and will be presented in the conference in greater detail.

Ileana Waddy

CA - University of California - Santa Cruz

Discipline: Humanities

Authors:
#1 Ileana Waddy

Abstract Name: Queens, Scientists, Creations, and Aliens: an Afro-futurist Intervention into the Horror of Dr. Frank N Furter’s Colonial Fantasy

“The Rocky Horror Picture Show” is a tribute to the history of pop rock, sci-fi, and horror culture; it is also a challenge to the lack of queer representation in these genres. Through its integration of camp aesthetics and

overt queerness with pop-cultural tropes, the film presents the ways queer art has been inspired by and inspires the mainstream pop cultural mythic while highlighting how queer people and identities have been historically omitted from and/or subtextually vilified by its narrative worlds. 50 years after the release of Rocky Horror, the film has become a cult classic and cemented itself in the canons of queer culture and camp art, and its radical intervention into the queer shadows of pop-culture begs to be translated into the contemporary context of our age. Ileana Waddy seeks to give this new life to the text. By applying an intersectional, decolonial lens to her dramaturgical work, she argues that the film's science fiction tropes are influenced by cultural ideologies of white supremacist pseudosciences, manifest destiny, racialization, alienation, racialized gender construction, and practices of eugenics, and produce a metaphorical narrative that represents the oppression and violence that such ideologies and fictions justify in the cultural imagination. Guided by the question, "how would it change the story to make apparent the unspoken presence, the phantom of Blackness and anti-Blackness that haunts The Rocky Horror Show," she arrived at the idea that if read critically, a production of Rocky Horror could provide a critique of white supremacy and colonial violence. By reframing the familiar dynamics of the story through changes in theatrical aesthetic elements, she reimagines Richard O' Brien's legendary original script as an afrofuturist musical that reflects Black queer expressions of joy and experiences of oppression, marginalization, exploitation, and resistance within and outside of the queer community.

Marissa Wagley

GA - Georgia College and State University

Discipline: Natural and Physical Sciences

Authors:
#1 Rose Wagley
#2 Wathsala Medawala
#3 Ronald Okoth

Abstract Name: Two-Step Synthesis of a Novel Phthalein Based pH Indicator

Conventional phthalein dyes are used as pH indicators due to their distinct color change in solutions of different pHs. For example, a solution of phenolphthalein in water turns from colorless to pink as the pH of the solution is increased from acidic to basic. Here, we propose a two-step synthesis of a novel phthalein based pH indicator from commercially available materials that utilizes reactions commonly encountered in undergraduate organic chemistry courses. In step one, the pure product of 1-phenyl-2,3-naphthalenedicarboxylic anhydride was obtained which was then used in step two by reacting it with phenol. The final product obtained contained acid base color change indicator properties similar to phenolphthalein. However the final product was unable to completely solidify which indicated that phenol was still present. Currently, we are attempting to purify the final indicator product to better characterize it through NMR and melting point analysis. Once the pure indicator product is obtained, the synthesis will be incorporated into the organic chemistry and quantitative analysis laboratory curriculum at Georgia College with the aim of enhancing student learning outcomes through a student-centered hands-on pedagogy.

Adelynne Wagner

CA - University of California - Merced

Discipline: Natural and Physical Sciences

Authors:
#1 Adelynne Wagner
#2 Rose Smiley

#3 Daniella Ingloría
#4 Jesús Velázquez

Abstract Name: Microwave Assisted Solid-State Synthesis and Characterization of RuMo5Se8 and Preliminary Proton Adsorption Studies

With growing energy demands it is apparent there is a need for green energy solutions that transition away from fossil fuels and aid in the lowering of carbon dioxide emissions. Chevrel phase (CP) chalcogenides are candidates for this due to their potential as catalysts for energy conversion and storage materials. CPs have shown promise as electrocatalysts for hydrogen evolution reactions (HER) and carbon dioxide (CO2) conversion, however efficient and selective electrochemical conversion is hindered by achieving controlled bonding affinity of key intermediates. CPs have the generic formula MyMo6X8 (M = alkali, alkaline, transition, post-transition metal; y = 0 – 4; X = S, Se, Te), and are described typically as a molybdenum octahedron surrounded by a chalcogen pseudo cube. Due to the tunable nature of CPs, it allows changes in the electronic structure that influence charge transfer and binding of intermediates at the catalyst surface. One way the structure of Chevrel phases can be tuned is through substitution of the molybdenum octahedron with another metal like Ruthenium, Rhodium, and Rhenium. RuMo5Se8 has been studied as catalysts for the oxygen evolution reaction (OER) and shown increased activity compared to Mo6Se8. This work reports the utilization of microwave-assisted solid-state techniques to optimize the synthesis of RuMo5Se8 as well as preform hydrogen evolution reaction (HER) experiments on Mo6Se8 for comparison against ruthenium substituted Chevrel phases to probe proton adsorption as a function of substituting molybdenum for ruthenium.

Anjelica Waight

CA - California State University - Long Beach

Discipline: Health and Human Services

Authors:
#1 Anjelica Waight
#2 Jennifer Lopez
#3 Jacqueline Dawson

Abstract Name: Effect of Stress and Physical Activity Levels on Cardiometabolic Risk Factors in Student Physical Therapists in Los Angeles County

During graduate medical education, student experience high stress due to demanding curriculum and performance expectations. Most studies on stress and graduate healthcare education have been performed on medical students, but not Physical Therapy students (STPs). High stress has been connected to increased cardiometabolic risk factors (CRF), but exercise has been shown to lower stress levels as well as mitigate some of these CRF. This project's purpose is to explore the relationship between stress levels, exercise, and exercise-related CRF in SPTs. Specifically, the aim of this project will examine exercise-related indices of cardiometabolic health in SPTs compared to undergraduate students. We hypothesize that SPTs will exhibit higher stress scores and more exercise-related CRF, including lower aerobic fitness, decreased muscular strength, and lower physical activity levels, and have a greater number of exercise-related CRF than undergraduates. Currently enrolled SPTs and undergraduate students between the ages of 18 – 45 were recruited and tested on the following outcomes: 1) stress as measured by perceived stress scale (PSS), 2) 7-day moderate-to-vigorous physical activity (MVPA), 3) strength as measured by isometric hand grip strength, 1-rep max leg and chest press, and aerobic fitness as measured from cycle ergometry VO2peak, 4) blood pressure and fasting glucose. T-tests were used to compare the means of outcomes between groups. Forty-five SPTs and eight undergraduate students enrolled in the study. Undergrads were younger and had higher BMI compared to SPTs No differences in stress score, strength, blood pressure or fasting glucose were observed between groups. Compared to undergrads, SPTs demonstrated significantly lower MVPA but higher aerobic

fitness. The results showed that our hypothesis was false undergrads had more exercises-CMF and no difference in stress levels than SPTs. Future research on specific exercises that have the most significant impact on these risk factors and stress could be explored.

Grace Wainwright

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Grace Wainwright
#2 Victoria Carlsten
#3 Ellie Williamson
#4 Maddie Mueller
#5 Caitlin Patrick
#6 Adeline Goeltl
#7 Lucy Todd
#8 Chelsea Ortiz-Jimenez
#9 Sonja Wild
#10 Jennifer Smith
#11 Jennifer Smith

Abstract Name: When and why do they alarm call? : Insights from naturalistic and automated monitoring of California ground squirrels

Many animals living in social groups emit antipredator signals, including vocalizations called alarm calls, in response to danger. Although these calls are well-documented in many animals, most studies have focused on their production during the day. California ground squirrels (Otospermophilus beecheyi) represent one such social mammal that produces alarm calls when threatened. As part of The Long-term Behavioral Ecology Project at Briones Regional Park, the focus of this study was to characterize the duration, ecological context, and timing of these alarm calls. As a major prey species for coyotes, rattlesnakes, and birds of prey, we predicted ground squirrels should produce alarm calls to warn other nearby squirrels of these natural predators. In addition, anthropogenic disturbances may also pose potential threats to squirrels and trigger calling. To understand at what times and under which circumstances the ground squirrels produce alarm calls, we investigated the specific stimuli that triggered individually marked squirrels to call. The calls were most strongly associated with natural predators (e.g., coyotes, off-leash dogs) but not humans, and that some individuals consistently called more often and for longer bouts than other individuals. We also utilized an automated passive monitoring system to record acoustic information over the 24-hour cycle. Monitoring equipment was set up in a central location of the study area and squirrel calls were recorded. We analyzed the acoustic recordings in a software system called Raven Pro. These recordings, along with natural observations, offer novel insights into the temporal patterning of alarm calls, the stimuli triggering alarm call production, and the individual differences in calling propensity. Our findings confirmed our hypothesis that ground squirrels mainly call during daylight hours, following an alarm-calling “schedule.” This data offers new insights into not only what triggers squirrels to call, but also the temporal patterning of fear responses over time.

Sera Walicki

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
#1 Sera Walicki
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#3 Ruth McDermott-Levy
#4 Daniel Smith
#5 Caitlin Brady
#6 Steven Goldsmith
#7 Diana Martínez
#8 Rosalba Esquivel Cote

Abstract Name: Assessing soil lead contamination in Hispanic neighborhoods around Norristown, PA

Lead contamination in soil is an environmental justice concern in minority communities. Anthropogenic sources of lead in soil include fossil fuel combustion, fertilizer/pesticide use, present or past industrial activity and mining, incinerator, smelters, lead-based paint residue from exterior paint, and urbanization. Children's blood lead levels are generally higher in Hispanic communities than those in white neighborhoods, which is concerning due to the adverse health effects of lead exposure such as cognitive and behavioral developmental delays and long-term sequalae of anemia, hypertension, and renal impairments in adults. A collaboration between scientists from Villanova University and a local community organization was carried out to assess lead soil contamination in residences and parks of a Hispanic neighborhood in Norristown, PA. A total of 78 soil samples were collected from 38 households. Lead concentration was analyzed by X-Ray Fluorescence (XRF) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS). The mean lead concentration in soil based on ICP-MS analysis was 271.54 ppm (Range: 0.47 – 3396 ppm). About 19%of the soil samples exceeded US EPA's standard of 400 ppm lead in soil. Norristown may be subject to legacy pollution due to many industries such as textile and paper mills established during the late 1800's and early 1900's. There seems to be an association between the historical mill locations and the soil Pb concentration in Norristown. Alongside assessing soil lead contamination, this project aims to inform the community about lead risks and ways to mitigate lead exposure.

Makenzie Walk

IL - Eastern Illinois University

Discipline: Natural and Physical Sciences

Authors:
#1 Makenzie Walk
#2 Carolyn Karns
#3 Anchal Singh
#4 Michael Beck

Abstract Name: Synthesis and Characterization of Chemical Tools to Study Human Carboxylesterases (CESs)

The efficacy of drugs can vary person to person due to factors that influence the activity of drug metabolic enzymes. Human serine hydrolases called carboxylesterases (CESs) are such enzymes which are known to have several factors that can modify their activity. Despite clinical studies linking interindividual variability in CESs to adverse outcomes when treated with drugs known to be metabolized by CESs, they are understudied compared to other enzymes involved in drug metabolism. To address this need for methods to study CESs, fluorogenic chemical tools for studying CESs have been reported, however, many have not been fully characterized to determine their suitability for studying CESs in live cells. Our group is interested in developing new chemical tools for CESs that can be used in live cells. To this end, we report the synthesis and characterization of a series of chemical tools based on esters that are known CES substrates. These

chemical tools will eventually lead to a better understanding of the factors that influence CES activity and a person's ability to metabolize certain drugs.

Rogers Walker

CA - California State University - Monterey Bay

Discipline:

Authors:
#1 Rogers Walker
#2 Renee Penalver
Renee Penalver

Abstract Name: Collaborative scholarship in action: Engaging students and faculty in an authentic research partnerships

Recent scholarship suggests that Course Based Undergraduate Research Experiences are associated with numerous academic benefits, such as higher course averages and increased engagement for underrepresented students. Despite these benefits, CURE courses can be time-consuming to plan and implement. This is a challenge for faculty who also need to research and publish to be successful in tenure and promotion. In fact, prior studies have shown that faculty desire more guidance on combining their research with their CUREs. Our study aims to fill a gap in the scholarship on how faculty can effectively balance their teaching and research obligations. The following research question guided our study: What faculty strategies and course design elements best support collaborative student and faculty CURE research that can lead to publishable results? The study was quasi-experimental, and it utilized qualitative methods. Data collection included pre-post interviews with students, collection of students' research diary entries, and interviews with CURE course faculty. The student data were collected during an upper-level undergraduate psychology course on Bilingual Cognition. Students collaborated with faculty to conduct an empirical study on the effects of bilingualism on false memory. Researchers gathered data from student participants regarding their experiences collaborating with faculty on the Bilingual Cognition study. Following data collection, researchers used an inductive method to conduct conventional content coding of the qualitative data. Both researchers analyzed and discussed the data and identified emergent themes. Researchers expect to present findings about how to communicate to students about the scope of the project and students' role in the project. We also will discuss findings related to creating a timeline for training students and data collection, analysis, and eventual dissemination. In sum, the study will report several best practices for conducting collaborative research with students in the classroom that can be disseminated at conferences and in scholarly journals.

Regan Walker

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Regan Walker

Abstract Name: Physical Activity and Perceived Stress among University Employees

Physical Activity and Perceived Stress among University Employees Regan Walker, Melissa D. Powers University of Central Oklahoma, Edmond, OK Physical activity has direct links to lowering the risk of chronic health conditions and aids in the ability to cope with stress. Some of the top stressors in life are

building a career, finances, and fear of losing a job. The purpose of this project was to study the relationship between volume of physical activity and perceived stress among university employees (n = 85). Participants completed an online survey that included the International Physical Activity Questionnaire (IPAQ), the Perceived Stress Scale (PSS), and demographic questions. The IPAQ gives a measure of weekly volume of vigorous-intensity physical activity (VPA), moderate-intensity physical activity (MPA), walking physical activity (WPA), and total physical activity (TPA; the sum of VPA, MPA and WPA). The PSS is a validated instrument for assessing perceived stress that includes 10 items with a range of scores from 0-40. Pearson correlation coefficients were conducted to analyze the relationships between physical activity variables and PSS. Demographic information collected from participants indicate that 72.9% were female, 87.1% reported being white or Caucasian, and their mean age was 45.18 years. The results show an average PSS score of 16.26±7.30. Non-significant, weak, inverse relationships were observed between PSS and VPA ($r = -.069$, $p = .529$), MPA ($r = -.188$, $p = .084$), WPA ($r = -.178$, $p = .103$), and TPA ($r = -.200$, $p = .066$). These results indicate that volume of PA is not related to PSS, although the weak relationship did approach significance for the total PA variable. In conclusion, further study of this relationship is warranted in a larger, more representative sample.

Ashleigh Walker

OH - Case Western Reserve University

Discipline: Natural and Physical Sciences

Authors:
#1 Ashleigh Walker

Abstract Name: Localization of rDNA during metaphase in Saccharomyces Cerevisiae

Saccharomyces cerevisiae is a unicellular fungus that is often used for basic research. S. cerevisiae's nuclear genome is organized into 16 chromosomes. During metaphase, the DNA stretches out between the mother and the bud, with the bulk chromatin spanning the neck and stretching into the mother cell. The ribosomal DNA in the mother often appears as a loop. The long-term goal of this project is to describe the distribution of rDNA during metaphase, specifically when the role of one or both topoisomerases has been affected by either genetic modification or the addition of chemotherapeutic drugs. This project came about after establishing a procedure for DAPI staining of DNA and noticing a quasi-agglomerated appearance to the loop in the mother. Our goal is to determine what is causing that inconsistent appearance.

Dylan Walker

IL - Elmhurst University

Discipline: Humanities

Authors:
#1 Dylan Walker

Abstract Name: Why the Iroquois Confederation Allied with the British During the Beaver Wars and Not the French

From the early 1600s to the 1700s, the Iroquois Confederation allied with the Dutch and English during the Beaver Wars, a series of conflicts centered on the fur trade fought between the French and their Indigenous allies and the British and the Iroquois. Why did the Iroquois Confederation fight with the British instead of the French during the Beaver Wars? Using travel journals from New France explorers and French

missionaries, and the treaties that ended the conflict, this paper argues that the Iroquois Confederation opposed the French because of their trading alliances with rival tribes, and the French had previously massacred an Iroquois army to assist the Hurons, one of their ally tribes. The French had superior weapons, such as steel and firearms, and the Iroquois needed guns to fight the French. As a result, the Iroquois became allies with the Dutch and then the English after the fall of New Netherland. This alliance with the British gave the Iroquois the weapons they needed to expand their territory and weaken the French fur trade and the French's Indigenous allies. This alliance between the British and the Iroquois would create future alliances, as they would unite against the French again during the French and Indian War.

John Walker

CT - Eastern Connecticut State University

Discipline: Business and Entrepreneurship

Authors:
#1 John Walker

Abstract Name: Ethical Issues in Pharmaceutical Marketing

The opioid epidemic has rattled the US and shows the drastic realization of addiction. It is disheartening to see the effects of this crisis radiate throughout communities everywhere (Cortes, 2021). The cause for concern is the problem of a manufactured crisis: companies such as Purdue Pharma lied in their marketing of dangerous drugs and many people became sick (Chow, 2019). In this project, utilizing frameworks provided by Hartman et al. (2024), I examine the ethics and legal implications of pharmaceutical marketing. Through examining primary and secondarily-sourced case studies of pharmaceutical marketing, I will show the ethical quandaries that exist in this discipline. Ultimately, I argue, today's pharmaceutical marketing should receive the negative attention it deserves as when unchecked it becomes a force of unfathomable harm. The cracks within law and regulation show how easy it is for goliaths of industry to corrupt a system of health service that its intentions are supposed to help not harm. The use of profits to faultily market products should not be allowed, these groups targeted by the industry are often vulnerable and susceptible to the large influence of these companies (Mitchell et al., 2020). According to Hartman et al. (2024) there are both utilitarian and Kantian ethical concerns raised in marketing. Legally, too, Hartman et al. (2024) shows there are legal issues of negligence and strict liability. Solutions exist with proper conversation and action, but will we ever get to the point where we place the locus of attention on the topic? The consequences of pharmaceutical marketing pose a problem because it could slowly erode trust and sentiment towards our healthcare system (Spielmans, 2015). This system should be trusted by people and be a beacon of hope as when done right, it is a force for good.

Alex Wall

WI - University of Wisconsin-La Crosse

Discipline: Social Sciences

Authors:
#1 Alex Wall

Abstract Name: Impact of State Government Revenue Diversification on Income Equality

This paper analyzes the impact that tax-revenue diversification has on income equality in the United States. This paper builds on Carroll's (2009) research regarding how state government revenue diversification impacts revenue stability. This paper also builds on existing literature of income inequality, but instead of looking at revenue stability as the dependent variable, examines how state-level tax revenue structures impact income equality. Theoretically, revenue stability should translate into progressive government programming that reduces income inequality. The independent variable of revenue diversification is measured using the Hirschman-Herfindahl Index (HHI) and data is collected from the Urban Institute state-level government data in FY21. The dependent variable of income equality is measured using the Gini Index and collected from the U.S. Census Bureau.

Emily Wallack

CA - Loyola Marymount University

Discipline: Social Sciences

Authors:
#1 Emily Wallack

Abstract Name: Invisible Illness: The Silent Epidemic For Women

Background: The following study examines the experiences, including the treatment, diagnosis, and marginalization, that women with invisible illnesses, specifically, autoimmune diseases, have had with medical professionals. Uncovering the experiences that women with chronic illnesses have had with physicians, the following research reveals how these interactions have impacted their mental and physical well-being in their respective social lives. Ultimately, this study brings awareness to the real-life implications for women with invisible chronic illness. Methods: The method used in this study consisted of a content analysis of social media discussion platforms. The data was collected from the semi-public Facebook group, "Girls with Guts Private Forum: Support for Women with IBD and/or Ostomies," and the public Reddit groups consisting of "TwoXChromosomes" and "Ankylosing Spondylitis." The data was analyzed using a qualitative thematic analysis of 19 responses. The sample comprised of all women ages eighteen and older with any autoimmune condition, however, there was a special emphasis placed on inflammatory bowel disease and ankylosing spondylitis. Results: The findings of this study revealed three major themes: misdiagnosis, patriarchal healthcare, and social implications. Doctors rely on orthodox andronormative diagnosis standards to account for women's symptoms, which often delays an accurate diagnosis for women patients. Often, women's pain is attributed to emotional dysfunction and side effects of their physiology, like menstruation. Overall, women with chronic illness are continuously marginalized in healthcare simply because they are women. Conclusion: This study exposes how women with invisible illness experience a healthcare system with the inherent gender biases in diagnostic processes and pain management. It is imperative to end the delays in diagnosis and disbelief of women's pain so that they can live with dignity and purpose.

Derek Wallis

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Derek Wallis

Abstract Name: Enhancing Environmental Education through Virtual Tours

Virtual tours act as a means to explore diverse environments and phenomena from anywhere in the world. Particularly beneficial for individuals facing physical limitations or geographical barriers, virtual tours provide an opportunity to visit remote areas, historical sites, and other locations that may be challenging to access. They also serve as a safe and controlled environment for exploration, catering to individuals with limited mobility or those unable to undertake long-distance travel. While nothing can replace the in-person experience, virtual field trips enable those unable to attend physically to participate virtually, reducing anxiety and providing an opportunity to prepare for the trip. Such Virtual tours are already in use by the Stanford University. The project's primary focus is on creating virtual tours for the Bad River's tribe regarding Pipeline 5. The tour for the Bad River tribe aims to spread public awareness of the dangers Pipeline 5 poses to the tribe's wellbeing. Secondary objectives include creating virtual tours for the University of Wisconsin Whitewater's (UWW's) Nature Preserve, the Whitewater Effigy Mounds Preserve, the Koshkonong Effigy Mounds, and the UWW's campus garden. UWW Nature Preserve and UWW campus garden will act as a resource for promotion of the UWW Sustainability Office as they will highlight the efforts towards a sustainable future. Finally, the virtual tour of the two effigy mound preserves will foster respect for the area and aid in its preservation. Future work involves enhancing these tours by adding more information and tailoring them to specific classes or projects. In conclusion, virtual tours offer invaluable opportunities for individuals with physical or medical limitations to participate in field trips and explore hard-to-reach locations. While nothing can fully replace the in-person experience, virtual field trips reduce anxiety, help individuals prepare for the trip, and boost confidence.

Tyler Walters

GA - Georgia College and State University

Discipline: Engineering and Architecture

Authors:
#1 Tyler Walters
#2 Caroline Underwood
#3 Ronald Okoth

Abstract Name: Alternative Green Synthesis of the Green Pesticide

Carbaryl is a wide-spectrum synthetic insecticide used outdoors to control a wide variety of insect pests both in largescale farms and in small gardens and lawns. Unfortunately, the synthesis route used in the industrial production of carbaryl requires the use of the highly toxic and poisonous methyl isocyanate (MIC). In 1984, the leakage of MIC from the Union Carbide chemical plant in Bhopal, India was the cause of thousands of fatalities. Due to the toxicity of MIC, the synthesis of carbaryl and its derivatives also poses a huge challenge for teaching and research labs curtailing structure and activity studies. In order to develop a "greener" synthesis of carbaryl without the use of MIC, a pure carbaryl standard must be established and compared

against the synthesized product. Commercially available Sevin® pesticide, which contains carbaryl as the active ingredient, was used as a source of carbaryl. The carbaryl in Sevin® was isolated from the inactive ingredients and characterized by proton and carbon NMR and melting point analysis. Since the standard carbaryl has been isolated, the synthesis of carbaryl using safer reagents is the next objective. Future plans for this project involve the synthesis of carbaryl via a 4-nitrophenyl carbamate intermediate in a two-step reaction. The synthesized carbaryl will then be compared spectroscopically to the carbaryl isolated from Sevin®.

Polito Walters

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
#1 Polito Walters

Abstract Name: Hydrothermal Alteration Related to the Brittle-Ductile Transition at the Sierra Crest Shear Zone, Eastern Sierra Nevada, California

The Sierra Crest Shear Zone (SCSZ) is a dextral-oblique fault that documents hydrothermal alteration patterns at the brittle-ductile transition along the eastern Sierra Nevada. This shear zone is along the eastern boundary of the Tuolumne Intrusive Complex (TIC) and its contact zone. Hydrothermally altered andesitic to dacitic metavolcanic units of the Triassic Koip Group and the calc-silicate metasedimentary Jurassic Sawmill Canyon sequence are the two major units that host the SCSZ. Metamorphic grade increases from greenschist to amphibolite facies toward the TIC. The origin of hydrothermal fluids at the brittle-ductile transition in strike-slip faults, such as the SCSZ, is poorly understood. Documentation and analysis of alteration mineral assemblages done in conjunction with isotopic studies provides clues to fluid chemistry and fluid sources. Infrared spectroscopy identified muscovite, chlorite, tremolite, biotite, actinolite, calcite, phengite, and epidote in both the Koip and Sawmill Canyon sequences. Petrographic analysis and field observations reveal that alteration related to brittle deformation is characterized by undulatory extinction of quartz, 0.5 to 5 cm-thick bleached zones with chlorite and sericite adjacent to quartz±tourmaline veins, and breccia fillings containing epidote, tourmaline, and chlorite. Ductile rocks also display chlorite, epidote, and sericite as alteration minerals, but quartz experienced dynamic recrystallization and biotite appears shredded and is altered to rutile, chlorite, and sericite. Within the Koip Group, plagioclase is fractured with a preferred orientation and displays alteration to epidote, actinolite is heavily altered to biotite and chlorite and is nearly perpendicular to quartz veins. Biotite is also heavily altered to chlorite along cleavage planes. Epidote alteration of plagioclase and amphibole is prevalent in the Sawmill Canyon sequence. Biotite that defines lineation is almost completely altered to chlorite and quartz has undergone dynamic recrystallization. Stable isotope data indicates that magmatic fluids from the TIC and meteoric-hydrothermal fluids are responsible for the SCSZ-related alteration.

Patrick Walthall

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

Authors:
#1 Patrick Walthall

Abstract Name: Identifying Potential Oxygen Transport Membranes Via Structural Analysis of B-Site

Dependent Perovskites Oxides

Oxygen Transport Membranes (OTMs) are crystalline solid materials that allow for oxygen to move through their structure. OTMs due to their catalytic properties can be applied to several fields of interest, such as alternative fuel production, chemical looping processes, catalytic converters, and medical devices. The widespread implementation of OTMs has been hindered by a lack of understanding of the mechanism that allows perovskite oxides to repeatedly perform these specific redox reactions. In this research, we seek to provide an explanation of how structural changes to a perovskite oxide's B-Site may affect a crystalline solid's ability to function as an OTM. End members of the perovskite oxide lanthanum iron nickel oxide (LaFe1-y Niy O3-∂) were synthesized at specific mole ratios and characterized using X-Ray powder Diffraction (XRD). The software Vesta and SoftBV analysis create an accurate molecular representation of perovskite oxide structure based on powder diffraction data and allows for the analysis of potential oxygen movement through the perovskite structure. We hope to understand, by means of Vesta analysis, how perovskite oxides can serve as OTMs.

Helayna Walton

CA - California State University - San Marcos

Discipline: Social Sciences

Authors:
#1 Helayna Walton

Abstract Name: Traditional Chinese Medicine's Approach to Chronic Illness: A Discussion on Asthma

This presentation will discuss how Traditional Chinese Medicine (TCM) addresses chronic illness, and how this shift in approach might be better suited for managing similar illnesses than current clinical practice. TCM is rooted in ideas of balance and imbalance between the body and its environment as well as within the body between each of the organ systems. When imbalances occur within the body, illness results. Correcting this imbalance and helping the body return to equilibrium is the goal of any TCM treatment. A combination of ethnographic and literature data will be used to present an overview of the world view that shapes Traditional Chinese Medicine and discuss how that worldview has shaped the medical system as a whole. The ethnographic data was obtained during a group interview process with an expert in TCM and served to guide the research process, while the literature data was used to support and add depth to the points made throughout the interview. This presentation will use asthma to highlight TCM's approach to illness by discussing the different types of asthma, their causality, and their treatment processes. A focus on food therapy will be taken when considering the treatment process in order to further showcase TCM other principles and the character of both the foods and the organ systems being treated. This discussion on asthma serves as an example of how the approach that Traditional Chinese Medicine takes in order to treat such chronic illnesses transforms the illness from a debilitating condition to something that can be managed through careful dietary choices. Chronic illness is never going to be something easy to manage, but this management doesn't always have to be crisis control or pain alleviation. TCM demonstrates that lives can be lived despite the presence of chronic conditions.

James Walts

AL - University of Alabama at Birmingham

Discipline: Natural and Physical Sciences

Authors:

#1 James Walts
#2 Nicole Ridddle

Abstract Name: Altering Phosphorylation of HP1a Induces Sterility and Excites Early Death in Drosophila melanogaster

The Heterochromatin protein 1 (HP1) family are non-histone chromosomal proteins that are key factors in the formation of heterochromatin and in transcriptional regulation. HP1 proteins are found in many eukaryotic organisms including plants, animals, and fungi. HP1a from D. melanogaster was the first HP1 protein discovered, and it has been intensively studies for more than three decades. HP1a can act both as a repressor and an activator of transcription. Like many other proteins, HP1a undergoes post-translational modifications such as phosphorylation. However, little is known about the functions of HP1 post-translational modifications, including phosphorylation. To advance our understanding of HP1a's post-translational modifications, we produced two HP1a mutants that either mimic or block phosphorylation. We replaced serines (S) 88/89/91 (S88/89/91) either with glutamic acid (E) to mimic permanent phosphorylation or with alanine (A) block phosphorylation. Using these mutants, we investigated how phosphorylation of HP1a impacts its known functions. Western blot demonstrated that the phospho-mimic HP1a protein is stable but accumulates in decreased levels compared to wildtype HP1a. A position effect variegation (PEV) assay indicated that both mutant HP1a alleles act as suppressors of variegation. On the organismal level, we found that homozygous phospho-mimic HP1a mutants have a significant reduction in fertility for both sexes compared to heterozygous and wildtype animals. We observed a significant decrease in ovary size for the homozygous phospho-mimic HP1a mutant females when compared to heterozygous and wildtype animals. Parallel experiments with the HP1a phospho-block mutant strain are ongoing. Overall, our results show a significant fertility decrease, due to the decreased ovary size in homozygous mutants, a decrease in overall mutant protein concentration with an increase in suppression of variegation when compared to control. These results suggest that phosphorylation of HP1a proteins at the modified site (S88/89/91) have specific functions in the Drosophila germline.

Ziteng Wang

IL - Northern Illinois University

Discipline:

Authors:
#1 Ziteng Wang

Abstract Name: From Supply Chain Optimization to Autism Spectrum Disorder Screening: Engaging Undergraduate Students in Cutting-Edge Research

In this presentation, I will share my personal experience of leveraging university resources and supporting mechanisms to engage undergraduate students in cutting-edge research. Research topics vary from supply chain resilience, inventory optimization, to developing machine learning models for screening autism spectrum disorder in young children. I'll share stories and results of mentor-student collaboration in this journey, best practices and lessons learned.

Wendy Wang

MO - Washington University in St. Louis

Discipline: Health and Human Services

Authors:
#1 Wendy Wang

Abstract Name: Strategies for Including Individuals with Disabilities in Clinical Trials

The Americans with Disabilities Act describes a disability as any mental health or physical condition that can cause impairment when performing major life activities. Disabilities often co-occur with chronic illnesses. People with disabilities are regularly excluded from research that typically focuses on a single specific condition. Exclusion poses a challenge to advancing care - it reduces scientific attention to people with disabilities, which contributes to a lack of data about this population, limiting their prioritization in health research. The risk associated with excluding individuals with disabilities from participation in clinical trials perpetuates health disparities by limiting the generalizability of findings and having clinical trial results that do not accurately reflect the efficacy of treatment for populations with diverse health care needs. For this project, a literature, policy, and resources review was conducted to identify strategies for improving the inclusion of persons with disabilities in clinical trials. Recommendations highlight methods for improving inclusivity and proposing new solutions with an emphasis on increasing the communication of resources for individuals with disabilities to access clinical trials. The discussion focuses on how implementing these changes can further the mission of improving healthcare equity and enhancing the safety and effectiveness of treatments for everyone.

Jason Wang

PA - University of Pennsylvania

Discipline: Natural and Physical Sciences

Authors:
#1 Jason Wang
#2 Tyler Reagle
#3 Tobias Baumgart

Abstract Name: Correcting the stiffness calibration for optical traps

Optical trapping is an experimental technique used to apply piconewton scale forces onto model membrane systems. This allows us to measure changes in key physical properties as membranes undergo dynamic processes such as shape changes. To obtain accurate measurements of force, the “stiffness” of the trap must be determined through a calibration step. The equipartition calibration method calculates the stiffness by algorithmically tracking the position of a trapped bead over time. Camera readout noise creates inaccuracies in tracking which are propagated to the calibration step. We describe a mathematical model to correct for such inaccuracies and obtain a better calibration estimate. We use simulations based on empirical image data to determine the parameters in this model, and we demonstrate that our model indeed leads to improved calibration. With this new equipartition calibration method, we will be able to adapt our optical trapping setup to perform experiments investigating how the insertion and removal of lipids and proteins in model cell membranes affects membrane properties. These studies ultimately provide insight into the interplay between the multitude of processes occurring at the cell membrane.

Linda Wang

WA - University of Washington - Seattle

Discipline: Natural and Physical Sciences

Authors:
#1 Linda Wang
#2 Gwen Wood

Abstract Name: Susceptibility of Mycoplasma genitalium Clinical Isolates to Tinidazole

Mycoplasma genitalium (MG) is a sexually transmitted bacterial pathogen commonly associated with urethritis in men and cervicitis, endometritis, pelvic inflammatory disease, infertility, and preterm birth among women as it invades the upper reproductive tract. Infections can persist for months to years without effective treatment. MG has developed resistance to first-line drug choices which are now effective in less than half of patients. Recent data suggests that MG is susceptible to tinidazole (Tdz), a nitroimidazole-type antibiotic. The Tdz minimum inhibitory concentration (MIC), the concentration that inhibits growth by 99%, for 10 MG strains has already been determined but additional MICs are needed to predict in vivo efficacy as strains can vary in their susceptibility to particular drugs. This project will determine if an additional 10 MG clinical strains are susceptible to Tdz, what the range of MICs is, and if current strains have already developed resistance. Twofold dilutions of Tdz will be added to MG clinical strains in 48-well plates containing Vero cells required for MG growth. Doxycycline (DOX), a first-line drug choice, will serve as a control for correct assay performance as DOX MICs are already known for these strains. After incubation at 37 C/ 5% CO2 for 21-28 days, MG growth in individual wells will be quantified with qPCR and the percent growth inhibition in duplicate Tdz wells will be compared to quadruplicate “no drug” control wells. Calculated percent inhibition and MIC data will be compared to known Tdz pharmacokinetics to predict which antibiotic concentrations are useful for treating infected patients. As physicians are already beginning to treat MG patients with Tdz, data regarding the susceptibility of multiple isolates is crucial in informing dosing regimens. Tdz may fill the urgent need for effective MG treatments as it is already FDA-approved for the treatment of other infections.

Nathaen Wanta

WI - University of Wisconsin-Stout

Discipline: Mathematics and Computer Science

Authors:
#1 Jackson Feggestad
#2 Jacob Halvorson
#3 Christopher Mooney
#4 Noah Royce
#5 Nathaen Wanta
Jackson Feggestad

Abstract Name: Variations of Magic Labelings on Zero-Divisor Graphs

A zero-divisor graph is a graph whose vertices are non-zero, zero-divisors of a commutative ring R with unity and two distinct vertices are adjacent if and only if they multiply to be zero in R. Like on any graph, we can assign values to vertices and edges given certain constraints, which we call labeling. We investigate magic type labeling of zero-divisor graphs. In particular, we turn our attention to semi-magic, magic, and super-magic labelings. We are able to find infinitely many rings which admit these magic type labelings as well as infinitely many rings which do not have these magic type labeling. We further proceed to determine all of the rings which have zero-divisor graphs with up to 14 vertices as to their magic type properties. We then are able to make some conjectures about how these patterns may continue for larger zero-divisor graphs.

Jenalyn Warcup

MA - Bridgewater State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jenalyn Warcup

Abstract Name: Cold Stunned Sea Turtle Standings in Cape Cod, Massachusetts

Cold stunned sea turtles strandings are a natural phenomenon. When sea turtles become caught in cold waters and are prevented from moving into warmer waters, they endure a form of hypothermia called cold stunning. Onshore wind blows several species of sea turtles onto beaches, which is also called stranding. Cold stunning is fatal for sea turtles unless they are rescued and rehabilitated. Strandings most often occur in shallow bays and lagoons, and in areas where geography blocks a sea turtle's migratory path to warmer water. The geography of Cape Cod makes it a natural place for turtles to strand. This Massachusetts peninsula is the site of the world's largest recurring annual sea turtle stranding. However, the number of cold-stunned turtles in the area has drastically increased in the past few decades. This spike may be linked to warming ocean currents from climate change that cause a delay in sea turtles' migration south combined with Cape Cod's hook shaped geographical features.

Jay Ward

CA - Occidental College

Discipline: Humanities

Authors:
#1 Jay Ward

Abstract Name: Crimes of the Future: The Case for a Trans Look

This research project seeks to prove the existence and capabilities of a unique "transgender look" which allows transgender individuals to alter filmic reality and generate visual pleasure for themselves. The transgender look, as this research aims to assert, is a (sometimes oppositional) gaze that reclaims the power of looking, which has so often been weaponized against the transgender individual by cisgender filmmakers and viewers. The existence of the trans look is built on Laura Mulvey's ideas of visual pleasure, bell hooks' writing on oppositional gazes, and Jack Halberstam's inception of the transgender gaze. Though illuminating, Halberstam's theory of a trans gaze focuses on how cisgender viewers could adopt said gaze, and fails to take into account actual trans viewers and how ostensibly "cisgender" films could be "made trans" via a trans look. This is a gap in Halberstam's theory— one that this research will fill by expanding his notion of a transgender gaze in order to include actual trans viewers. By analyzing David Cronenberg's 2022 film Crimes of the Future, and by applying and expanding the theories of Mulvey, hooks, and, chiefly, Halberstam, this research will assert that trans viewers are able to indulge in cinematic fantasy by applying their own experience to films, even those which do not include explicitly transgender characters. In doing so, this research and the resulting research paper will assert that transgender viewers are generating a unique trans look that has the power to redefine films, create alternative forms of visual pleasure, and change the course of cinematic history.

Sydney Ward

MI - Hope College

Discipline: Natural and Physical Sciences

Authors:
#1 Janaa Ward
#2 Sam Hodgson
#3 Jennifer Blake-Mahmud
Sam Hodgson

Abstract Name: The Genetic Viewpoint of Environmental Sex Determination in Plants: RNA Extraction of Striped Maples

Many land plants reproduce through flowers. These flowers express the sex of the plant, based on the reproductive structures within the flower. Male structures produce pollen and female structures produce seeds. How these flowers are arranged on individual plants comprises the sexual system. There are three main sexual systems: hermaphroditic, monicious, and dioecious. With the increase of stressors brought about by extreme weather events occurring under climate change, dioecious plants are predicted to be most affected. To better understand how plants are being affected by the changes in the environment, the lab is studying the reproductive evolutionary process seen in plants. Plants may get their cue to be male or female through genetics or through the environment; these two routes are considered genetic sex determination and environmental sex determination. Historically, these two pathways to sex expression have been researched separately. Most research on environmental sex determination has been ecological, and the genes of plants have not been studied. This lab has chosen a native maple tree to look at the expression of genes to better understand the genetic component for when sex is determined by the environment. To investigate this, we used Striped Maple, a species that possesses the ability to change sex from year to year. Using this fluidity, the lab is looking for differentiation between the expressed genes between the sexes. The lab went out into the woods and collected flower and leaf samples from striped maple trees at sites in Northern Michigan. The tissue samples were brought to the lab, where we extracted RNA. Future work will be to sequence the RNA, analyze the results, and run comparisons between the two tissue types and the two sexes. These results will help us better understand the genetic basis for environmental sex determination.

Mia Ward

WI - Carthage College

Discipline: Social Sciences

Authors:
#1 Mia Ward

Abstract Name: Will You Be My Friend?: How K-Pop Expanded Into the United States

This thesis examines the history of Korean Pop (K-Pop) to define strategies industry leaders utilized to expand the market of K-Pop music in the United States. The researcher analyzes existing studies to identify four main tactics: multi-domestic and transnational marketing strategies and persistent usage of social media to create awareness of the genre and to cultivate strong fan loyalty. This thesis also applies the Uses and Gratifications theory to examine why these strategies aided in successful market expansion. The researcher examines how the industry meeting audience's needs of surveillance, cultural transmission, entertainment, and social interaction enabled people to gain interest in K-Pop; this maintained interest allows the industry to expand its market as companies gain and sustain money, public attention, and fans. This thesis reveals the importance of figuring out how to inform an audience of a foreign industry's existence and, in turn, gain an engaged audience and a place in intenational markets. As the world becomes increasingly connected, this

thesis provides an example of how future industries can use similar tactics when introducing a foreign business or concept to other countries across the globe.

Emma Warden

OK - Oklahoma State University

Discipline: Engineering and Architecture

Authors:
#1 Emma Warden

Abstract Name: Chromatic Continuity: The Historical Evolution and Influence of Bauhaus Design in Graphic Art

The Bauhaus design movement, originating in the early 20th century, stands as an enduring symbol of innovation and artistic prowess, leaving an indelible mark on the world of design. Its historical inception marked a pivotal moment that sparked a transformative evolution, redefining the very essence of creativity and craftsmanship. Through a revolutionary approach that emphasized functionality, minimalism, and aesthetic appeal, the Bauhaus movement revolutionized design and artistry. This movement's inception and formative years serve as a cornerstone for understanding its profound impact. Delving into its core principles reveals a paradigm shift that introduced clean lines, geometric forms, and the skilled utilization of primary colors, reflecting an ideology rooted in purposeful design and aesthetic harmony. This paper undertakes an exploration of the foundational principles and early stages of the Bauhaus movement, shedding light on its revolutionary concepts that continue to shape and inspire contemporary graphic design. By unraveling the ideology behind Bauhaus design, it underscores how these principles persist as a driving force, reinforcing the movement's relevance and influence in today's ever-evolving design sphere. The enduring impact of Bauhaus design extends beyond its historical context, resonating profoundly in modern graphic design practices. Understanding its historical underpinnings allows for an appreciation of its timeless relevance, as Bauhaus principles continue to serve as a source of inspiration and guidance for designers navigating the complexities of the present-day design landscape. Consequently, the Bauhaus movement stands not merely as a relic of the past but as an enduring beacon guiding the trajectory of design innovation and artistic expression.

William Warren

OH - Baldwin Wallace University

Discipline: Mathematics and Computer Science

Authors:
#1 William Warren
#2 Edwin Meyer
#3 David Calvis

Abstract Name: The Probability-Conserving Marble Bag: Maintaining a Constant Probability of Selecting a Color Pair with the Addition of New Colors.

Two marbles are drawn without replacement from a bag of red and green marbles. We add marbles of a new color to the bag and draw once again, then add marbles of a further new color and re-draw, etc. Can the numbers of new marbles added be chosen in such a way that the probability of drawing two marbles of the

same color remains constant at each stage? In this paper, we deduce the initial numbers of red and green marbles for which the answer is yes.

Cynthia Warren

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Cynthia Warren

Abstract Name: The Simulacra: Fragmented Survival Through Storytelling in Soviet Occupied Georgia

Once Upon a Time in Georgia by Aka Morchiladze borrows its namesake from the much more familiar Sergio Leone film, Once Upon a Time in America; assuming its identity in the process as a bid for survival. It is set in the time of perestroika near the end of the Soviet occupation of Georgia, the storytelling presenting a distorted, at times rambling retrospective, written as if active history is myth and the storytelling of Leone's movie is concrete fact. However, intermingled within the text, there are factual truths alongside the emotional ones. American media trickles into the landscape; Sergio Leone is rumored to be filming a movie in Georgia, and tales Bob Dylan and Robert De Niro appear as if magic, though all the factual. The narrator's focus flows from famous actors and musician into Russian politics, American politics, and perestroika with each given the gravitas of the other. In every discussion, fact and fiction fight with censorship and public pressure. Press critical of the Union is shut down while a picture of America, fashioned as a propaganda tool from the ultra-violence of Sergio Leone, becomes as real as the occupation itself. After fixating on American violence, Soviet occupation, the ending note is hopeful, undercutting the genre-typical cynicism much needed in our current global dialogue. Once Upon a Time in Georgia highlights the brutalism of the Soviet Union's rule of Georgia by transplanting the story into a digestible series of myths, false realities, and truths that reflect its national identity—a truth that has only become more relevant to our own modern lives than ever before.

Gabbi Warriner

OK - University of Central Oklahoma

Discipline: Visual and Performing Arts

Authors:
#1 Gabrielle Warriner

Abstract Name: April Greiman: The Start of the New Wave

April Greiman is known to be one of the leaders of the New Wave design movement created in the 1970s. She is credited with bringing the distinct style to Los Angeles after studying at the Kansas City Art Institute and the Basel School of Design in Switzerland. She was taught by successful designer Wolfgang Weignart who is attributed with the creation of the New Wave. Greiman's style was defined by her unique use of typography, colorful shapes, layering, and chaos combined with structure. Her application of the computer is what set her apart from designers at the time. Many were opposed to her use of the MacIntosh computer, but she quickly proved that her knowledge and means of exploration would create a path for innovation. Greiman continued her work despite critics who found her work overly personal and lacking true design. These responses only empowered Greiman to create more conceptual works and show the graphic design community what she was capable of. Her most famous work is, "Does it Make Sense" a life-size print of Greiman herself depicting a timeline of both personal and nonpersonal points in her life which was viewed as

radical at the time. Combining science and design would lead to her own individual style that has stood the test of time. Greiman has won numerous awards such as the AIGA gold medal for lifetime achievement and other prestigious accolades that put her at the forefront of design pioneers.

Elizabeth Wash

MD - Salisbury University

Discipline: Natural and Physical Sciences

Authors:
#1 Elizabeth Wash

Abstract Name: The Silent Killer: Hypertrophic Cardiomyopathy

Heart disease, one of the most prominent diseases that the human population faces, discriminates against no one and attacks some of the healthiest individuals in the modern population. In this project, one heart disease, Hypertrophic Cardiomyopathy, is investigated. Hypertrophic Cardiomyopathy (HCM) affects one in 500 people, making it a common genetic disease. However, most individuals are unaware they have the disease until it is too late. The genetic presentation of hypertrophic cardiomyopathy presents as a single base pair change in the genome, and an individual requires just one faulty gene within one chromosome to inherit the disease. While there are numerous treatment options, such as pharmacological options, surgery, CRISPR splicing, or even heart transplants, there is no simple cure for HCM. Countless patients have become activists and spokespersons for the disease, addressing what life is like for them and their disease and advocating for change. Chronic illnesses are not easy to live with, and patients are bravely wearing their disease as a badge of honor and fearlessly telling their stories so others will be able to recognize the signs of HCM and get help before it is too late. The outlook for HCM is the reality that a lack of treatment and diagnosis will leave numerous individuals desperate for answers. Athletes, performers, and everyday individuals are collapsing with heart issues that they have never before been diagnosed with: it is then determined to be Hypertrophic Cardiomyopathy. Further screenings need to occur for all individuals to get appropriate diagnosis and data surrounding HCM, as well as continuing research and understanding of the effects of HCM, such as genetic inheritance, sudden death, and potential treatments.

Olivia Washington

VA - Virginia Commonwealth University

Discipline: Social Sciences

Authors:
#1 Olivia Washington
#2 Cynthia Lin
#3 Arya Hanjagi
Cynthia Lin
Arya Hanjagi

Abstract Name: Reverberations of Medical Racism: Exploring the Legacy of VCU School of Medicine through the EMSW Project

In Reverberations of Medical Racism, we will present our ongoing work at Virginia Commonwealth University (VCU) as Health Humanities Lab Research Fellows within the East Marshall Street Well (EMSW) Project. The EMSW Project documents the history of medical racism at the Medical College of Virginia

(MCV, now VCU School of Medicine) and its ongoing impact on health inequities today. The EMSW Project takes its name from a well at MCV where, in 1994, human remains from more than fifty individuals were discovered during construction of a new medical building.Historical and scientific research revealed that the remains were of Black Richmonders whose bodies were stolen by MCV professors between 1848 and 1860, used for dissection at the school, and then discarded in the well. The EMSW Project was founded in 2013, and works to analyze the ramifications of medical racism in Richmond, as well as to enact the recommendations of the Family Representative Council that seeks to represent the voices of those found in the well. The recommendations prioritize ethical research, memorialization, and burial of the ancestors with dignity. They also include an emphasis on contextualizing the broader history between Richmond's medical establishments and the city's African American community to address healthcare disparities and to better understand their historical roots within the Richmond community.As Health Humanities Lab Research Fellows, we have joined this important project and are helping to advance an ongoing oral history and memorialization initiative. In this presentation, we will provide the historical context for this work and present our ongoing research to uncover the history of racism in medicine and its ongoing effects on health inequities today.

Grant Wass

CA - Palomar College

Discipline: Natural and Physical Sciences

Authors:
#1 Ella Frigyik
#2 Shahan Derkarabetian
#3 Gonzalo Giribet

Abstract Name: Thinking of Thrasychirus: Evolutionary and Phylogenetic Analysis of South American Long-Legged Harvesters (Arachnida, Opiliones, Neopilionidae)

The vast majority of life on this planet remains undiscovered or undescribed; for instance, around 80% of insect and arachnid species are still undescribed. Harvesters, colloquially known as "daddy long-legs", are especially in need of taxonomic revision as their diversity is highly underestimated due to their limited geographic dispersal. The Gondwanan long-legged harvester family Neopilionidae consists of over sixty species spread over South America, Africa, Australia, and New Zealand, with many described over fifty years ago without molecular techniques. Currently, we lack a published in-depth phylogenetic analysis of South American long-legged harvesters within the genera Thrasychirus, described in 1884, and Thrasychiroides, described in 1947. In addition to this, the three known species of Thrasychirus have only been recorded from the southern tip of Chile, whereas specimens of Thrasychirus have been collected and recorded from all across Chile and the residing Andes mountain range (with Thrasychiroides in Brazil). In this project, we use Sanger sequencing of COI and 18S for phylogenetic analyses, adding to previously sequenced data. Using integrative taxonomy combining genetics and qualitative morphometrics, we then determine whether genetic lineages within these broader clades can be considered as separate species. Our findings indicate that there are at least four broadly distinct clades, most with high levels of genetic variance indicative of species. Through furthering our knowledge of the systematics and phylogeny of Thrasychirus and other Gondwanan members of Neopilionidae, we contribute to our understanding of harvester diversity and reaffirm that there remains a great deal of diversity left to describe.

Zachary Wasson

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Zachary Wasson

Abstract Name: Producing Magnetic Field Windings Using Solid Harmonic Polynomials

Solid harmonics (solutions of the Laplace equation) can be fit to the any magnetic field profile, so that the corresponding scalar potential can be used to design intricate coils to implement these fields in a variety of experiments. The first step is to obtain the magnetic field measurements. Our measurements included the x, y, and z components of the B-field at 63 different specified points. The field was measured inside a 1 m × 1 m × 1 m cube, with 33 cm between each indexed measurement point. Solid harmonic polynomials were fit up to 5th order (35 degrees of freedom) were fit, allowing to model the magnetic field everywhere in the volume. Multiphysics simulation software COMSOL was used to solve Laplace's equation and design the wiring pattern needed to actively cancel this field. This set of windings will be fabricated and sent to the Nuclear Reactor Program Center (NRP) at North Carolina State University in Raleigh, North Carolina to be used the PULSTAR facility.

Trenten Watkins

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Trenten Watkins

Abstract Name: Design Hero: Rob Janoff

This paper covers the life, career, techniques, and influence of Rob Janoff, a Culver City-born graphic designer. The first part of the paper is about where he grew up and why he changed his major from industrial design to graphic design at San Jose State University. Following that it details his technique of keeping things simple. This defines one of Rob Janoff's guiding concepts. He felt it was best to choose something easy to remember and simple because complex things were difficult for people to remember. Your logo will stand out because of this. That's how you leave your mark. Third is how Rob was hired to make a new logo for Steve Jobs' new computer, the Apple II in 1977. This part goes into more detail about his first meeting with Steve Jobs, and the design process. I also briefly talked about the previous Apple logo and the man who designed that version, Ronald Wayne. The fourth part of the article discusses what he did after working at Apple. Since then, Rob has established multiple contacts and clients in Chicago, IL, and New York City. Rob has formed a company with a business partner and has worked with many companies all over the world like Italy and Japan. Finally, the article discusses the impact of his work and his advice to young designers.

Layla Watkins

GA - Fort Valley State University

Discipline: Natural and Physical Sciences

Authors:
#1 Layla Watkins
#2 Robin Bright
#3 Celia Dodd

Abstract Name: The Effect of Silver on Agrobacterium Tumefaciens

The purpose of this experiment is to determine which silver; silver colloids, silver dendrite, or silver nitrate is most effective against the growth of Agrobacterium Tumefaciens (A. Tumefaciens). A. Tumefaciens is a soil-borne pathogen that is widely studied for its genetic transformation capabilities. Although it is studied for its positive aspects, A. Tumefaciens causes a neoplastic disease, Crown Gall Disease on various plants. This disease is transferred from the bacterias Ti (tumor-inducing) plasmid, TDNA, into the host plant. A. Tumefaciens manipulates its host by altering the plant's DNA by adding new instructions that keep the bacteria alive. Plants infected with Crown Gall Disease receive less nutrients to thrive. For this experiment, A. Tumefaciens was used in liquid and gel form. Nutrient broth agar plates were made to apply the two forms of A. Tumefaciens onto separate plates. Concentrations of silver colloids, silver dendrites, and silver nitrate were kept consistent with both forms of bacteria. It was found that the silver colloids were most effective against A. Tumefaciens in the gel application. Silver nitrate and silver dendrite were partially effective against A. Tumefaciens. In an effort to protect plants from Crown Gall Disease, farmers may now have the opportunity to use silver such as silver colloid, dendrites, and nitrate.

Jillian Weathington

FL - University of Central Florida

Discipline: Health and Human Services

Authors:
#1 Jillian Weathington

Abstract Name: Addressing Medical Mistrust in the Black Community to Improve their Health Outcomes

The consequences of medical mistrust among the older Black population are associated with adverse health outcomes, including delays in preventative care, seeking treatment, and compliance. Before 1968, healthcare facilities were separate but equal. Despite desegregation, low-paying jobs and uninsurance contributed to the Black population's poorer health care quality. In light of this, the older Black population has an intriguing role to play in the study of medical mistrust as they were exposed to unequal and unethical treatment in healthcare during their lifetimes. The aim of this study was to investigate medical mistrust to find ways to improve health outcomes among the older Black population. A mixed-methods approach was used for this study. Twenty-one participants completed a Group-Based Medical Mistrust Survey (GBMMS), with 5 participants who completed a semi-structured interview. Descriptive and correlation analyses were conducted. The GBMMS was separated into 3 subscales: 1) Suspicion, 2) Group disparities in healthcare, and 3) Lack of support from healthcare providers. The mean score for the GBMMS was 3.41 (SD=0.74). Significant correlations were found between Factor 1 and income ($r=-.459$, $p=.048$). Results from the in-depth interview indicated 5 primary themes, including 1) Historical references to racism in the healthcare system, 2) Racial discrimination common in a doctor's office, 3) Assumptions made about health issues amongst Black patients, 4) Not seeking medical attention when needed, and 5) Utilization of primarily Black doctor. This study found that medical mistrust is multi-factorial and influences the willingness of Black people to seek treatment. Medical mistrust can be reduced by intervening at the micro and macro levels. Public health initiatives should be implemented at the micro level and at the macro level, implementing cultural competency training, physician outreach with trusted community groups, and increasing minority representation in healthcare.

Bradyn Weaver

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Bradyn Weaver
#2 Aishwarya Mantravadi
#3 Julia Zaikina

Abstract Name: Deintercalation Studies of a Layered Intermetallic in the K-V-Sb Ternary System

Crystal structures incorporating a two-dimensional layered architecture are interesting due to their potential for providing synthetic access to new materials. A notable example is the LiCoO2 layered compound used as a cathode material in commercial Li-ion batteries. KV6Sb6 is also a layered compound consisting of covalently bonded [V6Sb6] layers separated by K+ ions. The recent interest in this and similar types of compounds is due to the identification of exotic magnetic properties due to the trihexagonal arrangement of vanadium atoms, known as the Kagome lattice. Previously, our group synthesized and fully characterized this compound, utilizing various structural and property characterization techniques. The synthesis was carried out via the unconventional hydride route, a solid-state synthetic technique where the salt-like alkali metal hydride (KH) is used instead of the metal (K). This technique enables higher diffusion compared to elemental methods, leading to shorter reactions at lower temperatures. The structural modification of layered compounds using mild synthetic conditions to manipulate material properties and access unique metastable phases has prompted the research reported herein on the topochemical deintercalation (ion removal) of K+ from KV6Sb6. We have successfully performed deintercalation and an extensive structure-property characterization of the subsequently formed metastable K1-xV6Sb6 phase will be performed. Thorough structure elucidation will be performed utilizing a multi-tool approach to determine the compound's bonding, atomic arrangement, composition, and morphology through techniques such as solid-state NMR and scanning electron microscopy (SEM). We will also be focusing on the investigation of the physical properties of the deintercalated phase, including magnetic and thermoelectric properties. Our ultimate goal is to develop a methodology to access materials employing soft chemistry on layered materials, enabling the study of the structure-property relationships in the obtained phases.

Brayden Weaver

IL - Illinois College

Discipline: Social Sciences

Authors:
#1 Brayden Weaver

Abstract Name: Abraham Lincoln: Celebrated Hero, Complicated Human.

Abraham Lincoln is, perhaps, the most celebrated president in American history. His name brings an aura beyond any in the country's history. Historians have long debated the true intentions and moral basis behind Lincoln’s crowning achievement: The Emancipation Proclamation. Lincoln’s true moral stance toward slavery and abolition has long been debated by historians such as Henry Gates, Eric Foner, and David Donald. Some viewpoints of Lincoln’s morality have been skewed to the point of missing the moral height of Lincoln’s views. Gates, Donald, and Foner all argue points that suggest Lincoln’s views on slavery and African Americans greatly shifted throughout his life and political career. When looking at the words of Lincoln himself and through analysis of his dialect choices, it can be concluded that not only did his views not shift in as significant of ways as commonly believed, but in reality he always had the moral capacity to end slavery. While economic and wartime motivations were undoubtedly at play, it was his moral indignations against slavery that ultimately was his reason for signing the Proclamation. A deep dive into Lincoln’s words throughout his time in politics, both prior to and during his presidency, showcases the strong

moral stance that Lincoln had throughout his political life that suggested he was always a man with a much more strongly rooted moral compass against slavery than many scholars claim.

Lukas Webb

CA - Medanos College

Discipline: Natural and Physical Sciences

Authors:
#1 Lukas Webb
#2 Miaw-Sheue Tsai
#3 Corydon Irie

Abstract Name: Cost-Effective Purification of RNaseH1 D210N Mutant

R-loops are triple-stranded nucleic acids that are usually formed during transcription and have key physiological and pathological roles in cells. When R-loops are not removed timely, it leads to DNA damage, with an increase in DNA double-strand breaks, chromosome rearrangement, and mutations that result in degenerative diseases. Due to their volatility, it is imperative we have a quick and efficient way of imaging R-loops in the cells for study. Currently, the S9.6 antibody is the most commonly used method of detecting R-loops, however, its binding specificity favors dsRNA over DNA-RNA hybrids. Ribonuclease H are a class of enzymes that cleave the RNA of DNA-RNA hybrids. Our study has shown that a catalytically inactive form of RNaseH1 (containing a D210N mutation) binds strongly to DNA/RNA hybrids, but not dsRNA, therefore, the mutant RNaseH1 is more specific in identifying R-loops than the S9.6 antibody. We designed RNaseH1 D210N mutant protein to tag with tandem His and GFP tags– His tag for protein purification and GFP tag for cellular imaging. When expressed in bacterial cells, His-GFP-RNaseH1 can be produced quickly and inexpensively on a large scale. To purify RNaseH1, a two-column purification strategy was utilized, starting with a Ni-NTA metal-chelating affinity column and further cleaning up by an SP Sepharose strong cation exchanger column. Purification fractions from each column were analyzed with protein gels to confirm the presence and purity of the mutant protein. Fractions with a higher amount and cleaner proteins were combined, dialyzed into a storage buffer, and quantified by protein gel analysis with BSA (bovine serum albumin) standards. We purified a significant amount of protein, about 115 ug of RNaseH1 mutant protein from 100 mL of bacterial cells with good purity.

Camden Webb

IL - Eastern Illinois University

Discipline: Social Sciences

Authors:
#1 Camden Webb

Abstract Name: Prestige and Faculty Unions: Social Structures of Accumulation Theory and Status Reproduction Among Higher Education Professors

Some higher education faculty believe that unionization, as a “blue collar” activity, is beneath their status, despite their similarly lacking ownership of the means of production. While the higher education institution experienced increasing cultural and economic importance in the United States during the twentieth and twenty-first centuries, faculty unionization saw periods of both growth and decline. From a macro-level framework in social structures of accumulation (SSA) theory, with additions from Marx, Ehrenreich and

Ehrenreich, Bourdieu, and Simmel, my research develops a theory to explain the impact of changing social conditions on status reproduction and faculty unionization. SSA theory provides historical accounts of shifting social structures, contrasting and explaining periods of consolidation and growth with unstable periods of decay and exploration. Marx's class relationships, elaborated upon by Ehrenreich and Ehrenreich's Professional-Managerial Class (PMC), describe the relationship between faculty as PMC and the working- and ruling-classes. Bourdieu's social and symbolic capitals explain the developments and exchanges of prestige as a form of capital during an SSA's consolidation. Simmel's group affiliations from common interests during conflict expands on both prestige and unionization as a development of capital through the exclusive associations of those-with and not those-without. My theory explains that faculty, like capitalists, invest in symbolic capital during an SSA's consolidation due to increased confidence in status reproduction, but unionize during phases of decay and exploration, when their PMC status association is jeopardized. My methodology consists of a historical review of social structures that influenced higher education, the forms of prestige faculty experience, and an analysis of unionization data. By analyzing the exploration, consolidation, and decay phases of various SSAs in the United States, I describe the changing environments of status reproduction and faculty's choices within it

Caleb Weber

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Caleb Weber
#2 Jack Allen
#3 Elizabeth Duncan

Abstract Name: Function conservation of the BMP pathway in planarians

Planarians are an important model for studying regeneration and stem cells. The function of ciliation in planarian regeneration is unclear, despite cilia's other known important functions in developmental biology. This project uses two planarian species, Schmidtea mediterranea and Girardia guanajuatiensis, and aims to uncover the role of a key ciliation and developmental pathway, BMP. Schmidtea mediterranea (S. med) is an important model for the planarian field, but progress has been limited by the lack of multiple models. This experiment uses a recently characterized planarian, Girardia guanajuatiensis (G. gua), which has significant differences in ciliary patterning and regeneration. G. gua displays unique ventral patches of cilia, compared to the uniform ventral ciliation in S. med. Previous work shows that knockdown of the BMP4 protein, a key regulator of ciliation, results in failed regeneration in S. med. Addditionally, worms display a phenotype called ventralization. Normally, in S. med, ciliary patterning is uniform on the ventral side only, but after BMP4 knockdown, both sides are ciliated. However, whether the dysregulated ciliation is the cause of failed regeneration in S. med is not known. To knock down the BMP pathway, RNAi is used, which uses dsRNA to degrade target mRNAs and block translation. This project has shown that impaired regeneration occurs in both S. med and G. gua BMP4 knockdowns, and the goal is to examine ciliation patterning in G. gua knockdowns to determine connections between altered ciliation and ventralization. Altered ciliation patterning is expected in G. gua, but whether uniform ciliation occurs or patches of cilia form on both sides will indicate possible connections between ventralization phenotypes and ciliation. Uniform ciliation would indicate that cilia dysregulation is independent of the other ventralization phenotypes, but formation of patches on both sides would indicate a likely connection between ciliation and other phenotypes. This result will elucidate the connections between the BMP pathway, ciliation, and planarian regeneration.

David Weed

CA - California State University - Fullerton

Discipline: Mathematics and Computer Science

Authors:
#1 David Weed
#2 Tommy Murphy

Abstract Name: A Characterization of the Archimedean Solids

In studying any family of mathematical objects, a fundamental issue is to understand how one object can "sit inside" another object in the family, preserving the mathematical structure. We are concerned with convex uniform polyhedra. Two famous families of polyhedra live in this class: the Platonic and Archimedean solids, as well as the prisms and antiprisms. Our main result geometrically characterizes the famed Archimedean solids among the convex uniform polyhedra by studying how they sit inside a regular tetrahedron.

Aidan Wegner

CO - University of Colorado at Boulder

Discipline: Natural and Physical Sciences

Authors:
#1 Aidan Wegner
#2 Ziyue Dong
#3 Michael Toney
#4 Kayla Sprenger

Abstract Name: A High-Throughput Computational Framework for Investigating Protein-Polymer Bioconjugates with Molecular Dynamics Simulations

Protein-polymer bioconjugates are a promising class of hybrid biomaterials that combine the functional specificity of proteins and the synthetic modularity of polymers. These robust yet tunable biomacromolecules are highly suitable for applications in drug delivery, nanomaterials, and catalysis. However, despite the broad applicability of protein-polymer bioconjugates, there are few computational design tools available to predict their properties prior to in vitro experimentation. To optimally design and synthesize these hybrid molecules, the underlying mechanisms that influence their enhanced thermodynamic and kinetic properties must be understood at the molecular level. Computational approaches such as molecular dynamics (MD) simulations provide an excellent entry point for such studies, via the development of accurate molecular models for studying variations of the protein-polymer bioconjugate system.Herein, we showcase the development of a streamlined computational framework to systematically model and analyze the molecular behavior of protein-polymer bioconjugates using MD. This methodological workflow utilizes a breadth of in silico tools such as Python, CGENFF, Gaussian, ChemDraw, VMD, and GROMACS. Specifically, we built and tested this framework on bioconjugates constructed from the proteins bovine alpha-chymotrypsin and hen egg-white lysozyme conjugated with the zwitterionic sulfobetaine methacrylamide and biocompatible polyethylene glycol (PEG). These four discrete protein-polymer bioconjugates were then simulated in different chemical and biological environments using MD to evaluate the effect of conjugation on protein stability and function. These simulations investigated the behavior of each bioconjugate molecule (1) at the material interface of a silicon dioxide surface and (2) at the interface of a phospholipid membrane. The atomistic detail provided by MD simulations enabled an improved understanding of the effect of polymer conjugation on bioconjugate stability in these different biochemical contexts. Furthermore, analysis of the free energy profile of adsorption provided insight into the molecular driving forces governing bioconjugate behavior at these important bioengineering interfaces.

Laura Weinstein

DE - University of Delaware

Discipline: Interdisciplinary Studies

Authors:
#1 Zhenjiang Zhang
#2 Nicole Sarna
#3 Abigail Fabiano
#4 Michael King

Abstract Name: Neutrophil-Mediated Transendothelial Delivery of E-Selectin Liposomes for Targeting Inflammatory Sites

Nanomedicine is an expanding field that is revolutionizing translational medicine. Among the various nanoscale carriers, liposomal nanoparticles have gained significant attention due to their ideal size for robust transport within the environment of the body. Cell-mediated drug delivery harnesses the unique capability of nanoparticles to transport therapeutic cargo to specific destinations, such as tumors or inflamed tissues. To exploit this potential, our laboratory has developed a strategy for conjugating the protein E-selectin (ES) to the lipid-PEG shell of liposomes. This approach is advantageous as white blood cells possess ES ligands on their surface, enabling effective attachment of the liposomes to these cells. Subsequently, the liposomes can hitch a ride with white blood cells to target cancer cells in circulation or reach inflammatory sites, leveraging the immune system's natural response. Our investigation has focused on neutrophils as carriers for this cell-mediated delivery method, given their role as the body's first responders to infection or injury. By utilizing the protein Interleukin-8 (IL-8) as a signaling mechanism, we have successfully guided neutrophils to specific locations. Through comprehensive experimentation using TransWellTM migration chambers and identification through confocal imaging, we have demonstrated the ability of liposomes to attach to neutrophils and facilitate their migration across endothelial-like barriers via IL-8 signaling. These findings highlight the potential of liposome-neutrophil conjugates as efficient drug-carrying nanoparticle carriers, offering rapid and targeted relief in various medical conditions.

Samuel Weisler

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Samuel Weisler

Abstract Name: A Natural Advantage: An Eye-Tracking Analysis of Indoor and Outdoor Spaces

Contemporary architecture and design increasingly prioritize sustainable, healthy, and aesthetically pleasing indoor environments, acknowledging the fact that we spend most of our lives inside buildings. However, this research brings up a critical question: are we undervaluing the inherent beauty of the outdoors within our built environment? While the concept of beauty is a subject of heavy debate, the universal beauty of nature remains a constant. This study aims to substantiate the superiority of outdoor spaces over their indoor counterparts by comparing the visual appeal of AI-generated images. Specifically, it will create image pairs for five different activity categories: contemplation, recreation, social interaction, education, and creativity. Each image in the pair must embody essential elements: sunlight, biophilic components, and privacy.For each activity category, AI will be instructed to generate an outdoor space image and an indoor equivalent. Next, visual eye-tracking software will analyze these images, enabling us to quantitatively gauge their visual appeal. The analysis will provide insight into whether outdoor spaces surpass their indoor counterparts in

aesthetics. Anticipating that outdoor spaces will exhibit greater visual appeal, this research carries valuable implications for the architectural and design industries. In a world increasingly focused on enhancing the human experience, these findings will advocate for the greater incorporation and prioritization of outdoor spaces in built environments. Increasing our access to outdoor living spaces will undoubtedly improve the quality of human experiences.

Caitlin Weiss

WI - Alverno College

Discipline: Natural and Physical Sciences

Authors:
#1 Caitlin Weiss
#2 Yesenia Perez
#3 Jenna Coss
Yesenia Perez

Abstract Name: Titrimetric Fresh Water Analysis: Monitoring Salinity and Total Water Hardness in Locations along the Kinnickinnic River

The salinity and total water hardness of three sites on the Kinnickinnic River near Alverno College in Milwaukee, WI in parternship with Milwaukee RiverKeeper were monitored weekly for salinity and total water hardness. The locations were Zablocki Park, Wilson Park, and Jackson Park. Samples were collected and analyzed weekly for four weeks during the month of June in 2023. The water at all three sites were determined to be very hard (219-478ppm) and salinity levels (150-566ppm) to be considered fresh throughout the four collection dates. River water is expected to be soft and fresh. Samples were analyzed by titration with standardized titrants of silver nitrate for salinity and EDTA for total water hardness. Four replicates were collected for each sample, with percent errors being less than 5%.

Christopher Weiss

WI - University of Wisconsin-Parkside

Discipline: Social Sciences

Authors:
#1 Christopher Weiss
#2 Melissa Gregg
#3 Pasquale Chianello
#4 Tyler Helgeson

Abstract Name: An EEG Investigation of the Implicit Effects of Social Media Notifications

Smart phones and their notifications have been demonstrated to significantly impair performance on tasks of attention and cognitive control. The purpose of this project was to determine if there are implicit, physiological reactions associated with the notification sounds of popular social media applications. In this experiment, we measured neural responses to specific app-associated sounds and determined whether the frequency of app use and age were associated with enhanced neural processing of the corresponding app sound. Participants completed a primary task (watching a silent movie with captions) while background sounds were presented via headphones. The background sounds consisted of a repeating tone with randomly embedded sounds from specific social media apps. Participants also completed a questionnaire in which they

ranked popular apps according to how much those apps were used. Neural responses were recorded with a 32-channel EEG system. The EEG data were time-locked to the app-related sounds to determine the size of an ERP component called the MMN (mismatched negativity). The MMN is elicited by deviations that occur within an otherwise regular auditory pattern, and it has the critical virtue of being sensitive to neural responses to unattended sounds. As a result, the size of the MMN can be correlated with specific application usage. The results indicated that the size of the MMN was affected by specific app sounds and the participants' reported frequency of social media app use. The results make a novel contribution in showing that sounds associated with social media applications can implicitly affect neural responses.

Gina Welborn

OK - Cameron University

Discipline: Humanities

Authors:
#1 Gina Welborn

Abstract Name: How Fiction Authors Can Use Cultural Communication Differences to Enhance Conflict in Dialogue

This paper analyzes the dialogue of the American and "the girl with him" in Ernest Hemingway's "Hills Like White Elephants." Dialogue is a technique of fiction an author uses to add distinctiveness to their characters through the spoken word and through a silent language that enables people to communicate without the use of words, such as tone of voice, silence, body language, and facial expressions. The silent language of cultural communication is a complex, deep, and learnable artform. Awareness of cultural communication differences puts the onus on both parties to find common ground and a resolution that works for everyone. Hemingway's dialogue in "Hills Like White Elephants" demonstrates how conflicting communication styles and silent language enhances the friction between the characters, leading to a lack of resolution to their interpersonal conflict. This friction results from Hemingway's low-context speaker (the American) negotiating with a high-context speaker (the girl with him). By using research literature on high context versus low context, direct versus indirect, and formal versus informal communication styles, and my own close reading of "Hills Like White Elephants," I will explore how fiction authors can use silent language and cultural communication differences to enhance conflict in dialogue.

Zack Welker

MO - Missouri State University

Discipline: Humanities

Authors:
#1 Lori Rogers

Abstract Name: Validating Horror

"Horror" is defined as a literary or film genre concerned with arousing feelings of fear. The purpose for this genre is to shock its audience or educate them. This education can be seen through many works as social commentary. Ranging from mental illness, politics, and sexuality, the genre has highlighted these issues, but is still denied in the field of literature. To elaborate, the terms "science fiction" and "fantasy" are clearly defined in, A Handbook to Literature, but "horror" is not defined. In this text and many others, horror is not seen as a piece of literary fiction. However, there are works of classic literature that could be viewed as

horror. Both Lord of the Flies and 1984 comment on the horrors of a society gone wrong, using many elements from the genre. This paper's purpose is to highlight the distinction between horror fiction and horror literature. In separating these two terms, the genre can be accepted in the field of literature.

Haley Wells

AL - University of Alabama at Birmingham

Discipline: Humanities

Authors:
#1 Haley Wells

Abstract Name: Eradication or Empathy: Dracula and Depictions of Disability

Since the release of Bram Stoker's Dracula in 1897, scholars have proposed varying interpretations of the vampiric Count's identity. Some scholarship has focused on his psyche, highlighting how Victorian theories about criminal psychology may have influenced the creation of his character, while other scholarship has examined his body, noting how its physical appearance speaks to antisemitic anxieties and racialized stereotypes. However, scholarship on Dracula has yet to examine him—and the other vampiric bodies in the novel—through a disability studies lens. I would argue, then, that rather than reading the vampiric bodies in the text as entirely nonhuman monsters, they can be read as an allusion to Victorian discourse on disability and as literally disabled human bodies. Even after becoming vampires, their bodies still appear distinctly human. While the state of their souls or psychology is less clear, the relatively unaltered state of their bodies is obvious. They do not assume "monstrous" non-human bodies after their transformation; their bodies merely have different needs, abilities, and vulnerabilities—in other words, they become differently abled or disabled. Vampiric disability is ultimately constructed through how other characters in the novel–whose voices dominate the text–depict and categorize the vampires as physically inferior or Other. The disability of the vampires is further highlighted through how they utilize certain prosthetic rituals (the consumption of blood, resting in earth, and hiding from sunlight) to accommodate the unique abilities and vulnerabilities of their bodies. However, Stoker's novel ultimately destabilizes the binary categories of abled and disabled. The many instances of physical similarities between the "humans"—or acceptably abled characters—and the "vampires"—or disabled characters—instead suggest that ability is a spectrum, and all human bodies fluctuate along that spectrum throughout their lives; thus, the categories of abled versus disabled are arbitrary and inherently unstable.

Grace Welsh

PA - Villanova University

Discipline: Natural and Physical Sciences

Authors:
#1 Grace Welsh
#2 Dana Opulente

Abstract Name: Growing Pains: How Invasive Plant Species Impact Yeast Phenotypes

Microbes play a vital role in plant environments that vary with the conditions of the environment. Previous research has found yeast species diversity is negatively impacted by the presence of invasive plant species. The difference in diversity could be the result of invasive plant species directly or indirectly altering the soil environment or chemistry. However, little is known about how altered soil conditions impact the growth of

yeast species found in the soil of invasive plants. I propose to measure the effects of invasive plant species on yeast growth in the environment by simulating three variable conditions: carbon source availability, nitrogen availability, and antifungal exposure. I will compare the growth rates of yeast species isolated from invasive and native plant soils in each of these conditions. The observed differences in growth between these yeasts will allow us to draw conclusions about the impact of invasive species on the phenotypes of yeasts found within the environment. Invasive species can modify soil chemistry including specific sugar types, higher concentrations of nitrate, and more antifungal compounds. We expect yeast isolated from either invasive or native soils will express phenotypes matching the chemsitry of their environment. Understanding this variation could help us understand the functional role of yeasts in the larger microbial community in the environment. This research will also provide additional insights into our understanding of the yeast ecological niche.

JACOB WENDT

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 JACOB WENDT

Abstract Name: Traditional Urban Resurgence: A Blueprint for Mental Wellness in Modern Cities

This research delves into the transformation of urbanization over the past century, triggered by the influence of modern architectural concepts, and the potential ramifications for mental health. The primary objective is to investigate the neurological effects of specific urban layouts, with a particular emphasis on safety, social interaction, and aesthetic appeal, to gain insight into the human mind's urban preferences. A survey will be designed to capture subjective preferences in which respondents choose one of two anonymous center streets that are subjectively safe and attractive. Participants will favor the traditional street layout over the contemporary one, suggesting a preference for design associated with enhanced safety, aesthetics, and social appeal, affirming the statement by Allen Jacobs that optimal streets have paramount desirability. In parallel, eye-tracking software is utilized to objectively analyze subconscious neurological responses to diverse urban layouts and elements, providing a more scientific perspective on human perceptions of urban environments by revealing more balanced heat maps, and signifying a focus on aesthetic elements and reduced attention to potential hazards. The combination of survey and eye-tracking data presents a comprehensive argument in favor of traditional urban planning principles and expected to underscore the prevalent preference for traditional urban designs over contemporary alternatives. In conclusion, this research sheds light on the enduring human desire for both safety and aesthetic beauty in urban environments. Anonymous survey data ranging from 50 to 100 participants, coupled with eye-tracking simulations indicating balanced heat maps, highlights the potential of traditional design to cultivate healthier and more harmonious communities. Future research may delve into physiological measures, such as heart rate monitoring, to further validate the stress-reducing benefits of traditional urban planning. The findings from this survey are expected to provide actionable insights that can inform urban planning decisions and strategies that foster improved mental wellness and community well-being.

Magdalena Werger

WI - Carthage College

Discipline: Social Sciences

Authors:
#1 Magdalena Werger

Abstract Name: The Correlation of Likability and Success

The concept of success is one that affects every person in every career and is, therefore, important to research. This research paper addresses the question of whether competency or likability is more important in business and how the two qualities are correlated in the context of success. The paper aims to study whether a sociable personality is enough to succeed in the business sector or if pure competency and excellence in the field is the key to success. Multiple studies are examined that address the correlation between likability and success, such as Belmi and Pfeffer (2018), who discuss reward interdependent environments and explain why likability is less important than competency in such environments. A study by Cohan et al. (2013) looks at the Myers-Briggs Type Indicator of successful project managers and discusses why ISFP is the most successful personality among project managers, determined by both subjective and objective data. The results of these studies show that likability is essential to success in most careers, but competency will ultimately reign in reward interdependent careers. This research paper concludes with psychological and physical keys that promote success and likability, specifically in the business sector. Van Edwards (2017) shares how liking others is the root of being likable and gives quantitative data on how and why likability can help everyone succeed in business.

Sophia Westerkamp

CA - University of California - Los Angeles

Discipline: Natural and Physical Sciences

Authors:
#1 Sophia Westerkamp
#2 Lihsia Yeo
#3 Jason McLain

Abstract Name: Investigating the Survivability of Prebiotic Molecules on the Lunar Regolith

One of the biggest questions from the Apollo era was the discovery of small amounts of prebiotic molecules on lunar dust samples. This research aims to quantify the survivability of amino acids on the lunar regolith through experimental simulation of lunar conditions under high vacuum, UV radiation and hydrogen plasma exposure. To achieve these goals, lunar-simulant JSC-1A samples are dosed with a curated and calibrated amino acid solution. The samples are placed under vacuum and irradiated with a Plasma Source Ion Implantation (PSII) apparatus to simulate solar wind conditions. Amino acid survivability is quantified via High Performance Liquid Chromatography (HPLC), UV fluorescence and quadrupole time-of-flight mass spectrometry detection in conjunction with NASA's Astrobiology Analytical Laboratory. Preliminary results suggest that amino acids are stable under vacuum conditions down to 1.5E-7 Torr. Samples tested under the PSII apparatus at 30W suggest that all five of the tested amino acids break down under plasma irradiation on JSC-1A. This implies that amino acids may break down under exposure to solar wind conditions. Investigating the reactivity and dynamics of large organic molecules on airless bodies such as the Moon has implications for the proliferation of prebiotic molecules across the solar system. Furthermore, understanding the survivability of amino acids on the lunar regolith can inform scientists about human impact on the lunar surface and beyond. Future studies will be directed at studying the survivability of peptides on the lunar regolith and better approximating lunar temperature conditions in our system.

Daniel Wetherby

MN - University of Minnesota - Duluth

Discipline: Engineering and Architecture

Authors:
#1 Daniel Wetherby
#2 Emmanuel Enemuoh

Abstract Name: Evaluation of High Temperature Mechanical Properties, Physical Properties, and Energy Consumption of Fused Deposition Modeling of PEEK

The application of the fused deposition modeling (FDM) additive manufacturing has increased in the production of functional parts across all industries, especially in the biomedical industry. Due to its high compressive strength and biocompatibility, polyetheretherketone (PEEK) can be explored as a viable replacement material for bones using FDM manufacturing. PEEK has already been used in clinical studies for intervertebral cages and has seen success as a suitable replacement for bone, although minimal strength studies were conducted and analyzed. The challenge is that there are many process parameters that would influence the mechanical, physical, and energy demand of the PEEK FDM process. Many researchers have continued to investigate and address these challenges but one aspect that has minimal research undertaking is performance of PEEK components produced by FDM in a high temperature environment. This research will focus on investigating the influence of FDM process parameters on high temperature mechanical properties of FDM-PEEK, energy consumption, and surface roughness. The process parameters considered are print speed, infill density, infill pattern, layer thickness, nozzle temperature, platform temperature, and raster angle. Eighteen PEEK samples with three replicates each will be created in accordance with the American Society for Testing and Materials (ASTM) standards while adjusting the levels of the identified process parameters following the L18 Taguchi Orthogonal array design of experiments. Mechanical tests, surface roughness, and microscopic evaluations will be conducted on the samples with strict adherence to the ASTM standards. The Minitab software will be used to conduct mean effects and analysis of variance of the control factors on the quality characteristics.The results from this study will create opportunities for discovery and understanding of FDM of PEEK as biomaterial in a high temperature environment while promoting teaching, training, and learning by including students and faculty in the research.

Jocelyn Whalen

PA - Westminster College

Discipline: Natural and Physical Sciences

Authors:
#1 Jocelyn Whalen

Abstract Name: Suppressing biofilm production in Staphylococcus aureus using siHybrids targeting the codY gene

Staphylococcus aureus is a prominent nosocomial infectious agent, largely due to the production of biofilm that aids in antibiotic resistance. Organisms that produce biofilm possess a distinct biological advantage, and often coagulate on surfaces such as medical implants. These biofilms are a leading cause of post-operational infections and are difficult to treat due to their inherent resistance to antibiotics and the host immune system. One molecular pathway involved in S. aureus biofilm formation is the agr operon, which mediates the disassembly of bacterial cells from biofilms by regulating the quorum sensing system. In previous studies, CodY, a global regulatory protein, has been shown to repress this operon. For this study, 5 µg and 10 µg of codY-targeted co-suppressing RNAi oligonucleotides (siHybrids) were mixed with S. aureus cells in a 96-well microtiter plate to investigate whether they could suppress biofilm formation. After treatment, the cells were stained with crystal violet to quantify the amount of biofilm produced. Because CodY has been shown to repress the disassembly of cells from biofilms, treatment of S. aureus cells with siHybrids targeting CodY expression was expected to decrease biofilm production due to premature cell dispersal before a mature

biofilm could form. The results from this study indicate that inhibiting CodY has no significant effect on the amount of biofilm produced by S. aureus, contrary to the predicted results. Overall, this data does not support CodY's regulatory role in biofilm production.

Emily Whisenhunt

KS - University of Kansas

Discipline: Humanities

Authors:
#1 Emily Whisenhunt

Abstract Name: FIFA's Trek to Modernity: The Role of Muslim Women in Soccer

Muslim women in Arab countries long for participation in professional soccer, but personal identity creates a unique barrier from international competition. This research aims to identify how twenty-first century FIFA policy has evolved over time, working towards inclusive rhetoric to expand the involvement of marginalized populations, specifically Muslim women. Literature proves Muslim women treat and value physical fitness and participation in sports as a pillar for personal identity. Researchers have examined how feminism has propelled the involvement of Muslim women in soccer at international levels of competition. This research will utilize versions of Law 4 in the International Football Association Board's (IFAB) Laws of the Game from 1990-2023 to analyze change in inclusive rhetoric over the past three decades. This project will identify three case studies in the past two decades, and work alongside the Laws of the Game to identify any evolution in policy resulting from the case studies. The main conclusion might be that the inclusion of inclusive rhetoric was a direct result of Muslim women's increased participation in soccer since the start of the FIFA Women's World Cup in 1991. FIFA and IFAB policies attempt to create a diverse environment, but international soccer can only grow and diversify when women's soccer in Arab countries is recognized for FIFA's journey to modernization.

Austin Whisler

MT - Montana State University

Discipline: Visual and Performing Arts

Authors:
#1 Austin Whisler

Abstract Name: The History of Music (Abridged)

Within the scope of Eurocentric Music History we learn in class – from textbooks, theory articles, and ensemble repertoire – the styles are often grouped into broad categories with perhaps overly generalized definitions. While there have been significant developments which happen between epochs of music history, one concept which is often underrepresented with these definitions is how each tradition developed or sprung from its predecessors. Through the composition of a "Theme and Variations" style musical work I will map the structural development from Plainchant – or as early as I can reasonably achieve – through the many eras of the Western canon (Renaissance, Baroque, Classic, Romantic, Modern, etc.) before dissolving through relevant contemporary styles and vanishing into the unknown of what styles have yet to develop. Based on the work of K Marie Stolba in her text The Development of Western Music, as well as supplemental journals along the way, I will write a common passage in as many of these styles as possible while maintaining a recognizable melodic base. This composition will provide a lens through which the audience may better

understand the structural relationships across European music history. A successful composition is intended to be enjoyable in its own right for a modern audience.

Ellery White

UT - Utah Valley University

Discipline: Social Sciences

Authors:
#1 Ellery White

Abstract Name: The Influence of Political Affiliation on Academic Performance: An Examination on How Familial Political Beliefs May Impact a Child's Educational Outcomes

This study will examine the influence that parental political beliefs may have on students' academic performance. Decades of research have formed empirical links between social- contextual factors and student academic achievement, and this paper will seek to identify whether parental political values play a role in the academic achievement of their children (Lee and Shute 2010; Yamamoto and Holloway 2010). Parental attitudes, behavior, and stylistic approaches to their child's rearing and education have been extensively studied for how they impact educational outcomes (Pandey and Thapa 2017). This study fulfills the gap in research on the association between parental political beliefs and children's academic performance. This adds to the academic discourse on the impact parents can have on their children in an academic setting by answering the following questions: How can the political beliefs of parents impact a students' way of thinking and therefore ability to perform in school? Does the extremity of the parents' political beliefs make a difference in the outcome of the child's academic performance? A survey was distributed to a random sample of UVU students which measured their academic performance and the political beliefs of their parents. The statistical program SPSS will be used to conduct a multiple regression analysis to examine the relationship between the independent variable (parents' political beliefs) and dependent variable (students' academic performance) to see if there is an association between the two. I hypothesize that students with parents who have strong political beliefs are more likely to be impacted in their academic performance than students with parents who do not have strong political beliefs. Discovering the impact of parental political belief will open several important avenues of inquiry related to educational outcomes of students.

Jason Whitehair

IL - University of Illinois at Chicago

Discipline: Natural and Physical Sciences

Authors:
#1 Jason Whitehair
#2 Natalia Saldivia
#3 Diego Zelada
#4 Gregory Heller
#5 Ernesto Bongarzone

Abstract Name: Late-onset GALC Deficiency-Induced Susceptibility to Myelin Dysfunction: Insights into MS Pathogenesis

Deficiencies in the lysosomal enzyme galactosylceramidase (GALC) lead to consequent, toxic accumulations of psychosine due to the inability to metabolize it, which causes demyelination of axons in the central and peripheral nervous systems, resulting in motor and neurosensory deficits, paralysis, and death. In the twitcher (TWI) mouse, an animal model of infantile Krabbe Disease (KD) where the GALC gene is excised, treatment with AAV9-GALC gene therapy has been shown to delay the onset of demyelination, correct GALC deficiency, normalize psychosine metabolism, and prolong survival. However, focal microgliotic

demyelinating lesions developed in long-term surviving gene therapy-treated TWI, exhibiting accumulations of psychosine along with local losses of GALC and the AAV episome. These cells participating in late-onset focal lesions may have reverted to an untreated state, similar to those of multiple sclerosis (MS). GWAS analysis revealed a two-fold downregulation of GALC in MS brain lesions, suggesting a role of this pathway in MS neuropathology. Given these similarities, the role of GALC was investigated in adult-onset neurodegeneration. The PLP-Cre-ERT2 floxed GALC mouse was developed as a model for adult-onset GALC ablation in mature PLP+ oligodendrocytes. Data demonstrated that when given tamoxifen (TMX) to induce Cre expression, expression of the GALC enzyme is selectively prevented in mature oligodendrocytes, with animals displaying significant demyelination and decreased locomotion capability. When induced with experimental autoimmune encephalitis (EAE) to cause focal lesions, results showed that animals previously administered with TMX presented noticeably more impairment than their corn oil-treated counterparts. Mice treated with EAE and TMX displayed significant increases in PLP+ myelin debris in the brain and psychosine accumulation, and significant decreases in GALC. The deficiency of GALC within mature oligodendrocytes greatly increased susceptibility to myelin dysfunction. Hence, it was hypothesized that a functional GALC pathway is needed in the adult population of oligodendrocytes to decrease vulnerability to MS.

Sidney-Marie Whitfield

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Sidney-Marie Whitfield
#2 Nick Sbrockey

Abstract Name: The Effects of Storage on the Vitamin C Content of Oranges

This study thoroughly investigates the determination of ascorbic acid (vitamin C) content in commercially available orange juice using titration techniques. The main goal is to establish a reliable and efficient method for determining the ultimate storage conditions that result in the highest concentration of vitamin C, a crucial antioxidant in orange juice that plays a vital role in human health. The experimental approach involves titrating the four different orange juice samples: Frozen, Room Temperature, pasteurized, and Refrigerated. The titration employs 2,6-dichloroindophenol (DCIP) as the titrant, chosen for its ability to exclusively oxidize ascorbic acid without affecting other potential substances. Additionally, DCIP serves as a self-indicator in the titration process. For a substance to function as a self-indicator, it should exhibit one color when in the presence of excess analyte (i.e., ascorbic acid) and a different color when the analyte has completely reacted, which allows for the calculation of the amount of ascorbic acid present in the sample. The study explores the optimization of storage conditions, to enhance the amount of vitamin C concentration. The results indicate that frozen orange juice has the highest concentration of vitamin C.

Jake Whitlock

OK - Oklahoma State University

Discipline: Visual and Performing Arts

Authors:
#1 Jake Whitlock

Abstract Name: NIKE: THE COMPANY THAT CONTINUES to IMPACT MANY GENERATIONS

Often advertisements and design concepts are regarded as unimportant nuisances in our general life. Design has strong, impactful experiences to most people from buying, selling, and decision making as a whole. These positive attributes help companies sell their products by finding ways to connect with their audience and customer. This paper uses examples from different resources on how a simple concept and start up can grow into a multi-billion-dollar idea. Along with this, the paper also discusses specific examples of creative concepts used to grow a business. A simple dream based on a childhood memory can grow into a larger idea such as one of the largest shoes and clothing company nationwide. Through bbuying and selling items such as shoes and clothing, it can be more about the message than the actual purchase itself. The message of a purchase can helps mold the mindset of what an athlete or the general population. This can enable those who are exposed to the message of the company to start thinking of themselves with the same capabilities and strengths that the product says it offers. Nike consistently works remain competitive and keep with the ever-changing fashion industry. Nike has been able to do so with partnering with different organizations and impactful individuals to share their branding and ultimate mission statement of "Just Do It" and focusing on key campaigns such has Jordan which has a world-wide following of collections and novice shoe collectors.
Keywords: customer, selling, creative concepts

Ever Whitlock

TX - Trinity University

Discipline: Humanities

Authors:
#1 Ever Whitlock

Abstract Name: The Curious Case of Sherman M. Stanage: The Rise of Free Speech and Activism on College Campuses in 1960s America

In the late 1960s, Trinity professor Dr. Sherman M. Stanage faced a university investigation—and eventual termination— because of his social activism on and off campus. Dr. Stanage was involved in multiple activist demonstrations against the Vietnam War and regarding student life at Trinity University and at his prior place of employment, Bowling Green State University in Ohio. Stanage also encouraged his students at both universities to fight for what they believed in. This paper uses a significant collection of rarely examined archival documents from the Trinity University Special Collections and Archives to explore the situations that Dr. Stanage found himself in at both Bowling Green and Trinity as a case study into faculty activism and academic freedom in the 1960s. It sets this case within the larger story of the emergence and growth of activism and free speech challenges on college campuses in that era and the effects that resulted from them, such as the development of student rights on college campuses. The issue of free speech on college campuses is still relevant today and has continuously elicited groups to protest both for and against it. By researching the movements of the 1960s, this paper seeks to better understand and conceptualize the importance of free speech advocacy in the past and the ongoing need for it in the present.

Emma Whitlock

IL - Northern Illinois University

Discipline: Natural and Physical Sciences

Authors:
#1 Emma Whitlock
#2 Linda Yasui

Abstract Name: Neuroinflammation Levels Measured by Microglial Cell Activation

Neuroinflammation is an inflammatory response in the brain that can be caused by different stressors such as diseases and/or external factors such as traumatic brain injuries. It is important to note duration and intensity of neuroinflammation levels when determining the impacts of these stressors to the brain environment. During neuroinflammation, a type of immune cell that becomes activated in the brain is called microglial cells. Microglial cells play a role in progression of the pathophysiological effects from the brain stressor. Studying changes in microglial cell shape provides evidence of the degree of neuroinflammation in the brain. Researchers can quantify neuroinflammation based on the visualization of microglial shape changes from highly branched, or ramified, shapes (inactivated microglial cells) to more spherical microglial cell shapes (activated microglial cells). The degree of microglial cell activation elucidates the degree of neuroinflammation in different brain regions after exposure to brain stressors. The goal of this study is to develop an image analysis workflow for microglial cell activation found in 40 µm rodent brain cryosections that were stained using the antibody to microglial cells, iba1, and a secondary antibody linked to Alexafluor 568 to stain microglial cells red. A Zeiss LSM 900 with Airyscan 2 confocal laser scanning microscope was used to acquire image data, and Imaris 10.1 was used to perform 3D rendering and microglial cell segmentation to identify and quantify microglial activation. The workflow we develop will be used to determine the degree of neuroinflammation from stress in rodent model systems.

Nora Whorton

NY - SUNY Geneseo

Discipline: Interdisciplinary Studies

Authors:
#1 Nora Whorton

Abstract Name: Coexistence of Traditional and Biomedical Medicine in West Africa: The Case of Senegal

Along with globalization, the spread of Western medical traditions has been introduced to cultures and people who have had longstanding medical traditions of their own. Traditional medicine is not very common in social discourse in the United States. We tend to have complete trust in our modern Western medical system. However, that is not the case in other parts of the world. Africa has a rich culture where traditional healers have been practicing and honing their knowledge and abilities of spiritual and herbal remedies for years. Unfortunately, Africa also has a deeply rooted history of colonization, and to some degree, still does. Regarding medicine, that meant the imposition and assimilation to the biomedical ways of Western European countries. The research I did in Senegal, during the Summer of 2022, focused not only on how modern and traditional medicines could coexist but also on the importance of them coexisting to provide comprehensive healthcare. The two-fold aim of this research is to first attempt to redefine traditional medicine in Senegal and how it persisted after colonization as well as provide an understanding of the effects and implications of the increasing number of biomedical centers in Dakar, the capital of Senegal, then emphasize the social dynamic between caregivers and patients in both types of medicine. Trust, personal connection, and contextualization of the social and cultural environment of patients being conducive to efficiency in healthcare, could traditional medicine in the case of Senegal, beyond being trustworthy to its people, also remain a plausible solution in fast-growing Senegal as coexistence with a dominant biomedical industry appears inevitable?

Samantha Whyte

WI - University of Wisconsin-Eau Claire

Discipline: Social Sciences

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#2 Ty Dubman
#3 Leah Schilling
#4 Jennifer Muehlenkamp
Ty Dubman
Leah Schilling

Abstract Name: Body Factors Predict Self-Injury Among Sexual Minority College Students

Non-suicidal self-injury (e.g., self-cutting, burning; NSSI) has an elevated prevalence among sexual minorities (Cox, 2016). Body relationship factors may play a strong role as a disregard for the body is needed to intentionally injure it (Muehlenkamp, 2012). Previous studies have found higher body consciousness in sexual minorities than in their heterosexual counterparts, suggesting body factors may be more important to NSSI risk within this community than other factors like depression and stress (Mahon, 2023). The purpose of this study is to examine the differences in body regard between heterosexual and sexual minority college students and evaluate if body relationship factors significantly contribute to NSSI frequency beyond the effects of depression, anxiety, and stress. Participants included 634 students (Mage = 19.85, SD = 1.85; 64.7% female; 84.9% white) and 51.7% identified as a sexual minority, recruited through email and advertisements sent through LGBTQ centers at two Midwestern Universities. We conducted a one-way ANOVA revealing significant differences among all the studied variables (all p <.001). We ran a stepwise hierarchical linear regression to test the study's hypothesis. Sexual Orientation (b = -.17, t = -3.47, p < .001), depression (b =.32, t = 4.13, p < .001), rumination (b = .12, t = 2.07, p < .032), and body regard (b = -.16, t = -2.81, p < .001) were all statistically significant predictors of NSSI frequency. Anxiety and stress were not statistically significant predictors. Body regard explained additional variance in NSSI frequency beyond the effects of the other variables. Therefore, our hypothesis was supported and aligns with existing studies showing that body relationship factors are important to understanding NSSI engagement. Understanding the complex relationship between cognitive emotional factors and body regard is essential for developing effective interventions and support systems to reduce the risk for self-injurious behaviors.

Isabelle Widerberg

UT - Utah State University

Discipline: Social Sciences

Authors:
#1 Isabelle Widerberg

Abstract Name: Beyond the Scoreboard: Cultural Media Analysis of U.S. News Coverage of Spain’s 2023 FIFA Women’s World Cup Win

The research delves into an analysis of complex dynamics surrounding how U.S news sources covered the controversy involving the Spanish women’s soccer team's victory in the 2023 FIFA Women’s World Cup, where the Royal Spanish Football Federation (RFEF) president, Luis Rubiales, kissed player Jennifer Hermoso without consent. The study employs a cultural studies perspective to analyze 30 U.S. news articles published between August 20, 2023, and September 23, 2023. The analysis uncovers eight prominent themes, addressing two main research questions. The first question investigates how U.S. news coverage frames Spain’s women's team incident. The findings reveal a multifaceted perspective, including a comparison within the American women’s soccer team, negative framing of key figures within the RFEF, a conceptual shift in Spanish soccer culture, and the supportive role of the Spanish government in promoting gender equality. The second question delves into how gender roles are discussed by U.S. news coverage of Spain

winning the women’s World Cup. The results highlight discomfort surrounding discussions of equality, integration of cultural norms, and the notion that winning serves as a catalyst for change in women's soccer. The analysis contributes to valuable insights into the intersection of sports, gender, and culture, providing a foundation for further research and discussions in sports media representation. The paper sheds light on the process of social change within the realm of women's soccer from an outside culture of its own, so not only does it contribute to the conversation of gender dynamics in sports but also the framing of an outside culture from a U.S. perspective.

Gaby Widjaja

CA - California State Polytechnic University - Pomona

Discipline: Social Sciences

Authors:
#1 Gaby Widjaja

Abstract Name: Beyond Individuals: Understanding COVID-19 Risks through a Multigenerational Household Lens

Existing studies emphasize the connection between individual risk perception and COVID-19 protective behaviors. However, few studies have examined how individuals assess their risks and vulnerabilities for their households. This study investigates how a member from crowded multigenerational households (MGH) evaluates risks their households are vulnerable to—or what I call "collective risk." I will also examine the protective measures adopted to mitigate these risks and feelings of vulnerability. Methods: The study will use the constant comparative approach to analyze preliminary data from interviews with 50 multigenerational households residing in California conducted in the Fall of 2021 and Fall of 2022. To analyze collective risk perception, the case study focused on measures such as households' sociodemographic information, risk factors, and harm reduction strategies. Findings: Findings reveal that individuals are mindful of their household members' vulnerabilities. Additionally, age, preexisting health conditions, and occupations (specifically, public-facing occupations) drive high COVID-19 vulnerability perception within a household. Discussion: These insights highlight that perceptions of risks are not formed individually; rather, it is a social process—one where members are mindful of the health and actions of others in their household when accounting for what makes them most vulnerable to COVID-19. Thus, understanding what MGH points out as risks should be understood as forming out of a relational process. Conclusion: Knowing this is useful in shaping communication strategies for future outbreaks, where risk perceptions affecting the whole household may strongly influence health behaviors and mitigation strategies.

Aris Williams

LA - Louisiana State University, Baton Rouge

Discipline: Natural and Physical Sciences

Authors:
#1 Aris Williams
#2 Yan Chen

Abstract Name: Quality and Yield Responses of Louisiana Tea to Nitrogen Fertilizer Treatments

AbstractAs the tea industry in Louisiana expands, growers need reliable information to make important fertilization decisions. We have hypothesized that a combination of organic and synthetic fertilizers would

have the highest yield; and that a combination of organic and synthetic Nitrogen in the mid-range of Nitrogen totals will provide the best flavor and desirable chemical content. 'Camellia sinensis', a perennial tea shrub that is cultivated for its young leaves, was at the center of our research and the species that we applied a combination of organic and synthetic fertilizers to. There is currently no research-based information on the correlation between nitrogen fertilization requirements for tea cultivation and how they would pertain to the soil and climatic conditions of Southeast Louisiana. We aim to bridge this gap through this research project; as well as expand our region's knowledge of the tea industry and the physiological aspects of growing 'Camellia Sinensis'. Growers can use the information to avoid over-fertilization, which can lead to excessively acidic soil conditions that burn the plant, and under-fertilization, which can lead to reduced yield and plant health.

Christopher Williams

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Chritopher Williams

Abstract Name: Moving the Canon: A History of Motion Graphic Design

Motion graphic design plays a ubiquitous role in our daily visual experiences, influencing everything from advertisements to entertainment spectacles like Beyoncé's Renaissance World Tour. However, despite its pervasive presence, many design students find motion design intimidating. This reluctance may stem from the historical exclusion of motion design from the design canon. In this exploration, we delve into the rich history of motion graphics, tracing its evolution from early pioneers like Émile Cohl and Winsor McCay to technological milestones such as the multi-plane camera and colored cinematography.

Kaitlyn Williams

TX - Texas Woman's University

Discipline: Humanities

Authors:
#1 Kaitlyn Williams

Abstract Name: Analysis of Trauma in Toni Morrison’s "Home"

This analysis explores specific methods that the main character’s in Toni Morrison’s Home used to heal from both racial and circumstantial trauma. Home is set entirely after the events and conflict of the Korean War, but before the National Research Act of 1974 which protected citizens from being subjected to unethical experimentation. Both war (its aftermath) and human experimentation are circumstantial traumatic events faced by the main characters of Morrison’s novel. These events are compounded by the longstanding existence of racism and white supremacy that appear to leak into the everyday experiences of the main characters. However, Morrison indirectly addresses how the characters find themselves healing from the experiences of their past and their present traumas. She offers evidence of a longstanding tradition within the Black community: homegoing, kinship, and networking which are used as a form of renewal and protection. These three strategies are crucial to how the characters in Home begin to heal from traumas which, historically and systematically, Black Americans have faced as a reality of being expendable in the eyes of the American government. This has led to an increased uncertainty of Black Americans’ places as a free

people in the United States. The struggles faced by Morrison's characters reflect a breakdown of communication; their perceived failures or blunders in life are not entirely their fault. Morrison's characters in Home only had the tools to make their situations worse such as: abuse of alcohol and the lack of education. However, through the practice of homegoing, kinship, and networking they begin to validate their experiences with methods unique to their community effectively filling in the spaces that a lack of resources and protective rights had left.

Maya Williams

OK - University of Central Oklahoma

Discipline: Education

Authors:
#1 Maya Williams-Furaha

Abstract Name: Power Within a Broken System: Expressing The Black Boys Intersectional Experience within Special Education

Oklahoma's Education rating within the United States falls at 49th out of 50th in the nation. Of the number of potential intersections, focusing on race, gender, and (dis)ability will offer an intersectional analysis deconstructing the structures of power (i.e. interpersonal, disciplinary, cultural, and structural) within the special education system of Oklahoma's Publicly funded schools and programs. Given the increased pitfalls, intersectionality highlights how certain groups, including African American boys diagnosed with disabilities, suffer the greatest criminalization and marginalization. One sample study that demonstrates these concepts comes from Dr. Hani Morgan, "Misunderstood and Mistreated: Students of Color In Special Education". This study explores the intersectional experiences of black students in special education. He focuses on how poverty assists in creating a harsher environment for students within these programs. My study is similar in that I focus on the experiences of black students but specifically young black men. I aim to further explore their socio-economic status to understand how this may affect their experiences within the four structures of power. I utilized surveys as a method to collect qualitative information. Data from the surveys collected create an oral history and represent what it is like to be these affected minds.This project creates a deeper understanding of the challenges involved in young black men's experiences in special education. This project also produces a creative message that can be used to engage a wide audience and promote the importance of integrating research into policy and culture of special education.

Weston Williams

TN - Middle Tennessee State University

Discipline: Natural and Physical Sciences

Authors:
#1 Weston Williams

Abstract Name: Removal and Bioconversion of Pharmaceutical Waste Created by the Production of Antibiotic Penicillin, and the Spread of Antibiotic Resistance in the Environment

Since its discovery Penicillium sp. has been a highly utilized cure-all for many bacterial caused illnesses, this is in no doubt due to penicillin's antimicrobial property, Penicillium chrysogenum is a mold like growth that prevents reproduction of gram-positive bacteria. In recent years antibiotics like penicillin have seen increased use and production on a national scale. Industry scale production of penicillin is a tenuous process of

purifying and harvesting bio-active penicillin. The synthesis and production of penicillin involves the use of various chemicals, reagents, and solvents. The waste generated from the chemical processes includes unused or spent chemicals, byproducts, and leftover biomass growth from the fermentation process. The release of these products into wastewater creates many ecological concerns and challenges. Primarily the spread of the antimicrobial resistance gene in bacteria. A development in bacteria where a sublethal exposure to antimicrobial properties is subverted and is ineffective to bacterial growth. Potential spread of the antimicrobial resistance gene would not only occur in wastewater but spread to livestock and crops through irrigation and finally towards humans. This project is aimed at studying biological treatment and conversion of these toxic antimicrobial wastes. Some of the methods discussed include Incineration, Chemical oxidation, Biodegradation and Absorption. These processes aim to remove the bioactive function of the byproduct and seek to create an ecologically safe product. Ideally the solution to the pharmaceutical waste issue would be not only environmentally stable but also economically viable. The proposed strategy should encompass proper disposal practices, advanced waste management systems, and innovative treatment methods.

Matthew Williams

UT - Utah Valley University

Discipline: Natural and Physical Sciences

Authors:
#1 Matthew Williams
#2 Elena Laricheva

Abstract Name: Enhancing Binding Free Energy Prediction by Integrating Molecular Dynamics and K-Means Clustering into Protein-Ligand Docking

Protein-ligand docking is a computational method widely used in drug discovery to predict binding affinities of small molecules to target receptors. However, despite its widespread use, the method has inherent limitations that can lead to false negative and false positive results affecting its reliability. False positives occur when docking predicts strong binding affinities that experimental evidence does not confirm, while false negatives arise when the method fails to identify potent binders validated in experiments. These inaccuracies stem from multiple factors including limitations in scoring functions and search algorithms. But a more significant issue is the oversight of protein dynamics, specifically receptor flexibility. To address this limitation, flexible docking methods which partially account for receptor flexibility, have been developed, but they come at a considerable computational cost.In this project, we incorporated molecular dynamics simulations and k-means clustering into protein-ligand docking to improve prediction of binding energies in two different protein-ligand systems: one comprised of human dopamine 2 receptor, which is a crucial therapeutic target for neuropsychiatric disorder, and another one containing human serum albumin, which is a known drug transporter.Our findings demonstrate that sampling conformational states through molecular dynamics and clustering followed by docking to representative clusters offers a more accurate assessment of binding energies. Importantly, this enhancement in predictive capability comes with minimal additional computational expense.

Christina Williams

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Christina Williams

Abstract Name: Ancient Greece: The Impact on Modren Typography

Ancient Greece has had a major impact on the modern world, from architecture, fashion, literature, history and design. One of the biggest impacts Ancient Greece had on modern society was the development and evolution of the modern alphabet.The evolution of typography dates back to the discovery of the first written language, the first alphabet and the evolution of the modern alphabet. This paper will explore the impact and influence Ancient Greece has had on the development and evolution of the modern alphabet,typography, typefaces and type based design.

Christiana Williams

TX - Lone Star College

Discipline: Interdisciplinary Studies

Authors:
#1 Christiana Williams

Abstract Name: Lighting for Our Home and Galaxy: NASA's LED Technology and its Benefits for Children with ASD

This study examines the efficacy of NASA developed light-emitting diodes for the use with children with Autism Spectrum Disorder to help realign circadian rhythms for sleep regulation. Much like the astronauts at NASA, children with autism often experience difficulty with sleeping due to a lack of melatonin, which can lead to altered circadian rhythms thus causing poor sleep quality, low levels of productivity, and higher levels of anxiety and aggression. This analysis applies the work of George Brainard, NASA project manager, Daniel Shultz and the National Space Biomedical Research Institution in order to uncover how LED modules were developed and installed. Further scholars include lighting experts, Dave Bisbee and Connie Salma and their collaborative circadian lighting study from the Sacramento Municipal Utility District (SMUD), as well as peer-reviewed articles that examine sleeping disorders in autistic children. Building upon this research, this analysis applies NASA's research in LED technology as a foundation in creating innovative technology that can accommodate children with autism while using SMUD's research as a case study of its everyday application. The results suggest that LED technology has the potential to improve the quality of life for children with autism.

Christina Williams

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Christina Williams

Abstract Name: Sustainability: Green Design

Nature, in its broadest sense, encompasses the external world in its entirety, shaping ourdaily lives and influencing everything from culture to technology. As humans increasingly contribute to environmental degradation, from deforestation to pollution, the need for sustainable practices becomes imperative. Sustainability, defined as the avoidance of resource depletion to maintain ecological balance, extends its

influence to various sectors, including graphic design. This paper investigates the role of graphic designers in promoting sustainability through their creative choices, highlighting the potential for design to raise awareness about environmental issues and encourage responsible practice The purpose of this paper is to explore the impact sustainability has on our environment, graphic design and how that is reflected in our world.

Jenna Williamson

CA - University of the Pacific

Discipline: Humanities

Authors:
#1 Jenna Williamson

Abstract Name: Emotional Dynamics, Escapism, and Storytelling in Haruki Murakami's "Scheherazade" and "Kino"

Translated into English from Japanese and published for western audiences in 2017, Haruki Murakami's short story collection entitled Men Without Women explores complex dynamics between men and women, wherein men become emotionally orphaned by women in their orbit. Many of these men's emotional states center around receiving love, comfort, and sexual intimacy from women, and hardly any of the men in these stories appear autonomous in their relationships. Throughout both "Scheherazade" and "Kino," Murakami forges one inextricable link between femininity and emotional power, and another between masculinity and emotional inferiority. These dynamics stay largely the same throughout both short stories, despite the varied dynamics that each story entertains. Nonetheless, both men and women in these texts express strong desires to escape their circumstances, and rely on various forms of escapism to cope with their dissatisfaction for the present. In portraying these dynamics in both men and women in "Scheherazade" and "Kino," Murakami perhaps suggests existential loneliness to be a universal part of the human condition, even if men and women express their misery in differing ways.

Ellie Williamson

WI - University of Wisconsin-Eau Claire

Discipline: Natural and Physical Sciences

Authors:
#1 Ellie Williamson
#2 Maddie Mueller
#3 Caitlin Patrick
#4 Chelsea A. Ortiz-Jimenez
#5 Jennifer E. Smith

Abstract Name: Effects of anthropogenic activity on stress physiology and its consequences for habitat selection

Human activity represents a novel environmental challenge for wildlife, even for human-tolerant species that reside in human-dominated landscapes. Our long-term study of California ground squirrels (Otospermophilus beecheyi) has previously documented that exposure to human activity (e.g., anthropogenic noise, walking of domestic dogs) increases vigilance, disrupts group foraging and other collective behaviors. Since human activity varies with space and time, we wanted to elucidate potential differences among the stress responses

of individuals exposed to different levels of human activity. To measure this, we collected fecal samples from individual squirrels after their first capture and subsequent release of the week from two populations that differ in their level of human disturbance (e.g., pristine versus disturbed) for over a decade. After each field season, we extracted fecal glucocorticoid metabolites (FGMs) from fecal pellets. In the lab, supernatants were assayed using a fully validated enzyme-linked immunoassay (ELISA) kit to assess the concentration of FGMs. We found that individuals residing at our human-disturbed study site had significantly higher FGMs than those at our more pristine study site. We also found that FGM levels were repeatable over time for individual squirrels residing at the disturbed site. Our findings offer insights into the relationships among anthropogenic disturbance and stress physiology over small temporal and spatial scales.

Caleb Willis

GA - Kennesaw State University

Discipline: Engineering and Architecture

Authors:
#1 Caleb Willis

Abstract Name: Connect to the Site

With technology advancing rapidly in recent generations, it appears that the relationship between the architect and the site has only grown thinner. Working from home and technological advancements have created an environment that loosens the grasp that architects have of the site. This had led to a disconnect from the environment that we work in, creating infrastructure that is not sustainable for the future generations to inhabit. With this loss in connectivity, this project aims to reconnect the architect to their site, as they shall be issued land for development, compared to a building. With these points, guidelines are followed to improve the quality and consistency of the project. How can we make our environment, built and living, last? How can we provide our designs with the necessary technology to stick around for the next generation? What do we take and leave behind in a construction environment? How can we become more responsible for our site? This project aims socially as well, as the architect must be interwoven with the local inhabitants and the site's developers, for the sake of efficiency, and sensitivity. With this, the site of the Atlanta Constitution Building is studied and examined for its potential to the southern portion of Atlanta as a spark of development for the area to enhance and enrich the overall abandoned environment that this location exhibits. With this site being on the cornerstone of an active street and a quiet environment, while also providing enough space for new developments, it is a perfect opportunity to rebirth the spirit of downtown Atlanta. This approach will solidify the ways new buildings can be constructed while also showcasing how old ones can be redone, comparing technologies between these techniques as the Atlanta Constitution Building serves as a benchmark for this methodology.

Baile Willmon

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Baile Willmon

Abstract Name: Music Academy Design to Promote Healing, Growth, and Social Interaction through Music

For many years, the lack of emphasis on music education has left classrooms dated and inefficient. The lack

of attention not only affects classroom technology, but also function, comfort, aesthetics, and social interactions. The purpose of this project is to create and design an academic environment that promotes healing, growth, and learning through music. Music education has shown that people who learn to read and play music have better self-discipline, creative thinking, emotional development, and societal success. Interviews with music education professionals concluded that the most important aspects of music classrooms are acoustic applications, new music technology, and furniture. Many studies also indicated that the importance of creating a calm and homelike environment with few distractions and access to natural lighting can improve mental health. Based on research findings, this project incorporates professional acoustic applications and designs spaces to enhance social interactions, implement new technology, and provide dedicated areas for therapy. Windows bringing in natural lighting are abundantly incorporated into the overall building to improve mental health, increase energy efficiency, and bring biophilic design within the space. The use of green hues and large moss walls provides users with functional and healthy learning environment benefits like decreasing mental stress, reducing blood pressure, and dampening sound by absorbing the reverberations. Other acoustical materials such as carpets, acoustic panels, acoustic ceiling treatments, and upholstery fabrics help to minimize the noise problem in this music academy. Additionally, materials like laminate, tile, and terrazzo are installed throughout the facility which are durable, hygienic, and easy to clean. In conclusion, acoustic considerations and a biophilic design approach foster a functional, safe, and interactive learning environment by adding vibrancy to the community through the power of music.

Kristina Wilson

NY - St. John Fisher College

Discipline: Natural and Physical Sciences

Authors:
#1 Kristina Wilson
#2 Magdalena Magaj
#3 Stefanie Redemann

Abstract Name: The role of cls-2 during chromosome segregation in C. elegans

During mitosis, the mitotic spindle functions to faithfully separate chromosomes which is critical for the survival of the organism. Any error in this process could lead to cancer or developmental abnormalities. Recent publications have established that the microtubules between the segregating chromosomes, the spindle midzone, is critical for chromosome segregation. Prior research has suggested that sliding forces in the midzone may be generated by microtubule polymerization. Although, we lack significant information about how the spindle midzone generates forces supporting chromosome segregation during anaphase. One proposed model for midzone organization and function suggests that microtubule polymerization in the midzone may be regulated by CLASP in order to produce the force needed to segregate chromosomes. Previous research strongly suggest that CLASP is important for formation of microtubules in the midzone. However, it is unclear whether this is due to support of microtubule growth or nucleation by CLASP. We will study the role of CLASP by depleting the C. elegans homolog cls-2 by RNAi during the first cell division in the C. elegans embryo. We quantified overall changes in spindle assembly and chromosome segregation as well as changes in microtubule dynamics, such as growth-rates and turn-over. In addition, we will determine the effect of cls-2 (RNAi) on the localization of other midzone proteins. The results of this study will lead to a better understanding into the mechanisms that are governed by cls-2.

Sarah Wilson

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Sarah Wilson

Abstract Name: Killers of the Flower Moon: The Osage Murders and Sexual Conquest

The Osage murders were a series of murders that occurred in Osage County Oklahoma from the 1910s to the 1930s. In 1865, the Osage tribe was forced to move west to prepare for white settlement. The tribe purchased their own land and mineral rights which proved extremely beneficial whenever the largest oil deposits in the United States were discovered in 1906. The murders were committed by the white financial guardians assigned to the Osage people after they struck oil. During the time of the murders, the federal government declared an official number of 24 victims, but more recent investigations place the number of victims in the hundreds. Sexual conquest and colonization created a climate the exploitation of Native women through the ideas constructed by European powers of Native women. From as early as the 16th century, images were produced of either the “evil” Indigenous woman naked holding the head of a white settler, or the complete opposite, beautiful voluptuous women sitting atop food and gold. These images painted a picture of a woman waiting to be colonized through the stripping of her resources or the colonization of her womb. During the same time, there was a common discourse such as that of the English Comedy Eastward Ho! Where men depict a sexual fantasy of creating “English-faced children”. This presentation will cover Oklahoma's history as well as the direct causes and effects of the Osage murders and how the 2023 movie based on the 2017 book Killers of the Flower Moon which covers the murders has changed Oklahoma and the conversations around the Native American Tribes.

Lakota "Wyatt" Wilson

NC - Western Carolina University

Discipline: Humanities

Authors:
#1 Lakota "Wyatt" Wilson

Abstract Name: An Ethnographic Sociolinguistic Approach to Vowel Breaking in ‘Smalltown,’ NC

The field of sociolinguistics attempts to examine the social consequences of language by examining language with the eye of an anthropologist (ethnographer). Speech patterns within certain speech communities or Communities of Practice (CoP) contain ethnographic information about that community and the conversations that take place in particular local spaces. This study examines the dialect feature of vowel breaking in a small town (pseudonymed “Smalltown”) in North Carolina (USA). Vowel breaking, or diphthongization, occurs in many Southern American dialects where a single vowel sound (monophthong) becomes a diphthong with two vowel sounds. The speakers interviewed for this study include the small-town business owners and patrons of Trudie’s Classic Cuts and Carpenter’s Jewelry in Smalltown, NC. The specific research questions examined were 1. the frequency of vowel breaking in Smalltown speech and 2. the kind(s) of ethnographic or cultural information transmitted through this dialect feature. Methods of data analysis included constructing a table of Standard English, non-Standard English, and ambiguous examples (Gass & Selinker 2008, 41-43). Hymes’ (1974) sociolinguistic research methodology, the SPEAKING method was used to organize social functions related to vowel breaking. Data showed that vowel breaking does occur within the CoP of Trudie’s Classic Cuts and Carpenter’s Jewelry within particular syntactic environments, including phrase-finally, and in emphatic or instructive discourse contexts. Finally, the study will explore the ethnographic consequences of vowel breaking in these local spaces in terms of community-specific norms for both economic and interpersonal/social transactions.

Zach Wilson

WI - University of Wisconsin-Parkside

Discipline: Social Sciences

Authors:
#1 Markie Peroutka

Abstract Name: Disentangling How Projections from the Ventral Pallidum to the Shell of the Nucleus Accumbens Regulate Non-Homeostatic Feeding

Both humans and non-human animals often consume food even when they are satiated. Thus, our overall goal is to understand how specific brain structures control overeating, or non-homeostatic feeding. Here, we assessed how chemogenetic activation or inactivation of the projections from the ventral pallidum (VP) to the shell of the nucleus accumbens (AcbSh) affected motivation to work for food and consume sucrose in non-food deprived female rats. In the 23 rats, we used a dual vector approach where Cre-dependent adeno-associated viruses (AAV) containing genes for the expression of excitatory or inhibitory designer receptors exclusively activated by designer drugs (DREADD) were injected bilaterally into the VP. Additionally, retrograde AAV Cre were bilaterally injected into the AcbSh. This dual vector approach resulted in specific expression of excitatory or inhibitory DREADD in neurons projecting from the VP to the AcbSh. DREADD were activated via intraperitoneal injections of the DREADD agonist clozapine-N-oxide (CNO). 12 control rats received only CNO injections. In the first experiment, we measured motivation to work for food using a progressive ratio task after CNO injection. In the second experiment, we assessed food consumption by measuring the intake of a 20% sucrose solution after CNO injection. Our results indicate that the selective chemogenetic activation or inhibition of specific projections from VP to the AcbSh did not have significant effects on motivation to work for food. However, chemogenetic activation of projections from the VP to the AcbSh resulted in a decrease in 20% sucrose consumption. Conversely, chemogenetic inhibition of projections from the VP to the AcbSh resulted in an increase in sucrose consumption. Taken together, these results indicate that the studied pallido-striatal pathway is not implicated in modulating motivation to work for food but regulates food consumption in a non-deprived status.

Jada Wilson

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Jada Wilson
#2 Christina Meyer
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#5 Nyzil Massey
#6 Thimmasettappa Thippeswamy

Abstract Name: Beta Waves in Pre-ictal Stages of Rat Seizures

Organophosphates (OPs), such as diisopropyl fluorophosphate (DFP), are toxic chemical substances that are the main component of pesticides. OPs can harm the human nervous system and brain by irreversibly inhibiting acetylcholinesterase (AChE), a key enzyme in helping the nervous system function correctly. AChE catalyzes the hydrolysis of acetylcholine into acetic acid and choline, which lets the neuron return to its resting state after activation. Inhibiting this enzyme leads to over-excitation of neurons that trigger seizures in the brain. As a result of exposure to OPs, antioxidants decrease and free radicals increase in the

body creating an imbalance and leading to oxidative stress that can cause cell and tissue breakdown. In this study, we will be investigating the effect of DFP and the treatment with NADPH oxidase inhibitor, mitoapocynin (MPO), on rat brain activity by examining electroencephalogram (EEG) scans and the different frequency bands that can be seen in the pre-ictal period of a seizure. Alpha, beta, delta, gamma, and theta waves are seen throughout brain activity, but we will focus on beta waves, as it has been seen that in preictal stages in humans, voltages of beta waves increase the most. We hypothesized that beta waves will have a greater increase in voltage in the pre-ictal stage than the other frequency brands. EEG power bands will be compared between DFP+Veh and DFP+MPO to determine if NADPH oxidase inhibition affects preictal seizure activity. Acknowledgment: This project is supported by the National Institute of Health/NINDS through the CounterACT Program (R21 NS120916)

Sarah Wilson

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

Authors:
#1 Sarah Wilson
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#4 Mohammed Ghalib
#5 Briana De Miranda

Abstract Name: Trichloroethylene impairs astrogenesis and neurogenesis as a mechanism of Parkinson's neurotoxicity

Pathologically, Parkinson's Disease (PD) is characterized by the loss of dopaminergic neurons in the substantia nigra and non-motor symptoms such as cognitive impairment and anosmia (loss of smell). The organic solvent trichloroethylene (TCE) is an environmental contaminant that is correlated to increased PD risk as well as long-term cognitive deficits. Our lab recently found that TCE caused a reduction of neurogenesis, which is the generation of new neurons in the adult brain and occurs in the subventricular zone of the lateral ventricle and the subgranular zone of the dentate gyrus. In the subventricular zone (SVZ), astrocytes act as neural stem cells, proliferating along the lateral ventricles to form immature precursor cells and neuroblasts that migrate to the olfactory bulb. To this end, we hypothesized that TCE decreases astrogenesis in the SVZ, which reduces the neural stem cell population and impairs neurogenesis as a mechanism of toxicity that contributes to non-motor PD pathology such as anosmia. To investigate this, we exposed 12-month-old male and female wild-type mice to 100 ppm TCE or filtered room air for 12 weeks. TCE-exposed mice showed a significant decrease in astrocytes in the subventricular zone ($p= 0.0096$), indicating that the proliferation of astrocytes was impaired. We tested this further in vitro with primary cultured astrocytes treated with 500uM TCE for 24 hours, which showed a significant decrease in Ki67 ($p=0.0032$), a common proliferation marker. In conjunction, we found that TCE-treated primary astrocytes had significantly increased p21 expression ($p=0.0015$), a senescence marker, suggesting that the reduction of astrogenesis induced by TCE was caused by senescence rather than overt toxicity. Together, these data suggest that reduced astrogenesis caused by TCE exposure impairs neurogenesis in the SVZ, which may explain how inhaled toxicant exposure contributes to certain non-motor PD symptoms such as anosmia.

Michael Wilson

VA - Virginia Polytechnic Institute & State U

Discipline: Natural and Physical Sciences

Authors:
#1 Michael Wilson
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#5 John Hoben
#6 Ryan Stewart

Abstract Name: Comparison of Greenhouse Gas Emissions from Four Major Soybean Production Areas in Virginia

Understanding how agricultural practices affect greenhouse gas (GHG) emissions from agricultural fields is important to establishing a system for farmers to benefit from carbon credit programs. Soybean cropping systems are an excellent model for examining the interactions of crops, microbes and GHG emissions. The objectives of this project are to: (1) compare GHG emissions from four major soybean production areas in Virginia, and (2) explore the contribution of soil microbes to GHG emissions. We used five representative soil samples taken to a depth of 10 inches from 11 soybean research fields in four major soybean production areas in Virginia. DNA was extracted from all 55 soil samples and the V4/V5 regions of the 16S rRNA gene were sequenced. Microbial taxa were identified at the genus level using R. Each sample was incubated under 40%, 60%, and 80% water filled pore space (WFPS), and GHGs were measured using a Gasmet DX4040 FTIR Gas Analyzer.Our results show that CO2 (99.1762%, 584.403-7434.718 ppm), N2O (.7263%, .081-179.433 ppm) and CH4 (.0975%, 0-161.237 ppm) are the three major GHG emissions from the soybean fields. Significant differences in CO2 and N2O emissions were found between locations with Orange having the highest and Warsaw having the lowest CO2 emissions. In addition, 80% WFPS had the highest level of N2O emissions among locations. Finally, genera were significantly correlated with N2O, CO2, and CH4 across locations. These correlations varied in significance within location and by WFPS treatment, with most of the significantly correlated genera showing positive correlation for each GHG emissions and some showing negative correlation for CO2 and CH4 emissions. This project provides a foundation to further examine how agricultural practices contribute to GHG emissions and how soybean might be utilized to reduce agriculture’s carbon footprint.

Spencer Wilson

IL - Eastern Illinois University

Discipline: Business and Entrepreneurship

Authors:
#1 Spencer Wilson

Abstract Name: The Effect of Personal Income on National Park Attendance

Spencer WilsonEastern Illinois University, Charleston, IL Abstract There are 63 national parks in the United States and its territories. Previous economic research on national park tourism has focused on parks in other countries, especially those found in Scandinavia. This article uses data from both the United States National Park System (NPS) as well as the Bureau of Economic Analysis (BEA) to test the impact per capita income has upon national park attendance levels. The article also explores the impact that other variables of interest, such as weather and geographic location, have upon these attendance levels to further the understanding of the economics of national park tourism. Using regression analysis, this article attempts to explain if national park visits are a luxury item or not. The NPS promises to protect the country’s natural beauty for “this and the future generations.” The results of this article will show if that promise applies to people of all income levels.

Cooper Wilson

MN - St. Olaf College

Discipline: Health and Human Services

Authors:
#1 Cooper Wilson
#2 Colton Collum
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Colton Collum
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Abstract Name: Analgesia and Performance Anxiety in Division III Football Players

The analgesic response as a result of performance anxiety has been shown in endurance athletes; however, there is a gap in research on football players. The goal is to investigate the physiological responses to performance-related scenarios, which may lead to a better understanding of how analgesia manipulates pain perceptions. The purpose of this study was to analyze the effects of nociception and presence of analgesia between football practice and game settings. Prior to testing, subjects completed a consent form and demographics. Subjects arrived shortly before they went onto the field for warm-up. Upon arrival, subjects passively drooled 50 microliters of saliva into a test tube, and completed the State-Trait Anxiety Inventory (STAI) to assess their mental status. For the cold pressor test (CPT) subjects immersed their hands in ice water, reported pain levels on a scale of 0-100. Pain ratings were recorded after 15s, 30s, and every 30s thereafter for a maximum of 3 minutes. They could withdraw at any time. Subjects ranged from 18 to 23 years of age (M = 20, SD = 1.36). CPT data analysis revealed subjects's mean pre-practice pain ratings were higher than in other conditions (M = 42.4). There was a significant difference between pre-practice and post-practice pain ratings at 90s (p = .0016) as well as mean pre-practice and post-practice ratings (p< .001). The highest pain ratings experienced were higher in pre-practice (M = 60.16) than in pre-game (M = 52.49), post-game (M = 52.31), and post-practice (M = 49.71). Mean STAI scores were higher pre-game (M = 69.9, SD = 15.6) than pre-practice (M = 62.3, SD = 16.2). With higher anxiety scores, the pain responses were lower prior to competition compared to practice. These findings introduce increased understanding of analgesic effects on pain perception under pressures of a game setting and stress.

Ty Wilson

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ty Wilson
#2 Amita Kaundal

Abstract Name: Isolation of Plant-promoting bacteria from the rhizoshpere of hybrid buffaloberry Shepherdia x utahensis

Climate-induced environmental stresses and the increased use of fertilizers to meet the increasing demand for food significantly threaten food production and soil health. In natural environments, microbes in the soil are vital for plant growth and development. Their presence in the soil increases nutritional availability for plants, particularly those living in harsh conditions. A plant's microbiome, especially the underground, plays a significant role in its growth and development and mitigates environmental stresses. Idaho and Utah are particularly challenging due to extreme temperatures and arid soil. However, despite these problematic ecological factors, the native plants can thrive. Here, we are exploring the rhizosphere microbiome of

Shepherdia x utahensis ‘Torrey,’ a hybrid of two highly drought-tolerant buffaloberry species, S. argentea and S. rotundifolia native to the Intermountain West region of the US to isolate plant growth promoting bacteria. In this study, we isolated plant growth-promoting bacteria from the rhizosphere of hybrid buffaloberry. Root samples of hybrid buffaloberry were collected from three locations in Utah: the USU campus, Greenville Farm USU, and the USU botanical garden, Kaysville. The rhizosphere was removed from these root samples and pooled together. The bacteria were isolated twice on six different bacterial growth media, including media to isolate bacteria with ACC-deaminase activity. The isolated microbes were then purified using the streak plate method. Fifty-nine unique isolates were selected based on morphological characteristics and tested for five plant growth-promoting traits. 24 bacteria could show the ability to fix nitrogen, 28 produced a siderophore, 25 could solubilize phosphate, 15 show protease activity, and 23 produced catalases. IAA production and ACC deaminase assays are in progress. The isolates will be identified by 16S rRNA Sanger sequencing. The shortlisted bacteria will be tested on Arabidopsis thaliana for growth promotion.

Francesco Gabriel Winandar

IA - Iowa State University

Discipline: Engineering and Architecture

Authors:
#1 Gabriel Winandar
#2 Gustavo Miliao
#3 Raquel Rainier
#4 Cicero Pola

Abstract Name: Laser Induced Graphene Ion-Selective Sensors and Supercapacitors

The effectiveness of a sensor to detect specific ions depends on its surface wettability, whereas the effectiveness of a supercapacitor is characterized by its ability to fulfill a charge-discharge cycle when a charge is applied. The current method of producing ion-selective electrodes is through a time-consuming chemical treatment process or physical methods that lack the fine-tuning capability to determine efficacy and performance and require additional steps before the desired characteristics are met. Supercapacitors are created using various processes, such as chemical or physical routes, that are more expensive and harder to manufacture on a larger scale. Because of this, we demonstrate that the ion-sensing electrodes and supercapacitors can be fabricated using a cheaper and easier method, where the fabrication and adjustment of wettability is done in one step, such that the Graphene is induced onto the substrate by laser and its performance is unaffected. Laser-induced graphene (LIG) is a highly conductive material fabricated through the photothermal conversion of polyimide substrate, using a CO2 laser in our study specifically, into a graphene-like material with high electrical and thermal conductivity. This one-step direct-writing method can fabricate platforms for developing sensors and supercapacitors. This versatile material can be easily tuned and modified to make its characteristics suitable for the intended task, expanding considerably the applications. By tuning the wettability of the LIG during the laser induction process, it has been found that ion-selective sensors present a better potential stability in detecting a target ion within an environment of interfering ions while reducing fabrication time and cost. Furthermore, the LIG supercapacitors were effective in a charge-discharge cycle when an electric charge was applied.

Sophie Wingo

KY - University of Kentucky

Discipline: Humanities

Authors:

#1 Sophie Wingo

Abstract Name: Rebranding Spain's Difference: A Study of Franco's Spain in the 1960s Through Postcards

Spanish beaches, bullfights, and royal palaces are the subjects of various Spanish postcards dating from the 1960s from the University of Kentucky Libraries Special Collections Research Center. On the surface, these postcards simply portray popular tourist attractions; however, a critical and visual analysis of these postcards revealed how they functioned as tools used to reinvent Spain's global image. From 1936 to 1975, Spain was controlled by General Francisco Franco through a fascist, dictatorial regime. Decades of political and economic isolation led to an inflation crisis by the 1950s, forcing Spain to reopen to the outside world in order to survive. No other factor was as critical in improving Spain's image and economy than tourism. During the Spanish tourism boom in the 1960s, the Ministry of Tourism and Information adopted the slogan "Spain is different" not only to signify that Spain was different from other Western European nations due to Spain's exotic and unique culture and traditions, but also that Spain was different from what it once was during the first decades under Franco. While the slogan "Spain is different" was written on various items for sale to tourists, the slogan was also conveyed visually through postcards. Analyzing this collection of postcards in the context of Franco's dictatorship and the Spanish tourism boom allowed for a deeper understanding of how the slogan "Spain is different" was communicated through these postcards to distract tourists from Franco's oppressive regime and instead shift their focus toward the duality between modernity and tradition that existed simultaneously in Spain. *This presentation will be given in Spanish.

Dean Wink

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Dean Wink
#2 Ethan Hensel
Ethan Hensel

Abstract Name: Finding Sustainable Solutions to Shoreline Erosion using Detailed Slope Measurement with a Laser Tool

Shoreline erosion is a growing issue along ocean and lake coasts, exacerbated by climate change. This problem has intensified due to climate change, causing rising water levels and increasingly intense weather causing more erosion. Creating 3-dimensional maps of unstable slopes using devices like Leica's DISTO E7500I, helps us understand slope dynamics and what factors cause the slope to fail. The focus of my research looks for more environmentally conscious solutions to shoreline erosion without negatively affecting existing ecosystems and providing long-term benefits for the people it affects. My current research is along the shorelines of Lake Superior and Lake Michigan. I use a Leica DISTO E7500I device to create maps of erosive areas to better understand their structure. I have found this device incredibly useful as it can measure the length of particular sections and the angle between two points. This device also enables safe measurements of slopes at the bottom, as opposed to having to climb very uneven and unstable terrain. Using this device is also much cheaper and easier than using drones for aerial measurements.Our approach can provide detailed data for implementing remediation measures other than short-term "hard stabilization" methods such as breakwaters and groins. Those measures often result in worse, long-term issues. Our initial idea is that native plants can be used to help hold soil in place and terracing the slope in to reduce the undercutting on slopes. We plan to test our hypothesis in small and large scale settings to see if these solutions are beneficial for homeowners. Erosion will always be a problem, and we are not attempting to completely solve the problem, but make it more manageable for homeowners to handle.

Jerah Winn

IN - Indiana Wesleyan University

Discipline: Humanities

Authors:
#1 Jerah Winn

Abstract Name: Thorn: A Young Adult Fantasy Heist Novel

When the Scarlet Rose—a masked criminal of unmatched skill—first appeared, she struck terror into the hearts of Varenth's ruling class, the crowns. She moved in and out of vaults and treasuries like a ghost. No one could find her; no one could stop her. Her reign of mystery seemed destined to continue forever.But one day, the Rose vanished. Five years later, a young man called Thorn stands poised to become Varenth's next great legend. When Thorn finds his mentor murdered on the eve of his greatest heist yet, however, gold and jewels fall below revenge on his priority list. In his attempt to bring justice to the crowns who, he's certain, killed his dearest friend, he stumbles across a much greater conspiracy. His quest brings him face-to-face with the family he rejected and robbed; his inspiration and hero, the Scarlet Rose; and even the criminal mastermind who's been pulling strings in the background all along.Thorn is a young adult fantasy heist novel of approximately 80,000 words. It follows Thorn in deep third-person point of view, occasionally dipping into others' viewpoints to encompass the full story. In pursuit of justice and truth, Thorn grapples with the meaning of integrity, the complexity of family, and the source of his identity.

Janina Winnicki

CAN - Carleton University

Discipline: Health and Human Services

Authors:
#1 Janina Winnicki
#2 Madeleine Sheppard-Perkins
#3 Francine Darroch

Abstract Name: Abandoned routes: Unraveling the Impact of Greyhound Bus Cancellations on Gender-Based Violence Survivors in Rural and Remote Canada

The permanent withdrawal of Greyhound from Canada in 2021 raised concerns about transportation accessibility for Gender-Based Violence (GBV) survivors in rural and remote areas. GBV survivors in these regions face challenges accessing safe spaces, as shelters may be distant and difficult to reach without inter-city bus services, which are often lacking in rural and remote communities. The purpose of this media analysis is to develop a nuanced understanding of how the cancellation of Greyhound Bus Lines impacts GBV in rural and remote communities, and subsequently synthesize the key issues and calls to action as a mechanism for informing policy. This mixed-methods media analysis involved a comprehensive search of 7 news databases and media websites, which yielded 2950 articles. To select articles related to the intersection of the bus cancellations and GBV, we conducted two levels of screening: (1) title-abstract, and (2) full-text. Frequency analysis of key article characteristics revealed that over half of news sources were national-level, and most were online press. Based on time trend analysis, a spike of articles published in 2018 coincided with Greyhound’s withdrawal from Western Canada. Thematic analysis revealed three main themes. Firstly, transportation inequities serve as significant barriers for GBV survivors, limiting access to safe spaces and fostering the need for unsafe travel practices, such as hitchhiking. Secondly, the discontinuation of Greyhound services disproportionately impacts already marginalized Indigenous communities, exacerbating their vulnerability. Limited transportation options contribute to unsafe travel practices, notably hitchhiking,

and to violence against Indigenous women, as emphasized in the Missing and Murdered Indigenous Women report. Lastly, advocates emphasize the need for collaborative efforts between all levels of government to establish an integrated national transportation system as a solution.

Kassandra Winter

CA - California Polytechnic State University - San Luis Obispo

Discipline: Mathematics and Computer Science

Authors:
#1 Kassandra Winter

Abstract Name: Closing the Gap in Women's Reproductive Health: Leveraging Generative AI for Personalized Contraceptive Solutions

Around 65% of individuals assigned female at birth, aging from 15-49, use some form of contraception during their lifetime. Over 80% of that population suffer from health conditions as a direct result, ranging from PMS to diseases such as Endometriosi. Despite these significantly high statistics affecting half of the global population, it has become evident that there is a noticeable gap in comprehensive research efforts dedicated to understanding and addressing the unique challenges and concerns in women's reproductive health. This imbalance, however, has a brighter future due to Generative AI: by harnessing the power of LLMs, we can expedite research, innovate personalized healthcare solutions, and ensure that women receive the attention and care they rightfully deserve.By utilizing Microsoft Azure’s ChatGPT-4 model, our research explored solving this problem through the creation of a personalized Chatbot centered around contraception. Designed to analyze inputted data, ranging from questions to medical history documents such as hormone tests, the algorithm is able to recommend personalized birth control methods that best fit the users body and desires by extracting relevant information through similarity search algorithms. This information can then be directly sent to a designated healthcare provider if chosen, creating appointments or requesting further analyzation, streamlining assistance.Further, we plan to pair this system with an Ethical Considerations Document focused on emphasizing the critical need for patient privacy and protection within the realm of Generative AI in Healthcare. We recognize the utmost importance of initiating education and spreading knowledge on this pressing topic, especially to young-adults. The scope of this project not meant to tell people what they should do, instead start a dialogue surrounding possible future use cases and options in order to foster awareness and facilitate meaningful progress.

Connor Wiseman

WI - Carthage College

Discipline: Natural and Physical Sciences

Authors:
#1 Connor M. Wiseman
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Hannah Poff
Kate Talens

Abstract Name: The Effect of Behavioral Inhibition on Avoidance Behavior During Transdermal Electrical Stimulation

Behavioral inhibition (BI) is a temperament characteristic associated with increased vulnerability to stress compared to their non-behaviorally inhibited (NBI) counterparts. Our previous study demonstrated that BI individuals have lower heart rate variability (HRV) than NBI individuals. This suggests that BI individuals have significantly less parasympathetic nervous system (PNS) output at rest; however, it is unknown how BI affects avoidance acquisition using a mildly stressful stimulus. Previous studies have shown differences in the behavior found in Wistar-Kyoto rats, which exhibit BI behavior, compared to Sprague-Dawley control rats. Our current study will test the hypothesis that BI individuals learn to make escape and avoidance responses using subdermal ulnar nerve transdermal electrical stimulation (TES) more rapidly than NBI individuals and also experience a more significant increase in heart rate (HR) and blood pressure (BP). BI individuals were identified through a series of self-reported questionnaires. Three levels (30 mV, 50 mV, and 70 mV) of subdermal ulnar nerve TES were delivered to participants while receiving warning signals that predicted the delivery of the TES. Participants had access to a button that, when pressed during the light, prevented the delivery of the TES, and the trial was scored as an avoidance response. If the button was pressed during the TES, it terminated the stimulation and was scored as an escape. HR and BP were also measured using a BIOPAC data acquisition system during TES. Our preliminary results indicate that BI individuals show learning acquisition throughout the experiment, while NBI individuals keep the same percent avoidance on trial ten as on trial one.

Emily Wishon

OK - University of Central Oklahoma

Discipline: Health and Human Services

Authors:
#1 Emily Wishon

Abstract Name: Elevating Nursing Advocacy and Patient Knowledge: A Research Proposal on Understanding the Impact of Pitocin on Laboring Mothers and Neonates

Within maternity and labor units, provider discretion has been observed as a factor that may lead to unnecessary management in what is fundamentally a natural process. While synthetic oxytocin is generally considered safe and is routinely used by many hospitals, a more cautious approach emerges from clinical observations. The potential complications associated with Pitocin extend beyond its routine application, encompassing issues such as the need for neonatal resuscitation, Neonatal Intensive Care Unit admissions, shoulder dystocia, abnormal fetal heart rate, cesarean sections, breastfeeding challenges, maternal morbidity or mortality, hyper-stimulation, and various other concerns. To provide an overview of existing research and formulate evidence-based recommendations, a literature search was conducted. The search strategy incorporated University of Central Oklahoma databases, ProQuest, PubMed, and CINAHL. This evidence-based proposal seeks to analyze literature concerning the effects of Pitocin on maternal and neonatal outcomes. Through a methodical review, the aim of this project is to increase nursing knowledge related to the use of Pitocin. This knowledge would assist nurses to advocate in the best interest of the patient and ensure that patients are being provided the education necessary to make informed decisions. The outcomes of this research proposal hope to demonstrate the critical importance of nursing advocacy and patient education. Literature illuminates the necessity of transparent communication regarding the complications associated with Pitocin and lack of of maternal awareness on these matters. This project emphasizes the pivotal role of nursing knowledge, open communication, and comprehensive patient education to empower women in making informed decisions regarding their childbirth interventions.

Olivia Wisont

DC - The George Washington University

Discipline: Social Sciences

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Abstract Name: The Question of Reunification with China: Taiwanese Opinions and Domestic Audience Cost

Tensions between the People's Republic of China and Taiwan have permeated international affairs since the outset of the Chinese civil war in 1949. In August of 2022 the PRC's military initiated a days-long military campaign to punish Taiwan when U.S. Speaker of the House Nancy Pelosi visited the island. The PLA's military reaction is part of a broader PRC policy shift that appears to mark the beginning of a new phase of the PRC's coercion of Taiwan. While multiple studies have examined the PRC and the United States' positions on Taiwan, the position of the Taiwanese people has rarely been explored. Indeed, even when Taiwanese identity is examined, scholars have not considered the security implications of shifting Taiwanese identities in recent decades. This study begins this exploration, working to examine how changing identity within Taiwan affects how the Taiwanese people view their government and its policies towards the PRC. This research utilized domestic audience cost, the domestic price a leader or government would pay for making a foreign threat and then backing down, in order to evaluate how changing Taiwanese identities could increase pressure (and cost) on the Taiwanese government to remain independent from the PRC. This study used quantitatively based surveys of Taiwanese citizens (N = 348) in an effort to place the very real identities of Taiwanese citizens into the conversation of great power conflict. In so doing, this research will help to understand the implications of changing Taiwanese identity on current and future Taiwanese government policies towards the PRC and Taiwanese citizens' reactions to present and future PRC aggressions.

Eden Wolde

NV - University of Nevada - Las Vegas

Discipline: Education

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Abstract Name: The First-Gen Prophecy: Students' Experiences with Career Planning in the Midst of the COVID-19 Pandemic

Students whose parents have not completed a college degree (Associate, Bachelor, or equivalent) are considered First-Generation College Students (FGCS). As the first in their families to explore the higher educational landscape, FGCS shoulder a familial responsibility to excel in an educational system dominated by racialized and socio-economic stratification. In this project, I offer language, the first-gen prophecy, which describes first-generation college students of Color navigating the familial burden of pursuing higher education as collective upward mobility for their families and communities. As a result of the COVID-19 pandemic and its lingering effects, FGCS have experienced increased difficulties pursuing a college degree

and choosing a career path that may enable these hoped-for outcomes. By examining three case studies from the Pandemic Journaling Project (PJP), we consider FGCS career pathways and what factors impacted their decision-making, including the COVID-19 pandemic. Accordingly, this case-study analysis illuminates how FGCS navigated the pandemic while living up to familial expectations of degree attainment and career prosperity, like fulfilling a prophecy.

Lucas Wolk

PA - Moravian University

Discipline: Education

Authors:
#1 Lucas Wolk

Abstract Name: Districts of Opportunity: Race and Lehigh Valley School Funding

In February of 2023, the Commonwealth Court of Pennsylvania delivered a landmark verdict in the case William Penn School District v. Pennsylvania Department of Education, declaring the state's education funding system unconstitutional. The ruling underscored the state's failure to uphold its constitutional commitment to provide a "thorough" and "efficient" education for all its students, highlighting the immense educational disparities between primarily Black, Indigenous, and People of Color (BIPOC) school districts and primarily White school districts within Pennsylvania. Despite the 1954 ruling of Brown v. Board of Education, educational segregation and inequities still occur nationwide. This paper investigates the systemic failures of federal and state policies, compounded by Supreme Court decisions, that allow segregation and educational inequities to persist with specific focus on Pennsylvania's predominantly BIPOC school districts. The research was conducted mainly by analyzing federal and state court cases and policy papers and scrutinizing budget allocations for schools within Pennsylvania, in particular, the neighboring Allentown and Parkland school districts in the Lehigh Valley. The results show that the failure to enforce desegregation measures immediately following Brown, the impact of Supreme Court decisions in the 1970s that declared that education was not a constitutional right, as well as Pennsylvania’s reliance on local property taxes for educational funding perpetuates segregation and educational inequities state-wide. By examining educational failures on a federal level, the Pennsylvania state level, and the local level within the Lehigh Valley, the research has identified overlapping patterns, root causes, and specific challenges faced by BIPOC communities, thus paving the way for targeted, comprehensive solutions to address educational disparities in these regions. Upon completion of the research, this thesis will be distributed to members of legislation in the state of Pennsylvania in order to continue the effort to provide equitable education for students statewide.

Faith Woll

CA - California Baptist University

Discipline: Social Sciences

Authors:
#1 Faith Woll

Abstract Name: Social Media And ADHD Stigma Levels In College Students

The commonality of ADHD or attention deficit hyper disorder is astounding compared to the lack of information available about it. Mass Media induces an information overload, creating an inability to access or decipher accurate information. The purpose of this study is to explore the connection between social media

use and ADHD stigma levels. In this study, media use was measured with the Social Media Trust Scale (Warner-Søderholm et al., 2018). ADHD stigma was measured with the ADHD Stigma Scale (Fuermaier et al., 2012). The sample included 97 full-time college students from a Christian university. A simple regression analysis, a T-test, and ANOVA were conducted to analyze the data. The findings in this research revealed that social media use did not significantly predict ADHD stigma levels (b1 = -.09, p = .322). The amount of social media use and trust perceived had no association with ADHD stigma levels in college students. There also was a test conducted to compare the stigma of ADHD based on a person's gender. Male individuals (M = 3.4, SD = .36) were slightly less stigmatized than the women (M = 3.6, SD = .46). However, this difference was not statistically significant (p = .08). In addition, there was a statistically significant difference in ADHD stigma levels between different school years (t = .21, p <.05). The findings emphasize the need for society and university institutions to identify what increases ADHD stigma levels in college students over their years in school. Furthermore, future implications address the need to understand how ADHD stigma levels can be decreased among college students.

Emily Womack

OK - Cameron University

Discipline: Humanities

Authors:
#1 Emily Womack

Abstract Name: Finding Literary Freedom

This presentation discusses Jack Kerouac's perception of social issues in On The Road and how more recent contemporary readers critique it. Kerouac's story, featuring a cross-country road trip set in the late 1940s, has received much negative criticism due to its controversial viewpoints on gender, race, and sexual orientation. The author argues that Kerouac's story reflects an unadulterated reality based on how and what he observed during his time, which has caused many incidents and views in the book to conflict with a more contemporary understanding of them. Among these criticisms are Kerouac's surface-level relationships with women, his stereotypical and fetishized views of race, and his contradictory depictions of homosexuality. However, considering the book as a representative product of the Beat Generation who wrote about the controversial topics of their time with an attitude of "bareness" and a belief in free expression, the author maintains that well-rounded readers should keep a critical open-mindedness toward the novel. That is, people should be aware of the fact that historical social environments can influence what and how the writers depict their experiences in their times just as what Jack Kerouac did in On The Road.

Veronica Wong

VA - Virginia Commonwealth University

Discipline: Natural and Physical Sciences

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#1 Veronica Wong
#2 Eun Lee

Abstract Name: The Trophoblastic Immune Response of Endoplasmic Reticulum Aminopeptidase 2-Arginine In Vivo as a Future Tumor Clearance Therapy

Endoplasmic reticulum aminopeptidase 2 (ERAP2) is a gene that codes for an enzyme that trims

polypeptides, contributing to a robust immune response. With the known missense mutation of ERAP2-Lysine (K) to ERAP2-Arginine (N), the impact of ERAP2N on the immune system's function remains largely unknown. Part of the reason there is limited knowledge of ERAP2N's role is because of the lack of genetic homozygosity in studied populations, which suggest the gene's incompatibility with life in utero. The disruption of healthy pregnancy could be through the immunological contribution of increased Natural Killer (NK) cell activity that targets ERAP2N-expressing cells as we have previously demonstrated in vitro. ERAP2N's proposed cell death during pregnancy has led to the potential application towards tumor clearance. This study examines the applications of ERAP2N introduction to choriocarcinoma cells in vivo. The JEG-3 cell line derived from gestational choriocarcinoma was stably transfected with ERAP2N to be injected into immune-compromised mice, followed by an adaptive transfer of immune cells to evaluate the impact of ERAP2N on tumor clearance. The mice that received transfected JEG-3 with ERAP2N exhibited a significant decrease in the remaining tumor volume compared to JEG-3 tumors that did not have ERAP2N. From a lymphocyte perspective, immunohistochemistry staining provided results indicating that NK cells and T cells colocalize and mediate the clearance of tumorigenic cells with ERAP2N expression. These results have enormous potential to investigate further an immunological therapy involving the ERAP2N gene for tumor clearance. Future studies to be completed would involve investigating ERAP2N's impact on other cancer cell lines and gaining further understanding of the pathway that transpires throughout the tumor clearance process.

Zoe Wood

IN - Indiana Wesleyan University

Discipline: Social Sciences

Authors:
#1 Zoe Wood

Abstract Name: Analysis of Jungian Psychology in the Persona Franchise

The Persona series is a Japanese Role-Playing Game, or JRPG, that was developed by Atlus. It has many implications of the use of Carl Jung's psychoanalysis, or Jungian psychology, and the writer wanted to explore how these concepts fit in the context of the wider story of the games. In this, the writer looked at all the games in the franchise but focused more on Persona 4 and Persona 5, because they had the most implications of the psychology used in the series. The writer focused on three major concepts of Jungian psychology; the Shadow, the Persona, and the Collective Unconscious, but also dealt with the idea of the "Self" and what it means to be a human being in the terms of Jungian psychology, with some myths sprinkled throughout. The data was collected through the watching of silent playthroughs to experience the feeling of playing the games that they did not own. The result of the research was that every single game applied aspect of Jungian psychology in different ways, and even if they changed from the original concepts, the core of them were the same.

Joel Woodland

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Joel Woodland

Abstract Name: Visual Imagery and the Transformative Power of AfriCOBRA

The paper delves into the profound impact of the AfriCOBRA (African Commune of Bad Relevant Artists) Movement, a pivotal force in African-American art during the tumultuous 1960s and 1970s. Rooted in the aftermath of Martin Luther King Jr.'s and Malcolm X's deaths, AfriCOBRA sought to forge a collective identity and destiny for African Americans through a dynamic fusion of African aesthetics, vibrant colors, and powerful messages of cultural pride and social justice. The movement's commitment to dismantling structural racism and promoting Black emancipation positioned it as a living monument to art's ability to shape identity and drive social change.Central to AfriCOBRA's ethos was the embrace of Black nationalism, a belief system that sought to establish and maintain a distinct black racial and national identity. The movement's aesthetic, characterized by what the artists referred to as "Kool-Aid colors" or bold hues, mirrored the vibrancy of the 1960s and '70s. Examples like Wadsworth Jarrell's Revolutionary (Angela Davis) and Gerald Williams's Say It Loud showcased the use of bold patterns and bright colors, serving as both artistic expressions and tools of resistance.Beyond aesthetics, the paper underscores AfriCOBRA's unique role in activism and feminism during the Black Arts Movement. The deliberate inclusion of rhythmic patterns mirroring musical waves in their artwork became a symbolic representation of the African-American experience. The movement's commitment to portraying the multifaceted experiences of African Americans extended to feminism, with the Studio Museum in Harlem providing a platform to amplify the voices of African-American women artists associated with AfriCOBRA.

Joel Woodland

OK - University of Central Oklahoma

Discipline: Humanities

Authors:
#1 Joel Woodland

Abstract Name: Photography: The Importance of Its Use in Graphic Design Then and Now

This paper explores the profound impact of photography on graphic design, delving into its historical evolution and contemporary applications. The proverb "A picture is worth a thousand words" serves as a guiding theme, attributed to Frederick R. Barnard but rooted in the ancient wisdom of Confucius. Tracing the development of photography from its inception, the paper highlights pivotal moments and innovations that transformed it into a powerful tool for graphic designers.The narrative begins with Joseph Nicephore Niepce's groundbreaking but laborious eight-hour exposure to produce the first photograph. Despite its blurriness, Niepce's work inspired further innovations, including wood-engraved illustrations. The transition from wood engraving to photoengraving, as exemplified by John Calvin Moss's efficient method, marked a significant step forward in cost-effective printing blocks while maintaining photo details.The paper emphasizes Frederick Ives's introduction of halftone processes as a game-changer, allowing the reproduction of photographs in newspapers and significantly reducing production time. This innovation laid the foundation for the integration of photography into graphic design. The narrative further explores photography's role in documenting historical events, citing Matthew Brady's photographic coverage of the American Civil War as a transformative moment that brought the war's emotion and reality to the public.The paper extends beyond historical contexts to explore photography's contemporary applications in graphic design, emphasizing its ability to evoke emotion and connection in the audience. Examples from organizations like Habitat for Humanity showcase how photography, combined with graphic design, can effectively convey messages and inspire action. Magazines such as National Geographic and Reader's Digest utilize photography to draw readers into their articles, while other publications like Time and People use a blend of photography and typography to communicate effectively.

Emily Woodland

PA - Drexel University

Discipline: Engineering and Architecture

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#1 Emily Woodland
#2 Amy Throckmorton
#3 Giselle Matlis

Abstract Name: Drexel Dragon Heart: Next Generation Blood Pump Design for Pediatric Patients with Heart Failure

The treatment of children with heart failure is a formidable challenge. Heart transplantation, when available, becomes the only lifesaving option. Children could benefit from a blood pump: a medical device designed to assist the ailing heart with pumping blood. Blood pumps for children, however, lag behind those for adults. While adult devices have been employed in children, the operation of these adult pumps off-design increases the risk of blood cell damage and clotting. Pediatric patients have limited options due to the anatomy of childhood heart disease and increased cardiovascular demands of physical growth. To address this unmet clinical need, we have innovated The Dragon Heart, which uniquely integrates multiple pediatric blood pumps. This compact device (60mm x 50mm) suspends the pumps in a magnetic field, thus facilitating a long operational lifespan and lower blood cell trauma. We performed high-quality modeling of two new pump designs, which produced target performance; 40-180 mmHg for 0.5-4 L/min at 2000-3000 RPM. Internal fluid forces were below 2.5 N, and fluid stresses were at acceptable levels. This work serves as the foundation for the next phase of prototype benchtop testing, moving toward animal studies.

Kayleigh Woodward

CA - University of the Pacific

Discipline: Visual and Performing Arts

Authors:
#1 Kayleigh Woodward

Abstract Name: THE SPIRIT OF THE AMERICAN WEST: AN EXPLORATION THROUGH PAINTING

This series of paintings and drawings was created to illustrate the wildness of America’s past and the spirit of the Old West. This group of work was started as an exploration into the portraiture of animals, paying homage to their strength and resilience, as well as the land they live on. Throughout history, people have become symbols and immortalized for what they achieved in their lifetimes and the question to be asked is, why are animals not usually given the same status and respect? I have a deep respect for the working animals who carried this nation forward for centuries, as well as the native North American species who have always survived off the land and became a rich resource for both the indigenous peoples and the masses who later made this country their home. Also, as a contemporary artist and student, I’ve built my series on the inspiration of Georgia O’Keeffe’s work as well as her life. It is said that she is the “Mother of American Modernism”, and that she painted her masterful compositions with a “signature blend of realism and abstraction”. This is something I have found to be formative in my evolution as an artist and crucial in my creative expression. Throughout my painting process, I use acrylic paint on canvas and depict various animals in a realistic way, but also allowing for a subjective use of color. As a result, I believe I’ve created a series of paintings that are successful in drawing attention to aspects of the Old West and its spirit through visual interest and an accurate rendering of my subjects.

Olivia Woody

MO - University of Missouri - Columbia

Discipline: Health and Human Services

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Amy R. Brandt

Abstract Name: COVID-19 Vaccination Status Associated with Discrimination and Victimization Among Non-Binary/Genderqueer and Transgender Participants

Introduction: Transgender/non-binary/genderqueer individuals experience discrimination, stigma, and violence which contribute to overall higher levels of anxiety, depression, and lower general psychological well-being compared to cisgender counterparts. Further, people in this community often face discrimination/victimization from healthcare providers. This study examines whether higher rates of victimization and discrimination against transgender/non-binary/genderqueer participants people is associated with their rates of COVID-19 vaccination. Methods: A cross-sectional survey assessed community health behaviors and perspectives, inclusive of an 11-item Gender and Minority Stress Resilience (GMSR) measure. Higher GMSR scores correlate to more stressors. Participants self-identified gender identity with two questions: the first asked about assigned sex at birth (male or female) and the second asked about current gender identity. Surveys were collected at seven PRIDE festivals throughout Missouri (June - August 2023). Logistics regression models compared vaccinated and unvaccinated participants.Results: A total of 381 participants met inclusion criteria. Black participants were 82% less likely to be vaccinated [95%CI: 0.04-0.88; p-value = 0.010] compared to white participants. Furthermore, participants that trusted nobody for COVID-19 information were 78% less likely to be vaccinated [95%CI: 0.06-0.81; p-value = 0.020]. For every increasing point on the victimization score, the odds of getting vaccinated decreased [OR: 0.74; 95%CI: 0.73-0.99; p-value = 0.030]. Finally, participants who were worried about developing long-covid were ~3.7x more likely to be vaccinated [95%CI: 1.591-8.487; p-value = 0.002].Conclusion: Among transgender/non-binary/genderqueer participants, the reported victimization based on gender identity was associated with lower rates of COVID-19 vaccination, particularly among Black participants. In contrast, the GMSR discrimination score was not associated with vaccination status. Further evaluation of factors influencing transgender/non-binary/genderqueer individuals' decisions to obtain COVID-19 vaccination and the influence of victimization on choices about health care is warranted.

Ellia Woolard

OR - Oregon State University

Discipline: Humanities

Authors:
#1 Ellia Woolard

Abstract Name: "Passing" as Identity Loss for Chinese Immigrants

Passing has been discussed centrally in literature and literary studies as a primarily African-American experience. Using the example of Phillip Brian Harper's definition, it's classified as "anyone while who, while legally designated as black, lives successfully as white for a significant time". This definition overlooks a different kind of passing, in which Chinese immigrants did not pass as white to enter America but instead passed as another Chinese immigrant via a method called paper sons, by entering America through a different Chinese name and life in order to bypass laws preventing them from immigrating into America. This undefined kind of passing raises some questions that both depart from and intersect with passing as an African-American experience; How exactly did these "passing" experiences affect Chinese immigrants and their lives? Has literature represented these experiences, and are they positive or negative? This paper investigates the effects of "passing" as presented in literature, specifically analyzing the stories of the author's father, Think Virtue, from Maxine Hong Kingston's China Men. Pairing close readings of the novel with material in historical archives, I show that exploring the experiences of Chinese immigrants can show how "passing" affected the way Chinese immigrants struggled to reconcile their new identities in America with their inherited identities in China. Discussing this form of "passing" can also show us how literature, in the case of Think Virtue, demonstrates this loss and its effects, celebrating Chinese-American heritage but also showing the truths of the loss of identity due to "passing". This paper thus shows how literature may open and broaden the critical conversation about passing as it refers to Chinese Americans. Thank you for your time and consideration.

Otis Woolfolk

FL - University of Central Florida

Discipline: Natural and Physical Sciences

Authors:
#1 Otis Woolfolk
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Abstract Name: Effects of Glyphosate on Mosquito Development, Survival, and Immune Regulation

Herbicides are an integral part of agriculture. Glyphosate is the most widely used herbicide by volume, with over 650,000 tons used in 2011 alone. The effects on off-target organisms are widely unknown. Mosquitoes are of interest due to their ability to vector diseases and because they develop in agricultural plots where Glyphosate is deposited. Previous work suggests that Glyphosate interferes with melanin-based immunity and makes mosquitoes better vectors. However, the previous work mentioned suffered from unrealistic Glyphosate dosages and delivery. This study aims to readdress this issue using biologically relevant dosages and applications. Experiments were conducted to examine the effects of Glyphosate on mosquito larvae throughout the rearing process and how it would alter fitness and immune activity including PO, a key enzyme in melanin production of mosquitoes. Survival and development time were recorded with 3 Glyphosate treatments and a control with no herbicide. The treatments added Glyphosate to larval rearing dishes, adult mosquito's nectar feed, and to adult mosquitoes directly via spray to emulate a field spray. The recommended field application dose of 68μm of Glyphosate reduced the survival rate to 0.80 and significantly increased development time. As Glyphosate dose increased, adult PO activity decreased for the feeding and spray treatments. Glyphosate induced upregulation in dicer (feed and spray), and a

downregulation in defensin, MyD88 (feed only), and PPO (feed only). These results suggest that Glyphosate causes stress for the mosquitoes and can negatively affect their immunity in agricultural settings. Decreased immunity may lead to increased vector competence which can lead to a higher probability of spreading disease.

Caden Worley

KY - University of Kentucky

Discipline: Health and Human Services

Authors:
#1 Caden Worley

Abstract Name: Eating Disorder Development in College Students

Background Young adults beginning college often face an environment conducive to the development of eating disorders (EDs), which have an elevated and rising prevalence among college students. EDs are mental health conditions characterizing a person’s unhealthy relationship with food and the dangerous compensatory behaviors they often engage in as a result. The college ecosystem presents the unfortunately perfect setting for ED development, as it suddenly exposes students to hundreds of development risk factors, all while they’re trying to navigate life independently for the very first time. Objective This research aims to break down and rebuild not only the system of eating disorder development, which is made up of all of the risk factors for the initiation and exacerbation of EDs, but also the University of Kentucky’s student support system (which was taken as a case study) to form insights about opportunity spaces or significant problem areas within each system that would best benefit from design intervention. Methods Employing a multi-method approach, the research combines surveys on current students across multiple universities, interviews with subject matter experts (including dietitians, researchers, and student wellbeing professionals), and an extensive literature review to gather previously published findings. Findings Key findings include the identification of the "developmental loop," a term coined to describe the phenomenon where complications that arise from EDs also exacerbate development themselves. Additionally, this research reveals the inadequate outreach efforts at UK, contributing to students' lack of awareness about available resources and how to access them. Anticipated Outcomes By identifying key risk factors that make up the “developmental loop” and locating the root of the disconnect between UK’s students and university support resources, design intervention can be guided to attack those two areas as a means of mitigating the abilities for eating disorders to develop in college students.

Julia Wozniak

IL - Elmhurst University

Discipline: Health and Human Services

Authors:
#1 Julia Wozniak

Abstract Name: Long-term Effects of Cancer Treatment in Childhood

Childhood cancer treatments, while contributing to improved survival rates, have raised concerns about the enduring impact on survivors' health and well-being. This research aims to conduct an in-depth examination of the long-term effects of childhood cancer treatments, focusing on identifying causes, and exploring management strategies. It will be conducted thorough literature review which will look at statistical analysis

of relevant databases, treatment modalities conducted through clinical studies and a review of real-life case studies. Through an extensive literature review, this research will systematically categorize and document the myriad long-term effects associated with childhood cancer treatments. This encompasses physical, psychological, and socio-economic dimensions, providing a holistic view of the impact on survivors. The anticipated outcome of this research project is to develop a deeper understanding of the long-term effects of childhood cancer treatments to enhance nursing care of these children.

Dylan Wright

FL - University of West Florida

Discipline: Mathematics and Computer Science

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Abstract Name: Modelling in Computational Neuroscience

With the recent advancements in technology and the rise in the general public's awareness of artificial intelligence and neural network models, it is imperative to reflect on the field of neuroscience for its foundational contributions. Data analysis is typically paired with biologically plausible models that can encapsulate the multitudes of behaviors for a single neuron to connections between multiple neural populations. Despite these developments, there remains a lack of understanding of how single-neuron behaviors integrate into neural network models. This study presents a comprehensive review of the current models in practice, examining their descriptive and computational constraints, including accuracy, complexity, mathematical limitations, and solution stability. Our findings aim to pinpoint specific areas that require further research to enhance our quantitative understanding of the connection between individual neuron functions and neural networks.

DingBang Wu

UT - University of Utah

Discipline: Natural and Physical Sciences

Authors:
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#3 Kelly Hughes

Abstract Name: Mutational analysis of the promoter and 5’UTR of the fljB flagellin in Salmonella Typhimurium identified base mutations defective in transcription and translation of fljB.

Salmonella enterica subspecies contribute significant public health concern in the United States, causing roughly 1.4 million infections and nearly 600 deaths annually. Many Salmonella enterica, including S. Typhimurium and S. Typhi, are motile pathogens and their virulence and survival are dependent on the presence of surface motility organelles termed flagella. The bacterial flagellum is comprised of three main structural components: the basal body, the hook, and the filament. A Salmonella bacterium expresses, on average, four peritrichous flagella per cell. Each flagellum constitutes one percent of the total cellular protein production. The biosynthesis of these structures is tightly regulated. A single bacterial flagellar filament is composed of approximately 20,000 flagellin protein subunits encoded by either the fliC or fljB genes. Most

of the flagellum is located extracellularly, and structural components need to be secreted from the cytosol through the growing organelle where they self-assemble at the structure's tip. The translocation of these proteins is mediated by a Type III secretion system embedded at the base of the flagellum. Previous work has suggested that the 5'-untranslated region (5'UTR) of the flagellar genes contains crucial regulatory signals responsible for efficient protein production during flagellum assembly. In the present study, we aim to dissect the regulatory signals within the 5'UTR of filament gene fljB with targeted doped mutagenesis via lambda red recombineering. Our results identified several distinct stem-loop structures in the 5'UTR region of fljB mRNA. Analysis of motile revertants from the fljB mutant pool revealed alternative RNA stem-loop structures in the 5'UTR that affect ribosome binding needed for fljB mRNA translation. The outcome of the study intends to understand the unexplored aspects of Salmonella flagellar regulation. Understanding these regulatory signals at the molecular level holds potential implications for developing targeted strategies, including novel therapeutic interventions or vaccines, to mitigate Salmonella infections.

Sophia Wu

CA - California Institute of Technology

Discipline: Natural and Physical Sciences

Authors:
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#3 Connie Wong

Abstract Name: Understanding the Role of Microglia in Neurodegenerative Diseases

Neurodegenerative diseases, characterized by protein aggregation and synaptic dysfunction, pose significant challenges to the global health sector. My study explores two interlinked facets of these disorders: protein aggregation and synaptic content. With recent studies highlighting microglia activation in neurodegenerative diseases, the first objective of my study is to investigate the potential impact of microglia removal on protein aggregation. Therefore, I eliminated microglia in culture to assess the histological and biochemical aggregation properties of proteins (Aβ, α-Synuclein, TMEM106B), which aggregate in neurodegenerative diseases. Our preliminary findings from these explorations suggest that removing microglial cells in primary culture does not significantly alter protein aggregates or protein expression. Beyond protein aggregation, synaptic alterations is another common feature in neurodegeneration. Therefore, we pioneer a new method for visualizing and tracking synapses in real-time by adding fluorescently labeled nanobodies to an ALFA tag inserted to the presynaptic marker Neurexin3β in primary culture. This novel technique offers valuable capabilities for studying synaptic dynamics in neurodegenerative diseases. Overall, our integrated approach seeks to unravel the intricate interplay among protein aggregation, microglial function, and synaptic activity, potentially revealing novel therapeutic avenues for these debilitating diseases.

Lillian Wu

AZ - University of Arizona

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Fibroblast & Smooth Muscle Cell Co-Cultures in a Microfluidic Prostate-on-a-Chip

Prostate cancer is the second most common cancer in American men, responsible for about 34,700 deaths in 2023. About 90% of human cancer deaths are due to metastasis, the process by which tumor cells from the primary site form colonies in secondary sites. Although the mechanism of prostate cancer metastasis remains poorly understood, it is well established that the interaction between the epithelium and the surrounding stroma plays a key role in prostate cancer progression. Thus, we developed an in vitro model of the human prostate gland to evaluate the effects of intercellular crosstalk. The prostate-on-a-chip model features two stacked channels designed for culturing epithelial and stromal cells, separated by a polyester porous membrane for cellular anchoring while allowing cell signaling. Produced via soft-lithography techniques, each 520 μm-high channel is made of polydimethylsiloxane (PDMS) for microscopic imaging and biocompatibility. The mature prostate stroma contains two major cell types, fibroblast and smooth muscle cells. To mimic the in vivo stroma, Smooth Muscle cells (SMCs) and Benign Human Prostate Stromal cells (BHPrSs) were mixed, and we report the effects of channel coating, cell media, and media supplements on stromal cell differentiation and proliferation. Despite initial mixture seeding containing 80-90% SMCs, the fraction of BHPrSs increased over 5 days of co-culture. Desmin staining of the SMCs suggests that switching from regular to differentiation media, following confluency, indeed promoted SMC differentiation. While the presence of fetal bovine serum (FBS) supplement in the differentiation media appears to be necessary for BHPrSs and SMCs viability, no significant effect of the FBS level was noticed. Furthermore, the alpha-smooth muscle actin (α-SMA) biomarker was substantially over-expressed in comparison with desmin. Establishing a biologically relevant SMC-BHPrS cell mixture, to faithfully represent the in vivo stroma, is critical for enabling in vitro analysis of prostate cancer development and progression.

Matthew Wychulis

MD - University of Maryland College Park

Discipline: Business and Entrepreneurship

Authors:
#1 Matthew Wychulis

Abstract Name: Impact of Racial Disparities in Home Mortgage Lending Outcomes on Intergenerational Mobility

This paper evaluates the level of racial disparities within the home mortgage lending market and their relationship with intergenerational upward mobility. Using data from the Home Mortgage Disclosure Act (HMDA) 2010 dataset and Opportunity Insights datasets, this study scrutinizes lending disparities and intergenerational upward mobility at the Commuting Zone (CZ) level. By only evaluating lending outcomes for first-lien home purchase loans, I can capture the cohort of prospective home buyers moving to better neighborhoods and self-sorting themselves into geographical regions. Through the implementation of logistic regression and ordinary least squares (OLS) regressions, I evaluate the correlation between variables, including but not limited to, applicant race and sex, applicant income, loan amount, minority population, and median household income with the probability of loan application denial. These correlates are then compared with intergenerational childhood outcomes at the CZ level to determine the relationship between home mortgage lending outcomes and childhood outcomes.

Angela Xia

CA - California State University - Fullerton

Discipline: Natural and Physical Sciences

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Abstract Name: Cultivation of Novel High-lipid and High-protein Producing Strains of Chlamydomonas reinhardtii for Use in Aquaculture Applications

The continued use of fish meal and fish oil (FMFO) in commercial fish feed disrupts marine ecosystems and contributes to unsustainable practices within the aquaculture industry. As aquaculture production has increased by 527% over the past twenty years, the need for alternatives to FMFO has become paramount (FAO, 2019). Chlamydomonas reinhardtii is a single-celled green alga that could serve as an ideal model organism for the development of an environmentally sustainable, economical, and nutritious alternative to FMFO due to its adaptability, ease of cultivation, and genetic manipulation, as well as its variability in protein and lipid content among wild-type (WT) strains. A combination of Classical Strain Improvement (CSI) techniques consisting of UV mutagenesis and mating of ten WT strains resulted in two generations of offspring. A total of 340 progeny were assessed for protein through crude protein extractions and Bradford assays, while lipids were assessed using BODIPY 493/503 staining, fluorescence assays, and confocal microscopy with ImageJ analysis. Eight high-protein and 18 high-lipid strains were identified, with the top producing strains having a 57.6% increase in protein content and 150.2% increase in lipid content relative to the WT parental strains. Currently, we are conducting experiments to monitor cell growth of parental and high-protein and high-lipid strains in culture to determine if an increase in protein or lipids affects their growth. As this research aims to develop high-protein and high-lipid producing strains of C. reinhardtii that can be efficiently cultivated in large volumes, it is important to investigate patterns in growth rates.

Angie Xiao

IL - University of Chicago

Discipline: Business and Entrepreneurship

Authors:
#1 Angie Xiao

Abstract Name: Where Does Your Help Come From? An analysis of Chicago minority business owners and their support networks

Minority business owners have less capital access, capital accumulation, and business expansion opportunities leading to disparate outcomes and a widening racial wealth gap. Minority “out-groups” have responded by banding together in both support networks and physical spaces giving rise to theories on race as social capital and ethnic enclaves as business incubators. However, the role of racial homogeneity on business and financial advancement has limitations such as lower community wealth, overly taxing norms of reciprocity and personal obligation, and fierce competition for customers. Further, purely co-ethnic business support networks can limit entrance into mainstream markets and financial stability. This thesis aims to study the support networks that have been most impactful for minority business owners in Chicago and how social capital plays a role in their efficacy. Understanding how a minority business owner’s value-creating

relationships exist not only on the basis of their ethnic identity is imperative in developing business support models. Increasing trust, knowledge sharing, and outreach for minority business owners can be informed by ways in which social capital at the local municipality level has been historically underleveraged. Chicago's diverse metropolitan population provides opportunity to study interactions within and across ethnic lines. Qualitative interviews guided this effort by digging into ways each business owner funded, ideated, developed, and sourced support through times of crisis across a range of industries. Indicators of social capital were coded in interview transcripts and compared across the experiences of 30 entrepreneurs at various stages in their journey. Implications from this study will guide public and private institutions as they look towards better supporting minority businesses either through community organizations or co- and cross-ethnic networks and relationships.

Ziyang Xiao

CA - University of California - San Diego

Discipline: Natural and Physical Sciences

Authors:
#1 Ziyang Xiao

Abstract Name: Control of Circuit Computations for Cue-Guided Movement Initiation by Dopamine

This study challenges the standard model of basal ganglia function, which proposes that the direct and indirect pathways play opposing roles during movement. Recent recording studies have demonstrated that direct and indirect pathway medium spiny neurons behave similarly during simple motor behaviors, suggesting the coordinated activation of both pathways is critical during action selection. To clarify this, my project aims to investigate the contribution of the dorsal striatum and its downstream targets, the external globus pallidus and the substantia nigra pars reticulata, in motor control. We will use a toxin- and genetic-based mouse model of Parkinson's disease (PD) at different severities of dopamine depletion to study the onset and progression of basal ganglia dysfunction: the 6-hydroxydopamine and MitoPark mouse model. Our experiments will involve acute, head-fixed recordings in awake mice navigating a virtual linear track to obtain sugar rewards. Since previous studies have shown memory deficits precede motor impairment in a PD mouse model, we hypothesize the neuronal firing activity of striatal circuits involved in cognitive control to be disrupted at an earlier timepoint than the neuronal firing activity of striatal circuits engaged in sensorimotor integration. We will also reveal how dopamine supports the firing patterns of striatal neurons during movement initiation and cessation, expecting adaptive mechanisms to stabilize population firing properties when dopamine depletion is more gradual in MitoPark mice compared to mice with sudden dopamine depletion after 6-OHDA administration. Our study will provide insight into how large-scale activity and oscillation patterns contribute to motor and cognitive function.

Victor Xie

CA - University of California - Los Angeles

Discipline: Humanities

Authors:
#1 Victor Xie

Abstract Name: De-Orientalizing Memories of the Cultural Revolution in Chinese America: Towards a Diasporic Framework of Mourning and Remembrance

In 1966, Mao Zedong initiated the Cultural Revolution, a decade-long violent movement that sought to revitalize China's socialist revolution through the purging of Communist Party bureaucracy and Western influence. This complicated and devastating political event has defined 20th century Chinese history and is embedded in China's collective memory. My research looks at the ways in which Chinese American museums and archives contribute to an Orientalized remembering of the Cultural Revolution. Many scholars have written about this Orientalization from the perspective of Chinese American memoirs, yet they have overlooked the archive, which represents another strand of knowledge production for Chinese Americans. Using frameworks from postcolonial scholars on the archive, I ask how Chinese Americans may have contributed to a colonial view of their ancestral homeland in return for Western exoticization and exploitation of their histories. Moreover, because the archive lacks nuanced perspectives on Chinese history, I explore how second generation Chinese Americans generate their own discourses with this violent, complicated history through fiction. Using the frameworks of postmemory studies, I ask if the second generation will continue this Orientalized remembering, or uncover a more productive framework of mourning--understanding all the complicated pieces of history that have been covered, over-exposed, and remembered. Through this interdisciplinary approach to memory from both the archive and literary fiction, I argue that Chinese Americans, as subjects living under the identities of two global superpowers in the wake of neo-Cold War politics, must move towards a framework of mourning as a political act that is highly critical of the role US empire plays in memory-making.

Victor Xie

CA - University of California - Los Angeles

Discipline: Humanities

Authors:
#1 Victor Xie

Abstract Name: Embracing the Posthuman: Subverting Techno-Orientalism and Reclaiming Asian Futurity in Salt Fish Girl and Light From Uncommon Stars

My research analyzes Ryka Aoki's Light from Uncommon Stars (2021) and Larissa Lai's Salt Fish Girl (2002), both works of Asian American speculative fiction that suggest queer temporality as an intervention to techno-orientalism, the persistent depiction of futuristic Asian bodies by the West as highly intelligent yet unfeeling and robotic. Techno-orientalism, in its operation to assert Western superiority over the Asian body, is inextricably linked to a colonial view in which Asia is imagined, threatening and dehumanized. While many scholars have written about how Asian American cultural production asserts its own resistance towards techno-orientalist stereotypes, few have focused on the queer intersection that complicate representations of futurity. Aoki validates the queer Asian body as a site of resistance towards colonial understandings of technological progress. Elsewhere, Lai's work queers folklore of the ancestral homeland and intertwines its narrative with a dystopian future to complicate notions of linear, heteronormative progress. Through a historical contextualization and queer of color critique of these two works, this article argues that queer Asian American speculative fiction, as a representation of queer temporality, has anticolonial potential and demands new ways of conceptualizing a future that is resistant to exploitation and extraction.

Hunti Xiong

MN - Hamline University

Discipline: Natural and Physical Sciences

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#1 Hunti Xiong

Abstract Name: Characterizing Expression of Meristem Genes in a Lig5 Maize Mutant

Plant meristems are developmental tissues that shape the structure of all plant organs. Aberrations in expression of meristematic genes as well as mutations in the proteins active in meristematic tissues could affect plant development. Understanding the relationships between meristem-specific genes and unveiling the regulatory mechanisms for their expression is essential to controlling plant development and breeding crops with desired characteristics. Liguleless genes are a group of meristem-specific genes affecting plant leaf development. A Liguleless5 (Lig5) mutation causes aberrations in the leaf ligule, a thin outgrowth at the junction of leaf and stem, changing the shape and the angle of seedling leaves. In addition, this mutation causes knot formation on leaves. In this project, we investigated the expression patterns of meristem-specific genes from several families (knotted, knotted-like, and liguleless) in meristematic and leaf tissues in lig5 mutant in comparison to the wildtype, to understand the possible causes of this phenotype. RNA was extracted from the meristematic (stem) and leaf tissues in young seedlings, converted into cDNA and analyzed using qPCR to determine gene expression. We determined that several meristem-specific genes were overexpressed in the mutant leaf tissues and underexpressed in the mutant meristematic tissues compared to the wild type plants. A few of those genes that expressed a change in expression patterns were kn1, knox1, knox2, and knox3. Our findings suggest that lig5 mutation causes changes in expression patterns of meristem-specific genes. Further studies are needed to understand the details of this effect.

Jingyi Xiong

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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Abstract Name: Creating Culturally Relevant Genetic Education Modules for the Asian American, Native Hawaiian and Pacific Islander (AANHPI) Community

Purpose: The purpose of this study was the completion of an extensive review of the literature, aimed to facilitate a comprehensive ethnic-based, genetic program tailored to the needs of AANHPI community that would be used by the ALLofUS program, fostering a culturally sensitive lens for genetic education.Background: Ethnicity has effects on many biological and behavioral traits, and so is an important consideration when personalizing culturally relevant educational modules. Ethnicity encompasses an individual’s genetic ancestry, geographic background, and cultural tradition. As an international undergraduate nursing student, I was asked to be part of collaborative efforts with the Asian Health Coalition (AHC) and the International Society of Nurses in Genetics (ISONG). A comprehensive literature review was conducted.Results: The results of this study provided significant exemplars to be used in the learning modules. Two examples include: 1) in Europeans, the usual genetic recessive trait example is blue eyes and brown eyes; yet in Asia, when there is very little variability in eye color, a more appropriate example is eyelids; and 2) in the mountains of Tibet, genetic variants that have been passed down for centuries allow Tibetans to adapt to the high altitude. Pharmacogenomics are also an important component of the modules, including variants in the CYP2D6 and CYP2C19 genes that are more frequent in the Asian American population.Conclusion: This thorough literature review contributed to a well-developed program that will be translated into five Asian languages, with the intention of advancing genomic health literacy across the AANHPI community; with the broader goal of bridging the gap in genetic knowledge and fostering a deeper understanding of genetic and genomic information within diverse communities.

Julia Xiong

WI - University of Wisconsin-Madison

Discipline: Social Sciences

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#3 Haley Vlach

Abstract Name: Can children learn concrete and abstract science nouns through a storybook?

Word learning is important for children's development. Vocabulary scores predict outcomes such as overall school performance, reading comprehension, and literacy skills. Previous research has studied different mechanisms and cues that children use to learn words. In many word-learning studies, children are taught novel concrete nouns through fast-mapping and other types of ostensive learning. In classroom settings, however, children are not typically taught words this way. Rather, they encounter concrete and abstract nouns in different contexts, one of which is through storybooks. We were interested in whether children could learn concrete and abstract nouns using a naturalistic setting: storybooks. In a pilot study, we taught 3 to 5-year-old children four concrete and four abstract nouns through a lab-created science storybook. Children completed a pre- and post-test which assessed their learning of the words. Caregivers filled out questionnaires about their children's reading habits and exposure to science words. The results revealed that the appropriate age range for concrete and abstract noun learning in this storybook is 4 to 5 years. These children successfully learned some concrete and abstract nouns. In our next round of piloting, we will focus on updating the tests to better reflect children's understanding of the target nouns. We will also update the caregivers' questionnaire to better reflect children's comprehension and production of science nouns. With the new pilot data, we expect that children who read more often will learn more science words. We also predict that children who have more exposure to science vocabulary will learn more science-related abstract nouns. This result would suggest that reading science books could help children expand their understanding of abstract science nouns. We will conduct exploratory analyses to determine whether prior exposure to science-related concepts relates to how well children learn nouns from the storybook.

Haoyun Xu

CA - University of the Pacific

Discipline: Social Sciences

Authors:
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Abstract Name: Rehabilitation as Social Control- a Review of Existing Research and Data

Rehabilitation programs in the post-Second Chance Pell Grant time comes in greater variation in the United States Prison system than ever before, but they all generally share the same goals: to prepare inmates for re-entry into their communities and society at-large, and as deterrence for recidivation. Despite the fact that many studies on rehabilitation programs suggest positive effects, existing studies on recidivism and participation in rehabilitation must be approached with the understanding that critical amounts of data are missing or inaccessible for public policy and/or privacy concerns. This does not mean that no conclusions of any kind can be drawn from the data, nor does it mean that existing data is not in favor of rehabilitation. In

fact, most research done on rehabilitation programs and their effects strongly suggest that there are significant positive effects for both the individual participating and their communities on release. In order to further study rehabilitation and its general effects on prison populations, we first review existing literature surrounding rehabilitation programs. Next, we move into a statistical review of open source data from the Bureau of Prisons to look more closely at the relationship between the availability of rehabilitation programs and in-prison conduct as a measure of the efficacy of these programs. We conclude with our findings from our statistical review, and the implications of our findings, as well as their limitations. In our findings from both the qualitative and quantitative reviews, we find evidence that suggests access to college education, and possibly other types of rehabilitation in the prison system, may currently be used against incarcerated people as a form of social control. Further research and testing is needed, both to prove the positive benefits of rehabilitation programming, as well as our hypothesis of access to rehabilitation programming as social control.

Sheida Yahyazadehmoghaddam

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

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Abstract Name: Fitness and Social Attention: Insights from a Study on Socioemotional Sensitivity in Free-ranging Rhesus Macaques

The ability to discern socioemotional cues from conspecifics is crucial for social competence in primates and overall individual performance, including humans. However, the connection between social information processing and key fitness components remains unclear. Here, we investigated whether preferences for social signals predict fitness components in a primate population by testing associations between survival, reproduction, and social interest of free-ranging rhesus macaques (Macaca mulatta) in Cayo Santiago, Puerto Rico. We experimentally assessed socio-emotional sensitivity in 393 individual adult monkeys. For this, we measured looking time to conspecific female photographs displaying diverse emotional expressions (i.e., neutral face, threat face), and tested whether such response was associated to survival and reproductive performance. After controlling for age, the annual survival of males and females was positively associated with social attention to a female photo ($b = 0.60$, $z = 2.01$ $p = 0.04$). In contrast, we found a negative association between the annual probability of reproduction in females and social attention to a female photo ($b = -0.27$, $z = -3.08$, $p = 0.002$), indicating a potential trade-off between social interest and reproductive performance. As social attention to a threat stimulus increased relative to the neutral stimulus (i.e., negative socioemotional bias), the probability of reproduction decreased ($b = -0.15$, $z = -2.24$, $p = 0.03$). Our results highlight the potential role of social interest in various aspects of fitness and suggest achieving reproductive success may come at the cost of social engagement in this group of primates.

Sairakshitha Yalla

KY - University of Kentucky

Discipline: Education

Authors:

#1 Sairakshitha Yalla
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Abstract Name: “No time for work”: Investigating the Financial Concerns of STEM Undergraduate Students at the University of Kentucky

Research has shown that financial stress affects many undergraduate college students and that first-generation college students and members of historically minoritized groups are more likely to experience financial difficulties. No prior studies have investigated the impact of academic major on one's financial concerns. Specifically, the goals of this study were to better understand how the schedules and course requirements of undergraduate STEM students at the University of Kentucky affect their ability to earn money from a job and to determine if STEM-major related financial concerns differ among demographic groups. We utilized a mixed methods approach consisting of analysis of both close- and open-ended survey responses. Our preliminary analysis (n = 27) indicates that the majority of participants surveyed worry about paying their monthly expenses. Over 75% of participants agree that if they did not receive grants, loans or scholarship money, they would not be able to attend college. Over 85% of students surveyed indicated that the class and lab schedule required of STEM majors makes it difficult to earn money from a job. Qualitative analysis of open-ended survey responses indicated that being a STEM student is heavily time consuming, affecting students’ work hours. Specifically, long hours in scheduled labs, research activities, timing of course offerings, and heavy exam weeks contribute to students’ inability to work as many hours as they would like. During future phases of this project, we will interview students to explore in greater depth the identified financial concerns and stress that undergraduate STEM majors face. The results of this study can help improve the accessibility of undergraduate STEM majors and help faculty and university administrators understand the stress and barriers that these students face.

Samantha Yamamoto

HI - University of Hawaii at Manoa

Discipline: Natural and Physical Sciences

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Abstract Name: Quantification of Ribosomes and Zinc in Mycobacterium smegmatis Grown Under Zinc Limitation

Zinc (Zn2+) is an essential micronutrient to living cells, required by various proteins involved in physiological processes. However, bacteria often encounter zinc-limited environments. Of particular interest is the zinc-limited environment inside necrotic granulomas experienced by Mycobacterium tuberculosis (Mtb) in tuberculosis patients. Mycobacteria respond to zinc limitation by expressing zinc-independent, alternative ribosomal proteins (AltRPs) for the replacement of zinc-dependent, primary ribosomal proteins (PrimRPs). Four AltRPs are contained within the altRP operon, which is conserved in mycobacterial species, including Mtb. AltRPs studied in a model mycobacterium Mycobacterium smegmatis (Msm) have been demonstrated to cause morphological changes and allow for continued growth and survival when Zn2+ is limited. This suggests that AltRPs can functionally replace PrimRPs as an adaptation to limited zinc. However, the expression and behavior of alternative ribosomes are not yet completely understood. This project aims to increase understanding of alternative ribosome biogenesis and its role in zinc homeostasis by analyzing how alternative ribosomes bind zinc compared to primary ribosomes. This will be done by comparing the number of ribosomes synthesized by a wild type and deletion mutant (ΔaltRP) of the altRP operon in Msm, which should synthesize alternative ribosomes and primary ribosomes, respectively, when grown in zinc-limited conditions. Additionally, Zn2+ abundance in ribosomes and ribosome-free cell lysates will be quantified and compared between strains. Because of the high zinc requirement of primary ribosomes

synthesized by the altRP deletion mutant, it is expected to have fewer ribosomes and bind more zinc per ribosome compared to the wild type whose alternative ribosomes have a lower requirement for zinc. This project will help to determine how AltRPs contribute to ribosome biogenesis and zinc homeostasis in mycobacteria. Since Msm is a model organism for Mtb, new knowledge from this project can also be applied to identify better drug targets to treat tuberculosis.

Jizhi Yan

IL - University of Chicago

Discipline: Natural and Physical Sciences

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Abstract Name: Glutamine Metabolism Is Altered in Myeloproliferative Neoplasms and Represents a Potential Novel Therapeutic Target

Cancer cells exhibit metabolic reprogramming to facilitate growth and proliferation. Previous studies in various cancers show cancer cells rely significantly on elevated glutamine metabolism for macromolecule biosynthesis and redox homeostasis. However, very few studies have investigated the role of glutamine metabolism in myeloproliferative neoplasms (MPNs). Glutamine catabolism begins via glutaminase (GLS1) catalyzing the rate-limiting conversion of glutamine into glutamate. Many studies in different cancers have found GLS1 to be a dependency and can be therapeutically targeted, but these studies have been extremely limited in MPNs. The potential mechanisms with respect to MPN driver mutations (CALR, JAK2, MPL) and their differential utilization of glutamine have yet to be fully explored. One previous study demonstrated that in JAK2V617F mutant-Ba/F3 cells, GLS1 expression was significantly increased and that GLS1 inhibition suppressed colony formation in patient samples but not healthy donors. To more comprehensively decipher the role of glutamine metabolism in MPNs, we performed RNA-sequencing on MPN patient peripheral blood mononuclear cells (PMBCs) and found that genes involved in glutamine metabolism are significantly altered. In contrast to the previous study mentioned above, our RNA-seq, qPCR, western blots, and enzyme activity data demonstrate that GLS1 mRNA, protein, and enzyme activity levels are not significantly up-regulated, and MPN PBMCs are not sensitive to GLS1 inhibition using CB-839, a selective GLS1 inhibitor. Rather, we characterized another key enzyme in glutamine metabolism, glutamine synthetase (GS), as a molecular and metabolic dependency in MPNs. GS converts glutamate into glutamine and serves to satisfy the metabolic demand for increased glutamine. We found that GS mRNA is significantly up-regulated, and inhibition of GS decreases MPN cell proliferation. In summary, we have demonstrated that GLS1 may not be an effective therapeutic target for MPNs and instead characterize GS as a novel dependency and potential point of therapeutic intervention.

Mai Nhia Yang

WI - University of Wisconsin-Madison

Discipline: Social Sciences

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Abstract Name: Pilot Study of A Pain Assessment Information Visualization Intervention to Improve Limited English Proficiency Hmong Patients and Healthcare Providers Communication in Primary Care

Pain assessment and treatment heavily rely on patients' descriptions of the location, severity, and quality of their pain. However, limited English proficiency (LEP) Hmong patients often struggle to provide accurate pain descriptors due to their different communication style (e.g., use of metaphors), resulting in providers' inability to understand and treat their pain. Therefore, this study's purpose was to assess the impact of a pain assessment information visualization (InfoViz) communication intervention to improve patient-provider communication about pain location, quality, and severity in primary care settings. Using a static design, we collected data from 20 triads of patients, interpreters, and providers in the usual care group (i.e., no communication tool) followed by 20 triads in the intervention group (i.e., using the Pain InfoViz Tool). Patient-interpreter-provider communication was audio recorded during clinical visits. We analyzed 36 visits using a pre-determined coding scheme on pain location, severity, and quality as well as on clinician conversation (e.g., probing for clarification, elaboration, reflection, and paraphrasing for pain information). We found that the intervention group experienced a decrease of 13.89 minutes in visit duration compared to the usual care group (Mean=18.25 minutes, SD=10.44 vs Mean=32.14, SD=27.81, respectively). There was also a reduction in provider's probing, such as clarification, elaboration, reflection, and paraphrasing in the intervention group. These results suggest that the Pain InfoViz intervention may have positively impacted the LEP Hmong patients' ability to describe their pain more clearly, resulting in fewer assessment probes by providers.

Kailee Yang

CA - California State University - Long Beach

Discipline: Social Sciences

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Abstract Name: Usability in Design: Trends in Assistive Technologies for Cognitive Impairments (1980-2022)

Assistive technology for cognition (ATC) has been proven to successfully support individuals with cognitive impairments, but how much of the research discusses the usability of these technologies for patients and caregivers? With the growing population of elderly people and the natural cognitive impairments that typically accompany aging, there is an increasingly dire need for more efficient assistive technology for cognitive deficits. The purpose of this study is to identify trends in ATC research from 1980 to 2022 to inform future research to design the safest and most effective systems for people with cognitive impairments. Along with the timeframe of 1980-2022, the parameters specify five major publications of the Human Factors and Ergonomics Society, including Human Factors: The Journal of the Human Factors and Ergonomics Society, Ergonomics in Design: The Quarterly of Human Factors Applications, Journal of Cognitive Engineering and Decision Making, Proceedings of the HFES Annual Meeting, and Proceedings of the HFES Health-Care Symposium. An original exhaustive search term list was used to analyze the publications by

creating keyword combinations. Results indicate a scarcity of research on the usability of assistive technology related to cognition and patients or caregivers, and it reveals an overall gap in research for the target population. Furthermore, recurring design recommendations suggest products be more “user-friendly” and minimize memory load. The lack of research on ATC and usability targeted towards patients and caregivers results in those in need of these technologies having a harder time finding and using them. The identification of trends and gaps within this research will encourage further studies on improving these technologies for cognitively impaired individuals.

Ashley Yang

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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Abstract Name: Depression in Relation to Vitamin B Intake After Traumatic Brain Injury

In the modern day with medical advances, Traumatic Brain Injury (TBI) continues to present a formidable challenge. Not only does it entail cognitive impairments and emotional repercussions, but depression is also emerging as a noteworthy consequence, particularly in severe cases. However, the conventional reliance on antidepressants only exacerbates the symptoms with a substantial number of patients contending with the adverse side effects. Recent research has illuminated a promising alternative in the form of Vitamin B complex, specifically B3, B6, and B7, which play pivotal roles in aiding neurotransmitter synthesis and axonal transport, fostering enhanced brain function and activity. With its demonstrated efficacy in reducing anxiety and depression significantly, Vitamin B complex emerges as a potential preventive measure for individuals in TBI recovery. Its ability to mitigate symptoms without the typical side effects shows promising results for promoting the overall well-being of TBI patients, which could address both physical trauma and mental health challenges. As a result, the prescription of Vitamin B complex as a preventive medicine should be advocated for the alleviation of TBI-induced depression. However, a formidable obstacle arises as many patients lack awareness of Vitamin B complex’s significance and share concerns about potential side effects. This study further underscores the potential of introducing nutritional interventions to enhance the mental well-being of TBI patients, better patient education, personalized vitamin B guidance, adherence monitoring, and interprofessional collaboration. Overall, this proposal aims to optimize TBI-induced depression management with improved patient outcomes. Through collaboration among healthcare providers, it is anticipated that the standard of care for TBI-induced depression patients will be greatly enhanced.

Harrison Yang

KY - University of Kentucky

Discipline: Engineering and Architecture

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Abstract Name: Magnetic resonance imaging of macrophage response to radiation therapy

Cellular response to cancer treatment is difficult to track in real time. Standard practice of macrophage

quantification currently involves immunostaining of a biopsied tumor. However, this technique is fraught with numerous limitations, including the invasive nature of the test, heterogeneous tumor associated macrophage distribution, and lack of a clear cut-off point for positive staining. Non-invasive imaging methods such as MRI could obviate the need for biopsies and serve as a biomarker of radiation therapy efficacy. Radiation therapy is widely utilized to clinically treat common cancers. By injecting a fluorine based nano-emulsion, macrophages that passively ingest the emulsion can be tracked via MRI. The results demonstrate the potential of 19F MRI to non-invasively track macrophages during radiation therapy and its prognostic value with regards to tumor growth. This study is the first to correlate macrophage signal change to tumor volume and a first step towards accurate non-invasive assessment of RT efficacy. A significant change in 19F signal was found between radiotherapy treated and untreated groups for both the breast and colon cancer mouse models two weeks after irradiation. Treated groups in both cohorts also displayed significant tumor regression. Fluorine signal change correlated to tumor volumes, indicating that MR imaging of macrophage recruitment in tumors may be a valid biomarker of RT efficacy. Additionally, tumors possess apparent mechanistic differences depending on their origin and have therefore varied responses to RT. This technique will be extremely beneficial in future analysis of inflammation's role in tumor recurrence. The findings support the potential, pre-clinical therapeutic benefit of incorporating MRI of macrophage dynamics in RT workflow. Non-invasive imaging tools are becoming increasingly necessary to provide safe and accurate tumor prognosis. Finding ways to increase probe specificity to distinguish macrophage phenotypes will be the next challenge but ultimately can dramatically better patient outcomes.

Kylie Yant

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: Assessing the Role of WRKY57 in Bolting Associated Leaf Senescence in Arabidopsis thaliana

Leaf senescence is the successive process in which older leaves mature and then die, indicated by leaf yellowing. This is a critical developmental stage in all plants, including the model species Arabidopsis thaliana, and is imperative to the plant's fitness, as nutrients are recycled back into the growing and storage tissues of the plant. The WRKY gene family encodes transcription factors that play critical roles in response to abiotic stressors. WRKY57 gene expression is induced by drought and overexpression of WRKY57 results in drought tolerance. Our lab is interested in WRKY57 as it may also be important for the regulation of leaf senescence in response to flowering, termed bolting in Arabidopsis thaliana. Our project is to monitor WRKY57 gene expression after bolting and to isolate wrky57 T-DNA mutants and determine if they display early senescence. Two T-DNA insertions, SALK_006206 and SALK_076716, localize to the WRKY57 gene. To identify individuals that were homozygous for mutant alleles, we used PCR primers that spanned the insertion site. Two homozygous individuals were isolated for each T-DNA insertion. These PCR products were then sent for sequencing, after which we designed real-time qPCR primers to quantify WRKY57 transcripts. The WRKY57-1 primer pair amplified cDNA linearly and was used to quantify transcripts in response to bolting. We found that WRKY57 gene expression was up-regulated after bolting. We purified, sequenced, and mapped the SALK_006206 allele, which is an intron. We then repeated the process with SALK_076716, which mapped to the promoter region. Next, we will determine if T-DNA insertion lines block WRKY57 gene expression, or in the case of the promoter insertion, activate WRKY57 gene expression, and will quantify bolting-associated leaf senescence through loss of chlorophyll and activation of NIT2 gene expression.

Jaimie Yap

FL - Florida Atlantic University

Discipline: Social Sciences

Authors:
#1 Jaimie Yap

Abstract Name: "Just Teasing" or "unJust" Insulting?

The aim of this research project is to shed light on how bantering messages may be received and why. Limited work has been conducted on the communicative act of banter. Various definitions for banter exist, making such incidents open to interpretation. To determine how outsiders perceive banter, 200 participants of the general adult workforce(ages 18-25) anonymously completed a Qualtrics survey through MTurk. All participants were randomly assigned a 20-30 second bantering scenario video. Participants then evaluated the interaction quality observed. MANCOVA, conducted on the effects assessment of interaction, measured multiple factors to determine variables affecting results. The new measure of bullying experiences responses compared personal accounts to banter perceptions to identify relations. Major findings show participant viewpoint is significantly influenced by the sex of the teaser and observer, nonverbal cues, and personal experience. This implies that our experiences shape how we later influence and perceive those around us.

Jocelyne Yataco

FL - Florida International University

Discipline: Engineering and Architecture

Authors:
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Abstract Name: Developing an Empathetic Socially Assistive Robot for Mental Health Support: Performing Personality Matching with Deep Learning

The research goal is to design a socially assistive robot (SAR) that will help in the day-to-day activities of a person coping with mental health challenges. The social robot will react to the behavior changes in mental health deterioration and deliver interventions, such as: 1) performing grounding techniques to mitigate such behavior changes and, in the case of needing a more severe intervention, 2) contacting family members and medical staff, all while maintaining empathy toward the user. In this research, our primary hypothesis is that the empathetic feature of the SAR can be achieved by matching the user’s personality. To achieve this personality matching, the user's personality will be measured using the Big Five Personality Test, focusing on the extroversion/introversion dimension. The Deep Learning Architecture chosen to develop this model is Long Short Term Memory (LSTM). Our preliminary result for this model indicates an accuracy score of 0.47. The personality database used in this research was obtained by Soheil Novinfard during his 2018 master’s dissertation at the Queen Mary University of London. Socially Assistive Robotics (SARs) in Mental Health is a field that has the potential to help people with mental health disorders feel more independent in their day-to-day lives. Our secondary hypothesis is that making an empathetic SAR could help the patient develop a bond with the robot and, in this way, make the SAR have a more positive impact on the patient. To conclude, we plan to develop a SAR that will mirror the patient's personality to test if the robot-user interaction reaches a high empathetic level.

Jessica Ye

MD - University of Maryland College Park

Discipline: Business and Entrepreneurship

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#1 Jessica Ye

Abstract Name: Economic Outlook and Political Polarization in Trade Impacted American Labor

Since the start of China's WTO membership in 2001, there has been a decline in over one million U.S. manufacturing jobs. This process has been linked to an increase in U.S. political polarization. This paper explores the relationship between local labor market trade exposure and Senate candidate ideological realignment. To this end, I exploit exogenous variation from economic outcome perceptions. The analysis combines import penetration data, the Database on Ideology, Money in Politics, and Elections' (DIME) candidate ideology scores, and household debt to income ratios since the early 2000s. The empirical strategy implements an IV method, in which Chinese import penetration in the U.S. is instrumented with Chinese import penetration in other advanced economies. I find a significant impact on Senate polarization from increases in import penetration and household debt to income. The estimated effect in polarization per unit increase in import penetration is comparable to 4/5ths of the baseline ideological difference between candidates without the 2001 trade shock. This increase in polarization is comparable to 75% of the ideological difference between Joe Biden in 2002 and Rand Paul in 2016. The increase in polarization from a unit increase in debt to income is slightly smaller, comparable to half of the ideological difference between Joe Biden in 2002 and Rand Paul in 2016. Further work will investigate alternate measures of polarization and introduce controls. These results support pre-existing literature and offer insight into the importance of economic optimism in widening political cleavages from trade.

Krishin Yerabolu

AL - University of Alabama at Birmingham

Discipline: Health and Human Services

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Abstract Name: Life's Essential 8 Score in Pregnant Females: Insights from National Health and Nutrition Examination Survey

Introduction: Cardiovascular diseases(CVD) is the primary cause of increased mortality in pregnant women in the US. Maternal cardiovascular health(CVH) influences both maternal CVD risk and offspring's CVH. However, the CVH of pregnant females has not been characterized and compared with non-pregnant females using the newly introduced Life's Essential 8(LE8) score.Methods: This study included females aged 20-44 years without a history of cardiovascular disease from the National Health and Nutrition Examination Survey(NHANES) cycles from 2011-2020. The cohort was stratified into pregnant and non-pregnant females. Adjusted weighted linear regression models were used for analyses. Results: This study included 3,580 females representing 36.1 million females of US population. There were 171 pregnant and 3,409 non-

pregnant females. The weighted mean LE8 score was lower in pregnant females [69.3 (1.2)] than in non-pregnant females[72.3 (0.4)]. Compared with non-pregnant females, the lower LE8 score in pregnant females could be attributed to lower mean physical activity[42.7 (3.9) vs. 56.2 (1.3)], blood lipids[61.8 (3.4) vs. 79.4 (0.6)], and body mass index[54.4 (3.2) vs. 60.5 (1.0)] scores. The LE8 score remained stable in pregnant(Ptrend:0.27) and non-pregnant(Ptrend:0.67) females between 2011-2020. Compared with non-pregnant females, pregnant females had lower odds of having an ideal LE8 score[ORadj: 0.50 (0.32–0.77)], ideal physical activity score[ORadj: 0.46 (0.31-0.69)], ideal blood lipids score[ORadj: 0.39 (0.26-0.59)], and ideal body mass index score[ORadj: 0.42 (0.25-0.70)]. The odds of having ideal blood pressure scores were two-fold higher in pregnant females compared with non-pregnant females[ORadj: 2.07 (1.02-4.21)].Conclusion: Compared with non-pregnant females, pregnant females have a lower CVH without improvement in the past decade. Pregnancy was associated with 50% lower odds of ideal CVH in females. This study highlights the need to improve CVH screening and promote rigorous risk factor control during pregnancy.

Ching Hong Brian Yeung

CA - University of California - Los Angeles

Discipline: Humanities

Authors:
#1 Ching Hong Brian Yeung

Abstract Name: The Awakening Hongkongers: A History of Identity Cultivation via Education in Hong Kong, 1984-2024

My honors thesis explores the cultural and political influence of the Hong Kong education system on the development of local identity (Hongkonger) since the signing of the 1984 Sino-British Joint Declaration.Benedict Anderson has explained why and how "nation" is constructed, arguing that language is the stem of an imagined community. Focusing on the Chinese region, Peter Zarrow and Robert Culp have demonstrated education as an effective medium to cultivate Chinese national identity during the Republican Era. However, since the emergence of the Hongkonger identity is a phenomenon that arose in the 2010s, research on the relevant topic is scarce.Liz Jackson is currently the only scholar who has explored the interrelation between Hong Kong's civic education and identity cultivation. However, her reliance on secondary scholarship limits her contributions to understanding the evolution of Hong Kong's education and identity. The essence of primary sources lies in their ability to challenge old historical testimonies and create new insights. Thus, while the endpoint of my study is understanding the construction of contemporary Hongkonger identity, my analysis is grounded in primary sources. The study is organized into three major periods: 1984-1997, 1998-2011, and 2012-present, each divided into four subsections: top-down policy, educational materials, the "hidden curriculum," and the bottom-up experience from oral interviews. This approach aims to create a solid and holistic historical foundation for the underexplored interrelation between civic education and identity formation in Hong Kong.My working hypothesis is that a nascent Hongkonger identity originated from the "depoliticized" civic education policy implemented by the British administration. The British colonial policy helped forge an identity that differed from nationalist narratives, which constantly emphasized pride in Chinese culture and the nation-state. Hongkonger identity did not become actualized, however, until students interacted with the nation-centric curriculum implemented under PRC sovereignty.

Jay Yoder

MT - Montana Technological University

Discipline: Engineering and Architecture

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Abstract Name: Flow Characterization of Low-Pressure Cold Spray Systems

Cold spray is an additive manufacturing process that utilizes a compressed gas through a supersonic nozzle to accelerate powder materials which impact and bond to a substrate. The common technique for studying cold spray systems is to change machine settings and measure the particle velocities near the exit for those settings. However, this results in a lack of understanding of what happens through the system. By analyzing the characteristics of air and particle flow in a low-pressure cold spray (LPCS) system, operating conditions, and nozzle design can be optimized. Our goal is to validate Computational Fluid Dynamic (CFD) models that can be used to further understand cold spray nozzles and systems. We will be measuring total pressure and total temperature throughout the gas plume. A test bench has been developed to align the cold spray nozzle with the instrumentation. Measurements will be taken at supplied pressures from .5 to .9 MPa at temperatures from 22 to 600 degrees Celsius. The total temperature probe is under development, but preliminary results have been recorded using a total pressure probe. Results indicate the presence of Mach disks along the plume. An optical schlieren system is being used to locate these Mach disks and additional shocks. Large Eddy Simulation (LES) 3D CFD models of the system are being created using ANSYS Fluent and an unsteady compressible Direct Numerical Simulation (DNS) solver is under development, both of which will be validated using the data obtained. The findings can potentially improve nozzle geometry design and assist in producing repeatable exit velocities for cold spray technology.

YEOJIN YOON

CA - California State University - Long Beach

Discipline: Natural and Physical Sciences

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Abstract Name: TiO2-coated Plasmonic Gold Nanoparticles as Photonic Nanoreactors

This research explores the synthesis of TiO2-coated plasmonic gold nanoparticles as a novel platform for photonic nanoreactors focused on advancing catalytic applications. The hybrid nanostructure, comprising AuNPs as plasmonic cores and TiO2 as a coating material, harnesses the unique optical and catalytic properties of both constituents. The plasmonic resonance of gold nanoparticles and the UV light absorption of TiO2 enables charge separation and electron transfer, which produces active electrons and/or charges, by both UV light spectrum and visible light spectrum. The enhanced harvesting and localization should enhance the overall photonic efficiency. This work demonstrates a comprehensive analysis of catalytic activity and optical properties using photometric spectroscopy and optical electron microscopy. We investigate the interactions between plasmonic and photocatalytic components to elucidate the mechanisms that control improved reactivity within photothermal and photocatalytic processes. Furthermore, we explore potential applications

of photothermal and photocatalytic processes of these hybrid nanostructures, highlighting their promising roles in environmental improvement and energy application. This work will lead to progress in the design and optimization of plasmonic AuNP-TiO2 nanocomposites, which have wide-ranging implications in various scientific and technical areas such as the development of environmentally friendly energy technologies, safe new healthcare methods, and the development of high efficiency and multipurpose photonic nanocomposites.

Yufu Yoshimura

MT - Montana State University - Bozeman

Discipline: Visual and Performing Arts

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Abstract Name: The Double Reeds of the World

Most people who have experience with the global phenomenon of western classical music are aware of the double reed instruments mainly used within that style. The most common in this genre are the oboe and the bassoon. Some may also be familiar with other members of these two instrumental families such as the English horn, oboe d'amore, and contrabassoon. However, few people are familiar with double reed instruments from other traditions. As an oboe player, I am particularly interested in how different double reed instruments, and particularly the timbre of the double reed, are used within the context of the culture from which they developed. In addition, the path in which similar instruments were exported or copied throughout history will be explored. Cultural aspects include traditional rituals, their role in folk music, the other instruments they are combined with, as well as historical and contemporary performance practices. I will find various papers and experts on a variety of different double reed instruments in order to gain a better understanding of the history of these instruments and to compare and contrast them. A partial list of instruments my project will cover include crumhorn, duduk, piffero, sourna, guan, hichiriki, piri, and shehnai. I will create a website that can serve as a database of different double reed instruments in the world with a general overview and history. In addition, I will have a poster and/or a paper in order to make this information presentable in various forms. Dissemination will include our campus undergraduate research celebration and student-led journal.

Caroline Youdes

KY - University of Kentucky

Discipline: Natural and Physical Sciences

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Abstract Name: Role of Bmal1 in Restenosis & cPLA2 Expression in Smooth Muscle Cells

Coronary Artery Disease (CAD) is a leading cause of death globally. Drug-eluting stents (DES), coated with medication that slowly releases into the arterial wall over time, are used to manage CAD and prevent

restenosis, the re-narrowing of the treated vessel. A potential target of drug development for DES is the transcription factor Bmal1. Smooth muscle cell (SMC) specific Bmal1 deletion protects against neointimal hyperplasia in femoral artery vascular injury mouse models for restenosis. Enrichment pathway analysis of RNA-seq in SMC-Bmal1 knockout and wild-type mouse aortas indicated a relationship between Bmal1 and the arachidonic acid metabolism pathway. Further RNA-seq of specific enzymes in this pathway revealed that the phospholipase cPLA2α, involved in inflammation, is selectively downregulated in aortas of SMC-Bmal1 knockout mice relative to wild-types. Western blot analysis was performed to verify that siRNA downregulation of Bmal1 reduces cPLA2 protein expression in cultured Rat aorta SMCs. The result of the administration of increasing concentrations of Bmal1 siRNA was an apparent dose-dependent downregulation of Bmal1 and cPLA2. This study aims to identify the mechanism by which Bmal1 regulates cPLA2. Since Bmal1 is a transcription factor and preliminary data has shown that cPLA2 mRNA is downregulated by SMC-Bmal1 knockout, we hypothesize that Bmal1 influences cPLA2 in SMCs via binding to the promoter to control transcription. We plan to clone the cPLA2 promoter, insert it into a vector containing the luciferase reporter gene, and transfect this construct into wild-type and Bmal1 KO mouse SMCs prior to running a promoter luciferase assay. This will us to directly compare cPLA2 transcription in the presence and absence of Bmal1 to identify whether Bmal1 regulates cPLA2 transcriptionally. In the future, we plan to identify potential binding sites (E-boxes) for Bmal1 within the cPLA2 promoter. We hope this project may reveal a new pharmacological avenue to treat restenosis.

Leo Young

FL - University of West Florida

Discipline: Natural and Physical Sciences

Authors:
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Abstract Name: The 2023 University of West Florida Campus Ecosystem Study: Effects of forest vegetation on light availability and soil processes

College and university campuses with a notable arboreal component provide unique opportunities for carrying out ecological research. The University of West Florida Campus Ecosystem Study (UWF CES) was established in 2019 as interconnected research to take advantage of the extensive arborescent nature of the UWF campus, particularly concerning longleaf pine (Pinus palustris). This year's study established permanent plots in forested sites of two contrasting types, one dominated by longleaf pine (‘pine site’) and the other dominated by hardwoods (‘hardwood site’). This study used these plots to examine the influence of forest vegetation on light availability and soil processes. Light was measured as photosynthetically active radiation (and expressed as photon flux density—PFD) with a handheld meter in each plot. Soil was sampled to 5 cm in each plot with texture was measured with the hydrometer method. Identical sampling was carried out in a persistent canopy opening to assess light and soil conditions under maximum solar radiation. Mean PFD was ~4x higher in pine stands than in hardwood stands; PFD was 12.8 and 3.5% of full light in the pine and hardwood stands, respectively. All soils were dominated by coarse-textured sands, but silt was significantly higher in pine stand soil and higher still in the canopy opening. Among forest stand plots, sand was negatively related to PFD, whereas clay was positively related to PFD. Across the three sites, silt was positively related to PFD. These relationships are consistent with the importance of solar radiation as one of many drivers of soil weathering.

Wyatt Young

UT - University of Utah

Discipline: Engineering and Architecture

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Abstract Name: Enhanced Data Integrity in Digital Health: Advanced Error Detection and Robust Batch Processing for Optimizing Wearable Sensor Outputs in Lower Extremity Fracture Rehabilitation

Lower extremity fractures (LEFs) are common injuries with complex healing periods. The incorporation of wearable sensors for patient monitoring has enabled healthcare practitioners and researchers to obtain high-level insights into fracture characteristics and the healing process. My research group developed a wearable sensor to continuously monitor patient behavior during LEF rehabilitation. The substantial volume of data generated over up to 92 days of sensor recordings, at approximately 4.15 million data points per day, can pose challenges in error detection, as errors may be concealed within this extensive dataset.This project addresses the challenge of detecting errors in large physiological datasets by implementing a robust batch-processing method that systematically analyzes an entire physiological dataset. First, a batch method to convert the sensor signal from binary data to a readable data structure was validated against the conventional one-by-one data analysis method with a Pearson correlation coefficient. The average Pearson correlation coefficient for all 7 datasets was 0.99797. Next, we incorporated checks in the batch processing to detect erroneous rates of change in the slope of the sensor signal. Our error detection algorithms uncovered 9 times more errors than previously identified through the legacy approach. This discovery has significant implications for preventing erroneous data analysis and informing future sensor design modifications.This advanced error detection and data processing pipeline contributes to the field of large physiological data management. Utilizing this pipeline, our group is better equipped to use objective data gathered from wearable sensors to optimize patient care and treatment outcomes. This project underscores the importance of continual refinement in data processing methods to navigate the challenges posed by big data, ensuring the consistent reliability and validity of research findings in the era of advanced digital health technology.

Stephanie Yu

CA - Chapman University

Discipline: Social Sciences

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Abstract Name: How Demographics Influence Self-Image

When creating psychological research surveys, demographics are typically recorded at the end of the primary survey. Psychologists suggest placing demographic questions at the end to omit any biases from the participants (Hughes et al., 2016). Does the placement of these types of questions influence people without them knowing? How does this apply across different ethnic groups? Can demographic question placement prime individuals in their self-rating of attractiveness and the overall impact of demographic placement on survey results? After an initial round, we wanted to see if ethnic groups would be primed differently when viewing people of the same race. We also investigated whether parents' views on beauty standards impacted them more than the American beauty standards participants grew up with. To test this question, this project

will conduct five surveys, each gearing towards a specific racial group: White, Black, East/Southeast Asian, South Asian, and Hispanic. Each survey will have two versions of the study to compare self-ratings of overall attractiveness. In version one, individuals will first answer demographic questions, rate the celebrities' attractiveness of their stated racial group, and then rate their own attractiveness. In version two, participants will first rate the celebrities' attractiveness, rate their attractiveness, and then answer demographic questions. Participants primed with their demographics at the beginning rated their attractiveness lower than participants who answered them at the end. In the second round of data, we will test if ethnic groups are more impacted by seeing celebrities of their same racial group. Overall, this research will further our understanding of demographic question placement and which marginalized groups are impacted the most. This is important since many testing formats currently place demographic questions at the beginning. Thus, this research will influence not only how psychologists conduct research, but also how proctors execute standardized testing in classroom settings.

Justin Yu

GRB - University of Warwick

Discipline: Social Sciences

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Abstract Name: A Critical Assessment of the Digital Markets Act. Can the EU Win the Competition Law Battle Against Big Tech?

Digital technology is a crucial part of our lives. While it transformed the way we live, large digital platforms could stifle competition by acting as gatekeepers. Because of their distinctive features in the digital markets, global regulators have questioned the effectiveness of competition law in addressing anticompetitive behaviour perpetrated by certain digital platforms. On 14 September 2022, the Digital Markets Act (DMA) was signed into law. It is a piece of legislation that has the potential to revolutionise the regulation of digital platforms and the enforcement of EU competition law. However, questions remain about its legal framework including designation, ex-ante rules, and enforcement.In this paper, I will answer the questions surrounding the DMA using existing competition law as a stepping stone. In part one, I will explain the characteristics of the digital economy and the issues created by dominant digital platforms. In part two, I will review the process of designation and the nature of the obligations of "gatekeepers". I will use entities that have been designated as "gatekeepers" as examples to analyse the obligations they are assigned. The prescriptive ex-ante rules for "gatekeepers" represent a drastic departure from traditional competition law philosophy. It is unknown whether it will lead to a loss in innovation. In part three. I will focus on the legal framework of enforcement. In particular, I will examine the necessity of structural remedies as the antidote for systematic non-compliance. Breakups have rarely been featured as a remedy in abuse of dominance cases under Article 102 TFEU. With the growing political and academic consensus that "gatekeepers" represent a distortion in digital markets, the possibility of divestiture could arise for repeat offenders. I will use entities that have been or have the potential to be designated as "gatekeepers" as examples to demonstrate the obligations they are assigned.

Talia Yu

GA - Emory University

Discipline: Humanities

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Abstract Name: An Examination of Negative Markers in Minnan

This study aims to analyze the use of negative markers in Minnan. Chappell (2016) describes Minnan as having nine primary negative markers: six used in negative sentences (two of which can also be used in question sentences) and three used in imperative sentences. Two additional compound negatives were reported. However, Chappell's paper does not provide an in-depth analysis of the usages of these markers, as it combines data from multiple dialects and sources. To explore the current usage of negative markers in Minnan spoken in Central Taiwan, we conducted eleven elicitation sessions with a native speaker. The study found evidence for only a subset of these negative markers (m, bo, mai, boai, be, (m)bian, m tang), suggesting a shift in distribution, meaning, and assimilation among the markers. Notably, the perfective negative marker bo has replaced m as the general negative marker in negative and question sentences in this dialect. Furthermore, in question sentences, bo is not always paired with its corresponding auxiliary affirmative modal, u, and can be paired with other modals such as e. Additionally, the imminent negative be has undergone a phonetic shift and is now realized as bue. Regarding imperative sentences, we confirmed three negative markers and observed a possible assimilation between m eng and (m)bian. These findings indicate a simplification of negative markers in Minnan, particularly among markers that belong to similar semantic categories. Therefore, further research is necessary to accurately represent the grammatical functions of Minnan negative markers in multiple structures.

Turner Yuen

CA - Biola University

Discipline: Natural and Physical Sciences

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#1 Turner Yuen

Abstract Name: Analyzing Unknown DNA Alleles in a Murder Exoneration Case: The Role of Paternity Testing in Forensic Analysis

There are many creative applications of the paternity test apart from determining parentage. One such implementation is in forensic genetics. In this case study, a man convicted of murder has been found to be "exempt" based on DNA analysis conducted on biological materials (DNA) found under the fingernail clippings of the dead body almost two decades later. This DNA profile did not match that of the convicted instead shows that of a possible unknown other. However, the convicted remains incarcerated due to the possibility that the unknown DNA profile could be that of the victim and not of a perpetrator. If the DNA from the deceased would not match the unknown profile, the exemption can be confirmed further. However, no more biological materials are available from the deceased. A biological son of the deceased volunteered his blood for DNA testing. The results of this study were considered inconclusive since the unknown DNA profile has dropouts at several alleles, although the son’s profile was intact. We therefore conducted a per allele study at each marker, comparing allele by allele. The results show that at least one allele does not match, making it possible for the unknown profile to be placed on the CODIS database to see if it matches with a possible perpetrator. While one allele may not exonerate the convicted, a CODIS match probably will provide evidence necessary for exoneration. We have further researched several possibilities that could support this finding and have provided the results here.

Rebekah Yurschak

MI - Hope College

Discipline: Health and Human Services

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Abstract Name: Foster Parent Experiences of Stress During the COVID-10 Pandemic

Foster parents face many unique parenting challenges due to their role. Many foster parents feel isolated and may lack close friends who understand their experiences. They face constant change and uncertainty as they navigate the caring of vulnerable children, often with complex needs and in complex situations. The COVID-19 pandemic only exacerbated these feelings of isolation and uncertainty, as well as adding increased stress to the lives of foster parents. The present study explored the experience of stress among foster parents during COVID-19. Semi-structured interviews were conducted with 16 licensed foster parents in one Midwestern state during the summer of 2021. Fifteen participants were female and one participant was male. Fostering experience ranged broadly from less than one year as a foster parent to over 10 years as a foster parent, with some parents only fostering one child and others having fostered six children or more. The interviews were transcribed and coded and the authors conducted thematic analysis to develop themes surrounding the experience of stress for foster parents during the pandemic, specifically what was experienced and how it was experienced. Findings indicated that foster parents were "asked to do more" and faced an increase in role-related tasks. Some of these tasks included helping with school and therapy, supervising visits and parenting time, providing childcare, creating routines, and facilitating any other virtual communication for their children. Foster parents reported that these additional responsibilities caused them to experience increased stress. These findings suggest implications for both research and policy, specifically research on developing evidence-based practices for the virtual delivery of services, as well as developing clear policies around virtual parenting time.

Tibirni Yusuf

TN - University of Memphis

Discipline: Engineering and Architecture

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Abstract Name: Efficacy of Electrospun Chitosan Membranes with C2DA in Preventing Infectivity in an in-vivo Composite Tissue Infection Model

Background: Electrospun chitosan membranes (ECSM) with C2DA (ECX) have previously been shown to exhibit a prolonged release of non-antibiotic biofilm inhibitors (up to 72 hours) and modifying inflammatory responses through the release of local anesthetics such as bupivicaine. Chitosan was chosen due to its natural antibacterial properties and has been proven to foster cell growth and optimize drug delivery. In response to the need for advanced wound dressings for extremity trauma, we use ECX to develop a wound dressing for prolonged infection prevention and inhibiting bacterial colonization. Methods: A mid-diaphyseal bicortical femoral defect was induced in 13-week-old female Sprague Dawley rats by inserting an orthopedic screw containing ~5x10^4 CFU of GFP-expressing S. aureus to simulate a biofilm-associated composite tissue infection. Treatment materials applied around the femoral defect included the untreated control group, Celox gauze (standard-of-care), ECSM treated with decanoic chloride , ECX, and ECX loaded with bupivacaine. (n=12) Two animals from each group were longitudinally monitored at days 1, 2, and 3 post-infection before

animals were euthanized using CO2 inhalation. Bacterial loads in the collected tissues were quantified through colony-forming unit (CFU) counts (n=10), and the data was subjected to statistical analysis. Results and Conclusion: Despite initial hypotheses, our results revealed that bacterial burden was not decreasedin the treatment groups. The untreated group exhibited the least bacterial formation on both bone and surrounding soft tissue compared to other groups, which may be due to the presence of material promoting biofilm and packing within the defect limiting flow. To optimize drug release in future evaluations, we plan to wet the membranes using PBS, thereby initiating release within the wound. Furthermore, we will explore variations in therapeutic loading and application methods.

Fernando Zacahua

WI - University of Wisconsin-Madison

Discipline: Natural and Physical Sciences

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#2 Chiara Cirelli

Abstract Name: Testing SHY: The Synaptic Homeostasis Hypothesis of Sleep

The Synaptic Homeostasis Hypothesis (SHY), introduced by Drs. Cirelli and Tononi, proposes that the price we pay for synaptic plasticity is sleep. During wake, neurons are excited and interact with other neurons through trillions of synapses, causing these interactions to strengthen. During sleep, neuronal firing decreases and we propose that unimportant synapses become weakened compared to those that are significant. The weakening of many synapses during sleep also has other key advantages, including saving energy and avoiding synaptic saturation, thus allowing new learning the next day. Previous studies on SHY have demonstrated that synapses become stronger during wake and weaker after sleep in areas such as the cerebellum, cerebral cortex, and hippocampus. The goal of this investigation is to test SHY in the striatum, hypothesizing similar results. Therefore, 12 mice are used, and divided into three groups for comparison (4 mice/group): mice allowed to sleep (3 pm), mice spontaneously awake (3 am), and mice that are sleep deprived, all for ~6-8 hours. Three groups allow us to attribute any differences to behavioral state, rather than stress (sleep deprivation) or time of day (3 am and 3 pm). For each mouse, approximately 500 synapses are measured to view the changes that occurred in synapse plasticity between sleep and wake. In my project, I am using FIJI, an image-J extension that allows one to reconstruct dendrites and measure synapses from 2D images using serial-block face scanning electron microscopy. Furthermore, my project is also focused on analyzing the interactions between astrocytes and synapses. Previous studies in the mouse cerebral cortex have shown that during wake, astrocytes are closer in proximity to synapses, and glycogen turnover is increased within astrocytes during wake to provide energy to neurons in the form of lactate. Therefore, we hypothesize similar results in the mouse striatum.

Phoebe Zagrobelny

MI - Michigan State University

Discipline: Visual and Performing Arts

Authors:
#1 Phoebe Zagrobelny

Abstract Name: The Human Impression

Humans have permanently altered the natural world. I learned this from a young age growing as a person who loved the rural landscape of Waddington, New York. The town that I grew up in was not known for being a wealthy area; however, it was rich in nature and agriculture. I spent my time gardening and exploring the river. While I appreciated the relationship I formed with nature, it taught me a sad lesson. There was always garbage around. This realization altered my path. I became focused on how I could help the environment. This passion would later influence my college decision and my pursued major. This idea that nature and humans are interconnected is also the inspiration behind many of Ana Mendieta's works from the 1970's. Mendieta's Silueta Series uses the Earth to carve and sculpt human figures. With these pieces, Mendieta argues that humans and nature are one. With my work I would argue that humans have permanently changed nature. My photography will explore how humans have damaged even the purest environments. An example of these pure environments is the Adirondack Mountain Range in upstate New York. Some of the trash has become a part of its environment. Nature has begun to overtake the garbage and grow around it and with it. However, our Earth is resilient, it perseveres to the challenges that humans create for it. Through this research human pollution of nature will be captured. Along with this research I also expect to give back to nature by picking up litter that I see along the way, as long as it does not harm the environment to do so. This series of photographs will prove that humans have altered the Earth. I will try to capture the environment in its natural state garbage and all.

Arfa Zahid

NY - Brooklyn College

Discipline: Social Sciences

Authors:
#1 Arfa Zahid

Abstract Name: The Implications of Social Isolation Amongst College Students on their Levels of Political/Civic Engagement

As young individuals enter college, many also simultaneously pass into adulthood, presenting them with the challenge of forming a social identity and political attitudes which, as prior studies have shown, will likely remain implanted over the course of their lives. Therefore, there is immense importance in ensuring that students receive the right tools, support, and safe opportunities to both develop their views/stances regarding social causes, and also to express them in an effort to contribute to the betterment of society. My project aims to examine this idea conjointly with the prevalence of social isolation amongst college students, both as a result of COVID-19 as well as effects that range beyond the pandemic. What are the reasons many young individuals may conform to existing societal norms/systems, rather than actively transforming those they see unfit? Do their college years leave them with dangerous habits that could lead to their opting for silence in the face of human rights violations and other injustices? Previous research has examined the civic engagement of Gen X and the Millennials, revealing that the older generation attributed less relevance to politics and found little meaning in participating in related activities. Through surveys and interviews conducted on campus, my research will gauge a better understanding of how students of the current generation perceive civic engagement, the sources of student isolation, and how these two concepts intersect. Expected results include Gen Z ascribing an overall greater importance to political engagement, but demonstrating more difficulty and hesitance in active participation. Further study into this relationship will help discover how additional strategies can enable students to increase their political engagement levels, and ultimately stress the importance of recognizing the moral obligation every individual has to be involved in civic matters.

Mahwish Zahid

CA - California State University - Northridge

Discipline: Natural and Physical Sciences

Authors:
#1 Mahwish Zahid
#2 Dianna Dzheyranyan
#3 Yoshie Hanzawa

Abstract Name: Investigating the Genetic Network of Histone 2B (H2B) Genes in Glycine max

Soybeans (Glycine max) are a globally vital crop that has versatile uses — from human consumption mainly via soybean oil, animal feed, or biofuel. . However, despite this crop's widespread usage, we have yet to fully understand developmental and molecular processes responsible for agricultural yield of soybean. Doing so can aid in the development of more resilient plants to abiotic stress via climate change. Recent reports in a model plant Arabidopsis thaliana suggest that plant responses to elevated temperatures are in part regulated by epigenetic mechanisms. We aim to investigate epigenetic regulations driving developmental processes in soybean. We aim to investigate epigenetic regulations driving developmental processes in soybean. Due to their importance in regulatory gene networks and chromatin modeling, we aim to study soybean Histone 2B (H2B) genes to address the surprisingly large knowledge gap of this gene family in plant systems. Gene expression studies on selected soybean H2B genes will be done to ascertain functionality and to identify novel gene interaction, further bridging the gap on gene networks involved in developmental and molecular processes. First, we will grow the soybean plants in growth chambers with controlled environments and harvest protoplasts from unifoliate leaves ~10 days after germination following established protocols. Following this, we will transfect protoplasts with the CRISPR Cas-9 system and allow for ~48 hr incubation to induce CRISPR mutagenesis in H2B genes. RNA will be isolated and libraries will be prepared for RNA sequencing experiments. Analysis on differential genome-wide gene expression will be conducted to identify genes regulated by H2B-containing chromatin in hopes of elucidating functionality of H2B genes.

Ponthea Zahraii

CA - Chapman University

Discipline: Engineering and Architecture

Authors:
#1 Ponthea Zahraii
#2 Saman Kashanchi
#3 Nooshin Estakhri
#4 Nasim Mohammadi Estakhri

Abstract Name: Implementation of Residual Tandem Neural Networks in Inverse Photonic Design

Residual Network (ResNet) represents an effective approach to traversing deep neural networks and addresses critical challenges in computing, particularly the vanishing gradient problem that arises in extremely deep models. ResNet resolves this issue by introducing "skip connections", enabling the retention of information from previous layers. In this project we implement a ResNet tandem architecture to inverse design multi-layered photonic structures for desired reflection and transmission spectra (i.e., spectral filters). The tandem network [Liu et. al. ACS Photonics, 5, 2018.] introduces a unique architectural paradigm consisting of two interconnected models. These models collaborate, with one generating a spectrum from 11 input variables (thickness of layers in the photonic structure) to emulate a Maxwell's equations calculator

(forward model), while the other looks at the spectrum as an input given from the user (generator network) and adjust its outputs to match the spectrum from the forward network. The tandem network proves valuable in addressing non-uniqueness problems in optical design typically hindering efficient training of networks for inverse design of optical structures. This problem is rooted in the fact that different optical structures can create similar spectrums, thus slowing down the training process. In the tandem architecture the output designed by the network is not required to be identical to the original training sample, if the correct spectrum is achieved. This allows the network to rapidly converge even while using non-unique training data. We report successful inverse design of layered structures using such networks.

Rana Zakerzadeh

PA - Duquesne University

Discipline:

Authors:
#1 Rana Zakerzadeh
#2 Wilson Meng

Abstract Name: Mentoring strategies to inspire, educate, and empower undergraduate researchers

This presentation focuses on the value and impact of academic mentorship through the eyes of a recipient of the Council on Undergraduate Research (CUR) Early-Career Undergraduate Research Mentoring Award and highlights the lessons learned from her professional mentors that contributed to her ability to successfully mentor undergraduate students. By using the Triangular Model of Mentor Competence proposed by W. Brad Johnson, a theoretical framework for the development of effective mentorship will be introduced. Subsequently, several strategies for inclusive mentoring of undergraduates to foster research productivity and simultaneously provide valuable high-impact educational experiences for the student will be discussed, and the extent to which various research skills are enhanced by students' participation in an undergraduate STEM research experience will be evaluated. Particularly, seven tips obtained from the literature and the author's personal experience will be provided to help improve mentoring skills of faculty working with undergraduate STEM students using an authentic, holistic approach, as well as to ensure student engagement and high-quality scholarly experiences. The role of the academic mentor in encouraging work-like balance and self-care will also be emphasized. Furthermore, four undergraduate researchers from a diverse range of backgrounds and identities will detail their experiences and discuss a mentor's role in helping them overcome challenges and succeed in their academic research careers. Examples include supporting mentees in their efforts to disseminate their research and encouraging them to pursue broader research opportunities. Finally, the obstacles and opportunities of working with students beyond the traditional classroom framework will be explored to help overcoming barriers and thereby provide greater opportunity for undergraduate students to gain research experience.

Rana Zakerzadeh

PA - Duquesne University

Discipline:

Authors:
#1 Rana Zakerzadeh
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Abstract Name: Mentoring strategies to inspire, educate, and empower undergraduate researchers

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Jackelyn Zamacona

OK - University of Central Oklahoma

Discipline: Engineering and Architecture

Authors:
#1 Jackelyn Zamacona

Abstract Name: Community Center for Low-Income Families: Design of a Safe and Healthy Environment

The positive impact of the interior design on the lives of low-income families has been considered as one of the important design goals when planning a community center. The design of the community center for low-income families is a relevant project nowadays because there are still many low-income families across the United States that lack access to resources and learning opportunities. Many studies indicate that structured after-school activities are associated with higher educational outcomes, therefore, the absences of these centers can cause children to look for other activities to pass time that can lead them to make poor decisions that may affect their future. Through this type of facility, the children of low-income families can have the opportunity to pursue a higher education and develop a better life. These studies show that physical activity daily is also important for children's development and health. The research findings were collected by using quantitative and qualitative research approaches. A survey was conducted with low-income families to ask what spaces and resources they would like to see in a community center. As for the qualitative research, case studies were collected on Community Centers that were built in areas where there are low-income families. Case studies of existing community centers showed that having these facilities accessible to families improves their physical activity and higher education outcomes.This project aims to design a community center for providing low-income families, especially their children, with safe and healthy environments by planning spaces like a gymnasium/indoor running track, art room, music room, esports lounge, library, and dining area/kitchen. The resources and services of this facility will expand children's learning opportunities and help them be physically active and healthy.

Pegah Zamani

GA - Kennesaw State University

Discipline:

Authors:
#1 Pegah Zamani

Abstract Name: Beyond Boundaries: From Undergraduate Research to Leadership in Energy and Environmental Equity

How can the emerging field of engineering contribute to devising innovative and holistic strategies that lead to a substantial improvement in the quality of life and overall well-being of underserved immigrant communities? Hispanic communities make up the second-largest ethnic group yet, live in more polluted environments than their white counterparts and battle higher rates of poverty. With low-income neighborhoods come unsafe and often hazardous environmental factors that harm the health of their inhabitants. Environmental engineering, a newer branch of the discipline that combines civil and chemical engineering ideas, could offer various solutions to such socio-cultural and environmental issues, in particular relating to air and water pollution. Previous reports have found strong connections between race and pollution in a neighborhood but fail to propose long-term solutions to these issues. This research focuses on the effects of environmental racism and how it harms the health of Latino communities through specific scenarios. The study would also investigate possible solutions that environmental engineering practices can offer. How can the engineering solutions effectively address the challenges and opportunities presented by specific socio-cultural demographics, with the ultimate goal of fostering resilience and thriving communities, especially among Latino immigrants? The study will identify common issues in different environmental settings, gather socio-cultural data from previous relevant studies about environmental health, and then analyze and compare it to data from a more affluent and predominantly white area. The expected findings of this research would include establishing a more robust connection between the environment and sociocultural factors affecting Latino immigrants. Additionally, the research aims to highlight how an exciting new field of engineering could contribute to providing innovative solutions to improve the lives and well-being of these individuals - taking into account factors such as sustainable resource management, cultural sensitivity, and community engagement.

Pegah Zamani

GA - Kennesaw State University

Discipline:

Authors:
#1 Pegah Zamani

Abstract Name: Cultivating Changemakers: Undergraduate Research, Community Partnerships and Student Empowerment in Higher Education

The Research Center for Sustainable Communities (RCSC) at Kennesaw State University (KSU) has been mentoring undergraduate students in conducting analytical studies on enhancing sustainability and reducing the carbon footprints of school infrastructures statewide in GA. The RCSC seeks ways in which the state could advance healthier and more sustainable, equitable, and cost-effective learning environments. Rooted in this initiative and funded by the KSU Office of Undergraduate Research, this research aims to examine the employment of Leadership in Energy and Environmental Design (LEED) certification as an outline for promoting the existing operation of school buildings. LEED is a globally recognized rating system with a set of rigorous standards developed by the U.S. Green Building Council (USGBC). There are 808 high schools in Georgia, 18 of which are LEED-certified. Centered on Fulton County, the team will inquire about what measures were taken by these certificated high schools that were not implemented in the rest of the County.

The research will encompass a multi-faceted methodology, including a literature review, interviews (i.e., with county officials), and analysis of building certificate data. The findings will provide insights into deepening the undergraduate architecture students' understanding of the economic and environmental aspects of such certificates and the role of county decision-makers and stakeholders. Ultimately, the research will underline sustainability through environmental stewardship, economic prosperity, and social responsibility.

Kathy Zamarripa

MN - St. Catherine University

Discipline: Health and Human Services

Authors:
#1 Kathy Zamarripa
#2 Abhinav Singla
#3 Rachel Canning
#4 Lindsey Philpot
#5 Arya Mohabbat

Abstract Name: Differences in Cannabis Usage and Clinical Outcomes Based on Fibromyalgia Severity

Fibromyalgia (FM) affects 2% to 8% of the general population, more commonly found in women than men. The current diagnosis of FM depends on physician experience, patient characteristics, and different diagnostic criteria. Core symptoms of FM include widespread pain, sleep disturbances, musculoskeletal pain, chronic fatigue, cognitive impairment, and mood disorders. Patients with FM face complicated prognoses, limited treatment options, and experience diminished quality of life. The current treatment standards (cognitive behavior therapy, pharmaceutical therapies, and aerobic exercises) have shown limited efficacy. Cannabis is an alternative therapy for various chronic pain disorders, such as multiple sclerosis, irritable bowel syndrome, and neuropathy. Recent literature suggests cannabinoids (tetrahydrocannabinol– THC and cannabidiol– CBD) have a potential role in managing FM; however, the efficacy of these trials remains unclear, and the evidence is limited. The objective of this analysis was to identify cannabis usage patterns and clinical outcome differences in patients with FM based on symptom severity. An electronic, cross-sectional survey was sent to FM patients previously seen at Mayo Clinic’s Fibromyalgia and Chronic Fatigue Clinic (Rochester, MN). Patients were diagnosed with FM (based on 1990 and/or 2016 American College of Rheumatology criteria) between January 1, 2018, and August 31, 2022. All data management and statistical analyses were performed using Statistical Analysis Software (SAS) Version 9.4. Our results show that cannabis use is associated with improvement in various FM symptoms, including pain, mood, insomnia, sensory hypersensitivities, and cognitive changes to different degrees across all four symptom severity clusters in this retrospective survey analysis.

Ana Zaragoza

IL - Elmhurst University

Discipline: Social Sciences

Authors:
#1 Ana Zaragoza
#2 Joshua VanArsdall

Abstract Name: Mental Illness as Maladaptive Expertise

This project delves into the deep and intricate connection between “top-down processing” and “maladaptive expertise.” Top-down processing describes the role of prior knowledge, expectations, goals, and context in an individual's process of making sense of the world. The research conceptualizes maladaptive expertise as specialized knowledge inherent in maladaptive thinking, providing a unique lens through which certain mental illnesses can be reinterpreted. I hypothesized that therapeutic interventions could be used as tools to combat maladaptive thinking by fostering cognitive restructuring in one's top-down processing system. Cognitive behavioral therapy is structured talk psychotherapy that aims to identify and reduce the amount of negative behavior an individual exhibits. In the context of this project, cognitive behavioral treatment reaches this goal by fostering cognitive restructuring, effortful problem-solving, and behavioral change. Particular attention was placed on cognitive behavioral therapy due to its efficacy in "unlearning" defective strategies and fostering optimism. Additionally, various forms of self-talk are explored as interventions to reshape cognitive patterns, such as language through self-affirmation and negative thoughts through cognitive restructuring and reframing. Underneath these mental patterns exists the realm of metacognitive thinking. Metacognitive thinking is a process that refers to the awareness and understanding of one's thoughts. Integrating the realm of metacognition into this project reveals an even deeper layer of how cognitive behavioral therapy can become more effective in unlearning dysfunctional behaviors. An analysis of existing literature surrounding the material was conducted to comprehend the topic. Through this empirical research, it can be concluded that the majority of the current research suggests that a cognitive restructuring of one’s top-down processing is possible through cognitive behavioral therapy, optimistic self-talk, and the use of metacognition in treatment. By shedding light on therapeutic interventions' role in reshaping mental patterns, this research aims to contribute to understanding and treating maladaptive thinking.

Natasha Zarvas

MD - Bowie State University

Discipline: Natural and Physical Sciences

Authors:
#1 Natasha Zarvas
#2 Sukyah Booker
#3 Mya Clark-Bonilla
#4 Sarah Owusu
#5 Konda Reddy Karnati
Sukyah Booker

Abstract Name: Comparative Sequence Analysis of COVID-19 Variants

This study investigated the genetic relationships between 20 different COVID-19 variants by analyzing their whole genomes and main protease sequences. Multiple Sequence Alignment and Phylogenetic trees were constructed using MEGA software to visualize the evolutionary divergence among the variants. The whole phylogenetic tree showed greater clustering of variants compared to the main protease phylogenetic tree, indicating a higher degree of similarity in the genome sequences. COVID-19 variants share a close genetic relationship based on their nucleotide sequences, the divergence in their main protease sequences may contribute to the observed differences in symptoms. This highlights the importance of studying both aspects of the virus to fully understand its evolution and impact.

Yutzil Zavala

CA - California State University - San Marcos

Discipline: Natural and Physical Sciences

Authors:
#1 Yutzil Zavala
#2 Asher Fernandez
#3 Betsy Read

Abstract Name: The effect of known biomineralization inhibitors on calcification in marine coccolithophores.

Coccolithophores, a group of calcifying marine phytoplankton, are known contributors of carbon fixation and geochemical cycling in oceans. They synthesize unique calcium carbonate cell coverings called coccoliths, although there are certain genes and proteins expected to be involved in the making of coccoliths, the precise molecular mechanisms underlying the biomineralization processes including coccolithogenesis, remain unknown. While the long-term objective of this work is to identify the genes and proteins governing biomineralization in coccolithophores using RNAseq, the specific objective of this work is to identify compounds that impact calcification without causing pleitrophic affects. Here, three inhibitors (etidronic acid monohydrate (HEBP), inositol hexaphosphoric acid (IP6), and sodium polyphosphate) known to affect biomineralization of bone were tested using three coccolithophore species, Calcidiscus leptoporus, Ochrosphara Sp., and Umbilicosphaera foliosa. Cultures of each species were grown in filtered seawater supplement with inhibitors at various concentrations. Growth rate and calcification was monitored over time in experiments conducted for 10-days, 3-days, and 24 hours. Calcification was quantified using the reflectance of coccoliths under plane polarized light and analyzing the resulting images using ImageJ, while cell growth was monitored by direct cell counts. HEPB (0.25mM, 0.5mM, 0.75mM, and 1.0mM) and IP6 (0.1mM, 1mM, 10mM, 100mM) showed marked effects on biomineralization and to a lesser extent on cell growth across the four coccolithophore species, while sodium polyphosphate did not appear to impact calcification at the concentrations tested. HEPB and IP6 affected the morphology of the coccoliths and the degree of calcification.

Julieta Zavala

CA - California State University - Fullerton

Discipline: Social Sciences

Authors:
#1 Lucia Alcala
#2 Katia Perez
Katia Perez

Abstract Name: Understanding Death in Yucatec Maya Communities

Recent studies have been conducted to look at how children learn about death and dying across communities. Researchers have found that children learn about death through observation, participation in Dia de los Muertos, and through media (Gutiérrez et al., 2014, Miller et al., 2014, & Brigewater et al., 2021). The present study is guided by Bronfenbrenner's Ecological System (1979) theory, specifically the microsystem that includes children's immediate environment. In this descriptive study, we examined how children acquired knowledge related to death and the dying process. Data were collected via semi-structured interviews with 40 Yucatec Maya children in two schools to look at their experiences related to the death of a relative during the pandemic. The interviews were transcribed and coded by native Spanish speakers using the qualitative software Nvivo. Children's responses were coded using thematic analysis (Saldaña, 2013) broadly guided by the 4 categories of death conception used by Speece (1994) to assess children's level of understanding about death. Those 4 categories of death include finality, universality, causality, and non-functionality. The preliminary findings are based on a sub-sample of seven children. Their ages ranged from 8 to 12 years old (M= 9.8). Funding from this fellowship will support our engagement in this research project

and allow us to spend the time to complete the data analysis and present findings at two conferences to support our career goals of entering academia.

Ashna Zavery

CA - San Jose State University

Discipline: Natural and Physical Sciences

Authors:
#1 Ashna Zavery
#2 Sumanth Mahalingam
Sumanth Mahalingam

Abstract Name: Evaluating and Comparing Total Flavonoid Content and DPPH● Free Radical Sequestration Across Various Coffee Species

The utilization of plant products as a source of bioactive compounds has long been explored, in order to extract pharmacological reagents and develop drug strategies. One such avenue in this exploration is the extraction of flavonoids, a key secondary plant metabolite, from coffee beans. These flavonoids are useful in sequestering reactive-oxygen-species, as well as in therapies for cancer, Alzheimer's, and other diseases. One key area that has been underexplored is how different types of coffee species, as well as relevant growing conditions and genomic differences, may lead to differing levels of flavonoid content. In this study, the current authors explored flavonoid content levels and antioxidant capacity across three different coffee bean species – namely, the Coffea arabica, Coffea liberica, and Coffea canephora (Robusta) species. Filtered extracts for each species were collected using hydroethanolic solvents and water-bath extraction, to maximize bioactive compound yield from each species. Thereafter, the Total Flavonoid Content and DPPH• (2,2-diphenyl-1-picrylhydrazyl) colorimetric assays were utilized to characterize flavonoid content and antioxidant capacity, respectively, for each species. Differences between each species' flavonoid content and antioxidant capacity were analyzed using UV-Visible spectroscopy. Absorbance values for the Total Flavonoid Content Assay were compared against a calibration curve made from (+)-Catechin, while DPPH values were compared against a control to find inhibition percentages. Analysis revealed that Robusta coffee beans contained significantly higher levels of total flavonoid content in mg of Catechin/mL, compared to Arabica/Liberica beans. Moreover, the DPPH assay revealed that Robusta coffee maintained higher inhibition of the DPPH radical, indicating higher antioxidant capacity. In turn, exploring the yield of flavonoids from Robusta coffee bean extracts could further inform the use of such extracts in drug design for oxidative-stress-related diseases, as well as physio-agronomic research about the role of genomic/growing conditions in altering flavonoid content across different plant products.

Dominic Zecca

NC - North Carolina State University

Discipline: Natural and Physical Sciences

Authors:
#1 Solomon Ghezehei
Andrea Putri

Abstract Name: Fast-Growing Trees For Municipal Wastewater Management

Due to soil and water pollution risks, wastewater management is an environmental issue in NC. Irrigated

wastewater application to grow fast-growing forest species (FGSs) is a nature-based approach to dispose of the wastewater properly and reduce contaminant discharges to local water systems while producing biomass for various industrial applications. FGSs are selected based on their productivity and ability to thrive under various environmental conditions and marginal lands, and there is a need for a long-term performance assessment of the various species. To develop FGS recommendations for future effective wastewater management and biomass production, I collected and analyzed (ANOVA) stem growth (DBH) and survival of FGSs (Pinus taeda, Chamaecyparis thyoides, Liquidambar styraciflua, Quercus alba, Fraxinus pennsylvanica, Quercus pagoda, Quercus phellos, Taxodium distichum, Populus deltoides) planted in 2011 and 2012 and irrigated with treated wastewater (Gibson, NC). There were significant growth differences among the FGSs in 2011 (p<.0001) and 2012 (p<.0001). P.taeda exhibited superior DBH (2011: 8.9±1.8 in., 2012: 9.0±2.1in.) compared to other tree species (2011: F.pennsylvanica 4.2±2.1in. to P.deltoides 7.5±2.2 in.; 2012: F.pennsylvanica3.7±1in. to L.styraciflua 6.1±1.1 in.). Survival was the highest for C.thyoides (2011: 79% vs. P.deltoides 38% - T.distichum 69%) and L.styraciflua (2012: 90% vs. P.taeda 58% - F.pennsylvanica 82%). Consequently, P.taeda and L.styraciflua, would be recommended as FGS with the highest potential for wastewater management application; meanwhile, C.thyoide and Q.alba have modest potential.

Samuel Zenteno

UT - Utah Valley University

Discipline: Engineering and Architecture

Authors:
#1 Samuel Zenteno

Abstract Name: “Shaping Futures: The Evolution of Elementary School Architecture.”

Evolution of Elementary School Architecture:Elementary school architecture has evolved significantly, reflecting shifts in educational philosophies, technological advancements, and societal priorities. From humble one-room schoolhouses to technologically advanced, sustainable, and inclusive learning spaces, the architectural form mirrors broader changes in education and society. What architectural form best reflects the ideal elementary school learning environment? Studying the evolution of elementary school architecture offers society several advantages:· Informed Design: By understanding the historical context and design trends, architects and educators can create more effective, engaging, and sustainable learning spaces.· Educational Enhancement: Insights from past designs can lead to environments that support modern teaching methods and foster improved student outcomes.· Equity in Education: Recognizing disparities in school facilities informs efforts to ensure all students have access to high-quality educational spaces. Research Methods:This research employs a comprehensive approach, combining historical analysis, architectural documentation, case studies, and conducting surveys with community members. Comparative studies of architectural styles, education methods, and pedagogical influences will shed light on ideal architectural forms for learning environments. Expected Results:Anticipated outcomes include a nuanced historical narrative of elementary school architecture, identification of pivotal design trends, insights into the societal forces that shaped these changes, and a repository of best practices. Ultimately, this research aims to empower architects, educators, policymakers, and communities to collaboratively shape the future of elementary school architecture, fostering equitable, innovative, and sustainable educational environments. An elementary school is the first public building that a child is called to regularly experience, be educated, find a playground, and socialize. In that sense, it is about to become a second home. By understanding the past, we can better prepare for the future of elementary school design.

Chelsea Zenteno

CA - California State University - Fullerton

Discipline: Humanities

Authors:
#1 Chelsea Zenteno

Abstract Name: The Mexican American Eldest Daughter Experience

In a Latinx traditional household, the prevalence of larger families often results in a higher likelihood of children assuming parentified roles, with the eldest daughter bearing the role. The background research will discuss what parentification is, which is when a child takes on the parenting role over their parent(s) and/or siblings, how it affects the child, and what the eldest daughters are saying on TikTok. The Mexican American Eldest Daughter Experience (MAEDE) adds knowledge to the lack of academic research for these daughters, but something to note is that on social media, the eldest daughters are being vocal about their experiences. The MAEDE's method is photovoice, in which the participants, who study at Cal State Fullerton, take five photographs of their day-to-day experiences as their role and write a narrative paragraph about what they have captured. They presented the photovoice to the investigator so that the recordings could be posted on YouTube for public access. When analyzing, the themes that were found were parentified roles for both parents and siblings, responsibilities, familial pressure, and a tendency toward self-silencing. The themes indicate that the eldest daughter's role is integral to the family, reveal their challenges, and express the effects of being parentified.

Haley Zeri

IN - Purdue University Main Campus

Discipline: Social Sciences

Authors:
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#2 Wei Siong Neo
#3 Jason Ware

Abstract Name: Unlocking the potential of community-based services to promote holistic life outcomes for children with autism and developmental disabilities

Rising prevalence rates of autism and developmental disabilities over the past decade have increased demand for intervention services. However, families continue to face significant barriers, such as waitlists and high costs, in accessing evidence-based interventions. Alternative community-based options, including day habilitation, are well suited for addressing these service gaps and improving accessibility for families of varying socioeconomic backgrounds. Yet, there is limited research on caregiver perspectives of community-based services, despite their significant contributions toward overall intervention plans. In this study, I will examine three core aspects of community-based services: accessibility, skill areas addressed, and family-centered practice. Approximately 60 caregivers of individuals with developmental disabilities, ranging from school-age children to young adults, accessing day habilitation services at Grant's House in Lafayette, IN will complete a survey in two parts. Part I focuses on caregiver and child characteristics, including socioeconomic status, demographic variables, and diagnostic information. Part II obtains caregiver perspectives on intervention services, including current service use, interest in additional services, and service access barriers; importance and status of skill areas being addressed in services; and degree of family-centered practice in services, as assessed by the Measure of Processes of Care (MPOC) questionnaire. As an indicator of accessibility at Grant's House, I expect service access barriers to be minimally influenced by caregiver attributes, such as demographic and socioeconomic factors. Additionally, I expect caregivers to report Grant's House services as addressing a variety of skill areas, reflecting a comprehensive service approach. Finally, I expect Grant's House services to closely follow a family-centered model as evidenced by high MPOC scores. By independently analyzing core aspects of community-based services, my study provides unique insights on

the value of such services, laying the foundation for future research aimed at comparing community-based approaches to traditional clinical services used in supporting individuals with autism and developmental disabilities.

Semele Zewde

MN - University of Minnesota - Twin Cities

Discipline: Natural and Physical Sciences

Authors:
#1 Semele Zewde
#2 Arif Hamid

Abstract Name: Striatal dopamine acetylcholine interactions during reinforcement learning

Reward values dictate the way we make decisions. However, the neural circuitry that guides decision-making is not fully understood. Dopamine and the basal ganglia are hypothesized to play a critical role in behavioral flexibility during reward learning and motivation. To assess how mice learn probabilistic reward outcomes and understand the role of the dopaminergic reward circuit in facilitating learning, we designed a head-fixed probabilistic reversal task. Mice showed a correlation between latency to press and reward rate, indicating their actions are goal-directed. Moreover, choice performance scaled with reward probabilities. During task performance, we used spectrally separated, simultaneous fiber photometry recording of dopamine and acetylcholine across different striatal subregions. Preliminary data indicates an antagonistic behavior between dopamine and acetylcholine at rewarding events. Specifically in the NAc, we observed dopamine firing increased at reward whereas acetylcholine firing decreased. Moving forward we will analyze the relationship between dopamine and acetylcholine in the NAc, DMS, and DLS.

Angela Zhan

UT - Utah State University

Discipline: Natural and Physical Sciences

Authors:
#1 Angela Zhan
#2 Liyuan Hou

Abstract Name: Understanding and fighting the emergence of antibiotic resistant bacteria in wastewater

The development and spread of antibiotic resistance in wastewater poses a significant threat to both the environment and human health. Biofilm is a key factor that promotes antibiotic resistance in bacteria by increasing their tolerance to antibiotics and facilitating the transfer of antibiotic resistance genes. This project aims to isolate and identify antibiotic-resistant bacteria from a wastewater treatment plant WWTP and discover natural molecules that can inhibit biofilm formation. The hypotheses are (1) wastewater bacteria can develop multiple antibiotic resistances through biofilm formation, and (2) specific natural compounds can hinder bacterial biofilm formation, thus reducing the spread of antibiotic resistance among wastewater microbes. To test both hypotheses, LB agar plates containing different antibiotics were used to isolate antibiotic-resistant bacteria from the Logan Regional WWTP effluent. Two streptomycin-resistant S2-1 and S2-2, four carbenicillin-resistant Cb2-1 to Cb2-4 and four kanamycin-resistant K2-1 to K2-4 bacteria were isolated. Notably, five strains S2-1, Cb2-2, Cb2-4, K2-2 and K2-4 are double-antibiotic-resistant and one Cb2-3 is resistant to three antibiotics. These strains were identified using 16S rRNA sequencing. Next, eleven

natural compounds were screened for the ability to inhibit biofilm formation. It was found that curcumin, quercetin, and resveratrol effectively inhibited biofilm formation in Pseudomonas aeruginosa PAO1 and two biofilm-forming double or triple-antibiotic-resistant strains Cb2-2 and Cb2-3 at a concentration of 26.67 micrograms per milliliter. These findings show that natural products could be an effective tool in reducing the spread of antibiotic resistance and preventing the development of superbugs in wastewater.

Yiqing Zhao

GA - Emory University

Discipline: Humanities

Authors:
#1 Amiee Zhao

Abstract Name: “Proud to be Autistic”: Greta Thunberg’s Queering Rhetorical Genre in Climate Change Advocacy

Greta Thunberg, a young, autistic climate change activist from Sweden, has generated mixed opinions about her rhetoric since her #FridaysForFuture climate movement started in 2018. Many people have found her inspiring, leading global youth to protest political inaction about climate change. Many neurodivergent people have also found power in Thunberg’s fearless identification as autistic. However, some strongly oppose her rhetoric and autistic identity. Former U.S. president Donald Trump, for example, famously tweeted that Thunberg should improve her “Anger Management.” Previous literature, such as Frey (2021), Shcroeder (2021), and Bach (2022), has analyzed Thunberg’s rhetoric, partially explaining the controversy and power of her rhetoric. This literature, however, doesn’t pay sustained attention to the role of Thunberg’s autistic identity in her rhetoric. To address this gap, my research focuses on the role of Thunberg’s autistic identity in making her rhetoric controversial yet powerful. I base my research on the framework of genre as social action pioneered by Carolyn Miller (1984) and queering rhetoric by Remi Yergeau (2018). I argue that by queering (altering conventions with the rhetor’s unique identity) the genre of political speeches, Thunberg adds variations to traditional political speeches and thus uses the genre as a social action to redefine the exigence of immediate climate change action. In her political speeches, for example, Thunberg distances herself from her immediate audience of powerful yet inactive people instead of creating identifications with them and uses this distance to create the exigence of immediate climate change action. My findings expand opportunities for climate change advocacy, especially for neurodivergent rhetors, and also raise questions about how to accommodate neurodivergent students in classroom settings and how to better teach the concept of rhetorical genre.

Yilin Zheng

LA - Louisiana State University, Baton Rouge

Discipline: Engineering and Architecture

Authors:
#1 Angeline Fatima Asa
#2 Victoria Lopez
Angeline Fatima Asa
Victoria Lopez

Abstract Name: Impact of Folding Climate-Responsive Façade System: Assessment of Energy Performance for the Future Adaptation and Evolution of Houses in Louisiana Climate Zone (Under Extreme Heat

Conditions)

Excess CO2 in our atmosphere is causing the Earth to heat up exponentially, creating stressed living conditions on its surface. This means rising cooling demand to maintain a building's thermal comfort which uses fossil fuels as an energy source. Consequently, it becomes a cycle that exacerbates extreme heat conditions. In addition, there is a strong positive correlation between the increase in the frequency of extreme heat days to health risks among residents with lower socioeconomic status.The shotgun house typology is an efficient and economical option for Louisiana residents. Its existence in the Louisiana landscape persists and has gained renewed interest following the trend of increasing sustainable living. Contemporary adaptations of the typology employ various techniques to help mediate heat. In this research, we chose the KIWI house, which is an interpretation of the traditional shotgun house located in Baton Rouge, as a case study. Kinetic facades are dynamic envelopes defined by their ability to change forms in response to user-specific needs. We categorized the systems based on their movement mechanisms, such as folding, sliding, contracting, expanding, etc. By adopting the kinetic facade system, buildings will be able to improve their energy efficiency, targeting specific climate problems. For the purpose of this research, we are going to focus on assessing the effectiveness of a manually-operated folding kinetic facade as a solar-shading strategy for buildings in the Louisiana climate. The design is manual which removes the need for an energy source. Therefore, it is economically accessible and encourages a sustainable way of living. Through this research, we aim to adapt the facade on the south and east sides of the KIWI House. We used Rhinoceros and Climate Studio softwares to collect quantitative data on the energy performance of the two orientations under extreme heat conditions.

Maya Zheng

MN - University of Minnesota - Rochester

Discipline: Interdisciplinary Studies

Authors:
#1 Maya Zheng
#2 Cassidy Terrell

Abstract Name: Optimizing Learning: Effective Approaches to Enhance Students' Long Term Memory

Undergraduate biochemistry is known to be a challenging subject as it contains many difficult concepts that require students to understand and make connections with other concepts that have been previously learned. Concept mapping and problem based learning are pedagogical tools that have been practiced in many curriculums. Both tools have been proven to increase students' long term memory and retention by their unique learning processes. Concept mapping allows students to create their own mind map, visualize different concepts, enhance their understanding and in result increases their long term memory. Problem based learning allows students to use prior knowledge and provide opportunities for elaboration in small groups. During this project we want to answer the following question: How does the use of concept maps affect student's long-term storage (retention) of information compared with problem-based learning? In the preliminary phase of this project, we will be designing the instructional activities and pop quizzes to be used in a future course. We will also enroll participants in a beta-testing version of the activities for preliminary results. The preliminary results will allow us to determine if the materials that we designed allowed us to answer our research question. In future experiments, we will be able to incorporate the concept mapping and pop quiz into the course. Once the experiment has been conducted we will then use the results of the pop quiz to analyze how well students perform on each pop quiz will help us determine which pedagogical tool: concept mapping or problem based learning works the best for students taking biochemistry. With the results of this experiment, we can further structure class formats in more challenging classes like biochemistry, to allow students to retain the most information in their long term memory.

Hengyue Zhou

PA - Lafayette College

Discipline: Business and Entrepreneurship

Authors:
#1 Hengyue Zhou
#2 Steven Swidler

Abstract Name: Home Prices and Proximity to a College Campus: The Case of Boulder, Colorado

This paper investigates the impact of houses' distances from universities on neighborhood prices and the volatility of returns. Prior research establishes that residential real estate in college towns is resilient to economic downturns compared to non college-townhouses, showing that economic stability leads to higher home prices with lower volatility of returns for houses in college towns. Using transaction data from Boulder County, Colorado, I employ GIS data to examine whether homes near the University of Colorado have higher prices than outlying homes in the county and whether returns to nearby campus homes have lower volatility than houses far away from the university in the county. The sample covers the period between 2000 and 2022 and contains more than 90,000 single-family home transactions. To test the hypothesis, I utilize the hedonic pricing model to estimate the value of single-family properties in Boulder County. This model includes neighborhood fixed effects, as well as property information, such as the number of bedrooms, bathrooms, square feet of houses, and lot size. In addition to testing for spatial differences, the analysis examines price patterns in boom and bust times in the sample period. This paper contributes to a deeper understanding of the housing markets in U.S. college towns, offering insights that may benefit homebuyers, investors, and policymakers in their decision-making processes. The findings may also have broader implications for property rents in close proximity to universities.

Sophia Zhou

KY - University of Kentucky

Discipline: Natural and Physical Sciences

Authors:
#1 Fernan Perez-Galvez
#2 Nicholas Teets

Abstract Name: Computational inference of thermal tolerance across insect taxa

It is imperative to understand how climate change effects arthropods, the most diverse and abundant animals on earth. Climate change is impacting the distribution of arthropods and facilitating the establishment of invasive species. Accurate quantification of thermal limits can improve predictions of species distributions and invasion risk, but current methods can be labor intensive and error-prone. We recently developed an open-source Python command line application, DIME (Detector of Insect Motion Endpoint) to automatically assess thermal limits in Drosophila melanogaster from videos of flies exposed to heat or cold, and here we assessed whether this method works across diverse insect species. To achieve this objective, we 1) selected a group of arthropods inhabiting various ecological niches, 2) carried out the thermal limit assay, 3) analyzed the data with both manual and computational approaches (i.e., DIME). We collected upper thermal limit (CTmax) data for 6 insects species and compared them to previously published thermal limits, and our data were consistent across 5 of the 6 taxa, supporting our hypothesis that the assay developed for the Drosophila is applicable to other species. For remaining species, however, there has yet to be an apt standard to which the results would be comparable. Nevertheless, our results demonstrate that DIME can produce high-throughput,

accurate measurements of thermal limits, which can contribute to ongoing efforts to predict ectotherm responses to climate change.

Maggie Ziem

IA - Iowa State University

Discipline: Business and Entrepreneurship

Authors:
#1 Maggie Ziem
#2 Ashley Goreczny

Abstract Name: The Unique Buyer-Supplier Relationship for Small and Medium-Sized Underrepresented Firms: An Empirical Examination

Firms have come to recognize the importance of diversity, however an angle that warrants further study is firms that are owned by those who are underrepresented. According to the census, around 40% of firms were owned by minorities or women in 2021. Research from Lashley and Pollock (2020) shows that companies led by someone in an underrepresented group have fewer resources. Therefore, understanding what it takes to help them thrive, unique to non-minority or women-run firms is vital for the economy and success of these business relationships. Further, small and medium-sized firms represent an extremely important segment of our economy, as they are the majority of the firms in existence, according to the Small Business Administration. Utilizing a company's CRM database, we are able to capture the unique resources and strategies that help minority or women-owned, small and medium sized firms thrive. CRM used to be sought after and powerful. We know this using data from companies such as Brother International Corporation, whose call times dropped by 43 seconds on average, resulting in substantial savings (Ledingham 2004). However, fast forward to the present, CRM has room for improvement, in ways such as developing strategies to reduce their burden, creating innovative solutions, focusing on retention rather than scalability, fostering mentoring, creating a goal of a long-term relationship, utilizing nontargeting marketing initiatives, guiding investment decisions to foster growth, and helping to create training initiatives (Marks 2021). Zeroing in on incomplete data and buyer supplier relationships is where we focused our research. Our findings demonstrate that minority and women-run firms are not only younger and smaller, they have distinctive relationships with their suppliers. Suppliers can use this research to help identify the ideal strategies to enhance their buyer-supplier relationships, using CRM to the maximum capability.

Summer Zilisch

WI - Carthage College

Discipline: Natural and Physical Sciences

Authors:
#1 Summer Zilisch
#2 Matthew Payea
#3 Emmanouil (Manolis) Maragkakis

Abstract Name: Long-read Nanopore Sequencing Reveals the Impact of Starvation Induced Ribosome Collisions in HeLa Cells

Translation and protein synthesis are the most energy intensive processes in the cell, and as such are highly regulated during periods of stress and non-optimal growth conditions. Recent evidence has shown that amino

acid starvation can affect translation by causing ribosome stalling and collisions that ultimately trigger the Ribotoxic Stress Response (RSR). The RSR results in rescue of ribosomal subunits, degradation of the nascent peptide, and mRNA decay through endonucleolytic cleavage at the stall site. However, while the RSR and resulting mRNA decay have been well-characterized mechanistically, there is currently no method to comprehensively analyze transient mRNA decay intermediates resulting from ribosome stalling. To address this limitation, we adapted a long-read sequencing approach called True End-to-end RNA Sequencing (TERA-seq) to identify putative mRNA decay intermediates of the starvation-induced RSR. Using this approach, we identified an increase in potential intermediates of endonucleolytic decay and saw a starvation-dependent change in nucleotide composition around the 5' end of identified mRNA molecules. In summary, we found that starvation caused detectable changes in mRNA features that could be uniquely identified using TERA-seq.

Sammy Zimmerman

IL - University of Chicago

Discipline: Humanities

Authors:
#1 Sammy Zimmerman

Abstract Name: Fungus Among Us: People, Place, and Species in Fungal Cholera Theories of 19th Century Britain and India

Friend, foe, food, fashion statement, and funerary accoutrement: fungi are enjoying increased cultural visibility in recent years. With climbing global temperatures, widespread use of antibiotics and immunosuppressants, and a growing immunocompromised population in the wake of COVID-19, human susceptibility to serious fungal infection is also on the rise. Until recently, popular understanding of fungal disease has largely been relegated to the realm of the inconvenient: athlete's foot, ringworm, yeast infections. But before Koch and Pasteur facilitated mainstream adoption of germ theory in the last decades of the nineteenth century, fungi were among the first "germs" to be conceived of as major threats to human health. In order to historicize the human-fungi relationship, highlight the contributions of plant scientists to the history of medicine, and complicate triumphalist narratives about scientific progress, this project examines three instances of misidentification wherein cholera was thought to be caused by a fungal pathogen. The fungal cholera theory was first popularized in Bristol in 1849, was the subject of debate in British India in 1867, and made its final appearance at Cambridge in 1886. Though never achieving widespread acceptance, fungal theories of cholera were remarkably resilient in nineteenth-century Britain and its empire. What made fungi a compelling explanation for perhaps the most devastating epidemic disease of the global nineteenth century? How did fungal theories of cholera imagine the relationship between humans, nonhumans, and the environment? Why did fungal cholera theorists ultimately fail to convince the medical establishment to take their theories seriously? Drawing on both professional and popular publications, and approaching scientific inquiry as a cultural, political, and epistemological problem, I aim to write a history which resituates fungi in the history of human disease and which embraces controversy, uncertainty, and failure on their own terms as part of the perpetual effort to preserve human life.

Brynn Zimmerman

WI - University of Wisconsin-Whitewater

Discipline: Natural and Physical Sciences

Authors:
#1 Brynn Aimmerman

Abstract Name: The Impact of Climate Change on Paper Birch Habitats

Climate change is impacting the distribution of many species across the globe. Keystone species are vital to their respective ecosystem however biodiversity is also an important factor. As biodiversity decreases, cascading effects impact the ecosystem. Paper Birch trees are important species within hardwood-conifer forests in North America, adding to the biodiversity. Due to the changing climate, we seek to answer how has and will the suitable habitat of Paper Birch species change throughout the United States. To determine the result, spatial analysis and Geographic Information Science (GIS) are used to map out the climate conditions most suitable for Birch Tree health in the past, present, and future. Once the baseline climate regimes for birch trees are identified, climate data from early 20th century, mid 20th century, current data, and end of 21st century is analyzed to see how the suitable habitat is growing or shrinking in the United States. To determine future suitable habitats RCP2.6, RCP4.5, and RCP8.5 are used to illustrate the different future pathways of climate change on birch tree habitat regions. It is hypothesized that over time the suitable habitat ranges of Paper Birch trees will shrink and have larger changes depending on the human handling of climate change. This analysis method can be used to map other species in ecosystems and show how ecosystems may change and possibly be lost all together.

Ellie Zimmermann

WI - University of Wisconsin-Platteville

Discipline: Social Sciences

Authors:
#1 Ellie Zimmermann

Abstract Name: Community Gardens, Free Vegetables, and Food Sovereignty

Food sovereignty is a concept arising from Indigenous movements, and refers to the universal access to nutritious, local, affordable, and culturally-appropriate food. Food security is an important aspect of food sovereignty and refers to the accessibility of healthy foods. Some scholars argue that food security on a broad scale is not possible without also addressing food sovereignty issues and transforming the food system. Community gardens have the potential to return the production of food, and the control of land, water, and seeds back to local communities, though they are often faced with structural barriers to achieving food sovereignty goals. Community gardens can help community members access fresh produce and provide opportunities to give back to the community through garden work. This project looks at the University of Wisconsin-Platteville Edible Garden and local food pantries and food assistance programs to understand the impacts of these programs on perceptions of health, wellbeing, and food security for program recipients/beneficiaries and community members. This research was conducted through participant observation in working in the Edible Garden, including note-taking and other ethnographic methods, key informant interviews of people working in the community garden and food assistance programs, and a survey issued to program recipients and beneficiaries on the impacts of the programs. My hypothesis was that both perceptions of health and wellbeing and food security would be improved through participation in food assistance programs and the community garden space. Results from this study are preliminary but indicate that while initial interest in the community garden was high, the interest was not sustained by community members. I will be analyzing this outcome as well as presenting results from the interview and survey data to understand the impacts of these programs on community wellbeing and food security.

Robert Zita

IL - Elmhurst University

Discipline: Mathematics and Computer Science

Authors:
#1 Robert Zita

Abstract Name: Understanding the CRAFT Algorithm for Predicting Conversational Derailment on GitHub

The Conversational Recurrent Architecture for ForecasTing (CRAFT) algorithm is a machine learning model developed by researchers at Cornell University for the sake of forecasting conversational derailment before it occurs (Chang et al. 2019). Conversational derailment in online discussions is when conversations shift from civil, productive discussions into insults, trolling, and demanding comments that hinder the productivity of the conversation. However, CRAFT was trained solely on WikiTalks and Reddit conversations meaning it can predict toxicity in everyday conversations, but not technical discussions that occur on open-source software (OSS) hosting platforms such as GitHub, StackOverflow, and SourceForge which are filled with code, hyperlinks, and technology terms that are not common outside of the community. When toxicity occurs in open-source software, it is often demanding, condescending, or discriminating towards minorities. To combat this, we modified the CRAFT algorithm to understand OSS discussions without letting technical terminology trigger an extreme amount of false positives. We collected a dataset of GitHub conversations (N=362) that were half toxic (N=181) and half civil (N=181). They were human-annotated with a derailment point and a toxicity point. Data was preprocessed to remove hyperlinks, camel case variable names, and resource names to determine which of these was creating false positives. An analysis demonstrated that CRAFT was unable to understand most technical jargon because it had never been exposed to those words or patterns before. The model was then fine-tuned by receiving annotated conversations so it could process technical comments, such as stack traces and code, that were not necessarily uncivil. By using the annotated dataset and fine-tuning the model, we improved the toxic comment prediction accuracy from 0.66 to 0.82. This contributes to the growing field of conversational derailment research and provides future researchers with a starting point on where the CRAFT algorithm needs improvement.

Max Zodkoy

FL - The University of Tampa

Discipline: Humanities

Authors:
#1 Max Zodkoy

Abstract Name: The Missing Baseball Game: Ernest Hemingway and Baseball in "The Old Man and the Sea"

Recently, the United Nations passed a resolution that asked the United States to end its embargo on Cuba. Though the United States and Cuba have had a tumultuous relationship since 1961, two things that the two countries have in common are baseball and the American author, Ernest Hemingway. In 1952 Ernest Hemingway published The Old Man and the Sea, which is about an elderly fisherman who goes far into the sea in order to catch a great marlin. Before he leaves for his fishing trip, he discusses with Manolin – a boy he is friendly with – several baseball games that occurred that week. Though the discussion of the baseball game is often glossed over, Hemingway is actually showing the exact date the book took place. He does this by leaving hints throughout the discussion. These Include the mention of Dick Sisler being on the Phillies and the record of two baseball teams. By understanding the date Hemingway chose, the reader can perform a more detailed analysis of the book and the date the book took place. Additionally, the emphasis on baseball highlights the importance of baseball in Cuban cultural identity by demonstrating how all parts of the population talked about the game. Knowing the exact date Hemingway referenced allows scholars to bring in social and historical facts in a more precise fashion. My analysis will walk the reader through figuring out the exact date of the book. Although previous scholars addressed what they thought the date of the baseball game

was, I will show in my analysis the faults in their reasoning. In January I will be traveling to Cuba on a grant from my Undergraduate Research institution and I will perform first-hand research to understand the significance of baseball in Cuba.

Mabel Zuccala

GA - Georgia State University

Discipline: Education

Authors:
#1 Mabel Zuccala
#2 Nicole Lynch

Abstract Name: Leveraging Motivational Videos to Mitigate Student Withdrawal and Academic Failure

This study investigates the impact of motivational videos on student retention and academic performance in online classes at a college level. With increasing concerns about student withdrawal rates and academic failure during and after the pandemic, educators are exploring inventive approaches to engage and support students. Motivational videos, characterized by inspiring content and visually appealing presentations, have emerged as a potential tool to enhance student motivation and persistence.The research employs a mixed-methods approach, combining quantitative analysis of student performance data with qualitative insights gathered through motivational videos. We will be comparing students' performance in Dr. Lynch's classes with weekly motivational videos as opposed to classes that did not offer motivational videos. In the classes with the videos, motivational videos are strategically integrated into the learning environment, supplementing traditional teaching methods.Preliminary results indicate a positive correlation between exposure to motivational videos and academic performance. The analysis of academic performance data reveals a significant reduction in withdrawal rates and an improvement in overall grades among students in the classes with motivational videos compared to the classes without the videos.Qualitative data provides deeper insights into the mechanisms through which motivational videos influence student behavior. The most popular themes that attracted students were videos on managing stress, studying when you do not feel like it, and stopping wasting time which seemed to appear as key factors contributing to the observed positive outcomes.This research illustrates how instructors can empower their students through innovative pedagogical strategies by shedding light on the potential of motivational videos as a preventive measure against student withdrawal and academic failure. As educational institutions continue to adapt to the changing needs of students, the findings from this study offer valuable insights into the practical application of motivational videos to foster a more resilient and motivated student body.

Stephanie Zumba

WI - University of Wisconsin-Madison

Discipline: Engineering and Architecture

Authors:
#1 Stephanie Zumba
#2 Erin Hamilton

Abstract Name: Perceptions of students and teachers on the success and shortcomings of open classrooms

This study will focus on the perceptions of students and teachers to define what contributes to the success or shortcomings of open classrooms. Open plan classrooms are student-centered design layouts for classrooms

with various areas of activity that are flexible to use, using a minimal amount of walls if any. Open classrooms arose in the late 1960s but declined in popularity by the 1980s due to distractions. Recently, open classrooms have been returning to schools with the commitment to provide “21st-century education.” One of the benefits of learning in open classrooms is that students score higher on “creativity, cooperative behavior, and class activities” compared to those in traditional classrooms. However, Solomon and Kendall (1976) note that students in open classrooms score lower on tasks that require concentration, which Ito and Yokoyamato (2019) suggest may be due to a large number of distractions in open classrooms. If problems from previous studies persist, they can outweigh the benefits of open classrooms. Students’ creativity at the cost of academic performance will be the primary issue arising from these up-and-coming classrooms. A minimum of 30 teachers and 30 students from the 4th through 8th grades will be requested to participate in an online survey that asks questions regarding how the space is being utilized, the perceived level of concentration, and the differences between their open classrooms and traditional classrooms. If an insufficient number of schools are willing to participate, the methodology will adapt to a qualitative interview study featuring designers and architects with a focus on education. Interviews will be conducted until saturation point to evaluate the strategies they use to minimize distractions and increase open classroom benefits. These results can yield guidelines on solutions to improve open classrooms and open the door for more research on this subject.

Amanda Zumbrock

IA - Iowa State University

Discipline: Natural and Physical Sciences

Authors:
#1 Amanda Zumbrock
#2 Daniela Cortés
#3 Jeffrey Essner
Daniela Cortés

Abstract Name: Understanding the role of Connexin44.2 with CRISPR/Cas9-induced deletions in zebrafish

Connexin44.2, or gjc4a, is predicted to be involved in gap junction channel activity as well as cell-cell signaling. Based on its expression and similar structure, Connexin44.2 is believed to be involved in similar processes as Connexin43.4 or have overlapping function during of left-right development in zebrafish. cx44.2 is a tandem duplicated locus in zebrafish, so we created a large deletion of both genes using CRISPR/Cas9. For this, we targeted the tandemly repeated genes, gjc4a.1 and 2, with gRNAs/Cas9 protein that target the 5’ UTR of gjc4a.1 and the 3’ UTR of gjc4a.2 with and without an oligonucleotide containing 48 bp of homologies to each flanking cut. We have identified a F0 injected fish that transmits a deletion to the next F1 generation. We will cross these fish with each other and cx43.4 to understand their unique and overlapping roles during zebrafish embryogenesis.

Zarah Zurita

DE - University of Delaware

Discipline: Social Sciences

Authors:
#1 Zarah Zurita

Abstract Name: Intergenerational Transmission of Violence in Latino Families: The Role of Mothers in Navigating the Cycle of Abuse

This paper asks the question: How do Latina mothers who survive intimate partner violence navigate breaking intergenerational cycles of abuse and the intergenerational transmission of violence? More specifically, this paper explores the tensions between personal experiences with witnessing violence and the actions Latina mothers, living in the United States, took in order to stop cycles of abuse and its outcomes for their own children. As previous research documents, Latino children and youth are the fastest-growing ethnic minority in the United States. They also are unique in the sense that they experience mixed-status families in which one, or more, of their family members lack the proper authorization to live and work in the United States. Due to this, they face a distinctive form of family violence in which fear of deportation silences victims. The data analyzed in this paper are a subset of a larger study that included Black women, Latina women, white women who were partnered with Black men, and a small sub-sample of Black and white men. The subsample analyzed here comes from in-depth, face-to-face interviews with 11 Latina women impacted by intimate partner violence. Based on interviews with 11 Latina women, I find evidence of cases in which the roles of mothers either interrupt or contribute to the continuation of the intergenerational transmission of the violence cycle. The paper concludes with suggestions for future research that centers on the experiences of Latino communities in order to reduce intergenerational trauma and transmission of violence in Latino communities.

Hawley Zurlo

PA - University of Pittsburgh School of Nursing

Discipline: Health and Human Services

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#3 Kai-Lin You
#4 Teresa Thomas

Abstract Name: Addressing Online Recruitment Challenges for Research Studies: A practical example utilizing Research Electronic Data Capture (REDCap) platform features

Background: Online study recruitment is a promising method to reach a large, diverse sample in a shorter period than in-person recruitment. When recruiting online, it is important to identify potential threats and develop strategies to ensure data quality and legitimacy. During the recruitment of our cross-sectional survey study examining the impact of cancer on the work and well-being of nurses in the United States, we employed the web-based, encrypted Research Electronic Data Capture (REDCap) platform to address challenges associated with online recruitment. Purpose: This presentation aims to identify online recruitment challenges, using our study as an example, and strategies to mitigate these challenges utilizing REDCap features. Methods: Recruitment. Our study recruited through multiple online channels, including social media platforms (LinkedIn, Facebook, Instagram), patient registries (Pitt+Me and Research Match), and professional nursing organizations. Interested individuals completed a 3-minute screening form, which the team used to verify their eligibility. Challenges. The screening form yielded 1690 responses over six months, with significant increases following social media advertisements. The process of verifying this large dataset was labor-intensive and time-consuming. Strategies. Our team adapted indicators of fraudulent responses from existing literature with various REDCap features (i.e., branch logic, data piping) to develop a form to validate eligibility. We prioritized two main criteria as most indicative of a fraudulent response: US Time Zones and identical open-ended responses. Additionally, sent personalized emails to individuals whose eligibility was uncertain and cross-checked survey with screening data. Results: Prioritizing these indicators decreased eligibility validation time from 3-5 minutes to ~30 seconds per record. Of the responses, 92.2% were screened as fraudulent. Conclusion: Research studies are suggested to develop proactive strategies for recruitment through online channels to address threats to data quality and legitimacy. REDCap is an effective tool to implement a multi-layer validating process to verify large and time-consuming datasets.