

Florida Undergraduate Research Conference 2023



Abstracts

St. Thomas University
Gus Machado College of Business
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Introduction

The Florida Undergraduate Research Conference 2023 was held at St. Thomas University in Miami Gardens, Florida, February 17–18, 2023. More than 600 submissions arrived from 85 colleges, universities, and other institutions throughout the state of Florida, some with international co-authors from as far away as Canada, Germany, Kenya, Singapore, Switzerland, and the United Kingdom.

The Abstracts included here are only the ones for which written permission was granted by the authors to publish their submission on electronic media and in hardcopy if accepted for presentation. A list of Abstracts by author name and number is provided to help you locate particular entries. The Abstracts themselves are organized by Submission number, title, author(s), affiliation(s), city, and then the abstract itself. The number sequence skips occasionally when an abstract was withdrawn for one of several reasons (e.g., a medical emergency).

We encourage you to review this material and learn about the fascinating, exciting, and important research being conducted by student scholars – the rising tide of excellence in academic research.



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The Association Between Obesity And COVID-19: An Analysis of Risk Factors

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Abstract (Posters)

The purpose of this study was to focus on whether solely obesity leads to an increased risk of COVID-19 mortality in terms of excess in-hospital deaths using a systemic review to identify possible confounders or patient outcomes and a meta-analysis to quantify the relationship between obesity and SARS-CoV-2 mortality. The study was conducted through a systemic review of risk factors between obesity and COVID-19, and this random-effects meta-analysis ascertained which factors have greater predictive value in determining mortality and severity of the condition. Obesity was measured using body mass index with a cutoff of 30 kg/m². COVID-19 mortality was the dependent variable measured using case counts across various studies. Ten research studies of 3,780,926 COVID-19 patient cases were included. Meta-analysis results indicate a pooled OR of 0.93 (0.71-1.23, $p = 0.627$) for in-hospital mortality of obese patients relative to non-obese patients when adjusted for confounders. Obesity did not lead to a statistically significant risk of dying from COVID-19. Obesity may not be the primary factor behind COVID-19 mortality in patients with the condition. Its expected statistical significance may be the by-product of other chronic diseases present in patients which correlate with excess adipose tissue or body mass such as type II diabetes mellitus and chronic kidney disease. While one cannot conclude that obesity plays no role in COVID-19 severity, this study reveals the need for future studies to disentangle the web of interactions behind COVID-19 mortality and various other comorbidities.



Effects of Verbal Cues and Time Constraints on Anxiety and Work Productivity

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Abstract (Posters)

Stress causes a decline in work performance (Vyas & Butakhieo, 2021). The current purpose was to determine if the relationship between stress and productivity in the workplace generalizes to the classroom. Because positive classroom factors influence cognitive performance (Halkos & Bousinakis, 2010), we examined whether positive, encouraging verbal cues by a “supervisor” under specific time constraints produced better test results (i.e., higher math scores) than negative, discouraging verbal cues. Time pressure to complete the test (time pressure: 5 mins vs. no time pressure: 10 mins) and the type of verbal cue provided by the “supervisor” (negative: rushed/discouraging vs. positive: calm/encouraging) while taking the test was manipulated between subjects. Changes in anxiety from baseline to post-test served as the repeated measure and arithmetic performance accuracy served as the dependent variable (i.e., productivity). The results supported the hypothesis; participants under time pressure who received positive verbal cues during the test reported less state anxiety and scored higher on the math test compared to those who received negative cues. In the no time pressure condition, the type of verbal cue did not have an effect on state anxiety or productivity. These results are particularly interesting because those in the positive, verbal cues condition under time pressure had significantly higher prior levels of math anxiety compared to those in the other conditions. The current results imply that when under a time constraint, employee productivity would benefit from positive verbal cues by the supervisor even when those employees are anxious about the productivity task.



Make New Mistakes, Make Enlightening Mistakes

Gregg Stanwood

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Abstract (Posters)

We learn more from our mistakes and missteps than our successes. Learn effectively and always make new mistakes. And make your own mistakes. In this workshop, we will explore ideas around “the best” approaches to scientific research and productivity, graduate and professional programs, and professional networking. Research-oriented individuals often have a too narrowly defined set of skills, goals and metrics to define their success. We will explore together how to enhance and cultivate your emotional maturity to improve your science and career, and how to use a Goldilocks approach in your professional development.



Water entry dynamics of hydrophilic spheres through particle-laden free surfaces

Korrie Smith, Anthony Cruz, Daren Watson
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Abstract (Posters)

We advance the seminal topic of water entry by documenting splash features generated by the impact of hydrophilic spheres through particle-laden free surfaces. Proximal interaction with small, buoyant particles is yet another means to manipulate splash dynamics. In this experimental study, we systematically investigate the fluid-structure interactions between floating particles and hydrophilic spheres for Froude numbers in the range of 20 – 94. Thus, we observe previously undocumented sub- and supersurface interactions. Generally, hydrophilic spheres entering a liquid bath below the threshold of 8 m/s produce minimal fluid displacement and no cavity formation. The presence of floating particles atop the free surface with respect to impacting spheres promote flow separation, yielding a radially expanding splash crown just above the free surface, simultaneously with an air-entraining cavity into the body of the and a vertically-protruding Worthington jet following cavity collapse. The resulting splash metrics differ from those of purely hydrophobic spheres based on the size of the impacted particles. Such observations augur well for fluid-structure interactions where flow separation warrant control.



Water entry dynamics of hydrophobic spheres near floating debris on a deep liquid pool

Anthony Cruz, Korrie Smith, Daren Watson
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Abstract (Posters)

We take the enduring topic of water entry further by documenting splash features generated by the impact of hydrophobic spheres with floating debris atop a deep liquid pool. Proximal interaction with floating debris is yet another means to manipulate splash dynamics. In this experimental study, we systematically investigate the fluid–structure interactions between floating debris and hydrophobic spheres for Froude numbers in the range of 21 – 74, and sphere–debris separation distance. Thus, we observe previously undocumented sub– and supersurface fluid interactions. Generally, hydrophobic spheres produce a radially expanding splash crown just above the free surface simultaneously with a deep seal cavity characterized by smooth cavity walls below the free surface, and a vertically–protruding Worthington jet following cavity collapse. The proximal presence of debris atop the free surface with respect to impacting spheres prohibit radial fluid expansion, yielding lopsided splash crowns, non–uniform air–entraining cavities, and in some cases, lateral sphere migration. Such observations augur well for fluid–structure interactions where splash and trajectory control are desirable.



In the Nick of Time: Understanding the Eviction of an Assembly Chaperone Hsm3 from 26S Proteasomes

Kaylyn Myers

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Abstract (Posters)

The proteasome is a complex cellular machine that is responsible for destroying unneeded or unwanted proteins. The proteasome consists of three subcomplexes: the lid, base, and core particle. Each subcomplex can assemble on its own before combining to form mature proteasomes. Under normal conditions, the assembly of the base is controlled by four chaperone proteins. However, how the chaperones are evicted prior to assembly of mature proteasomes is not well understood. We established a transition metal Förster resonance energy transfer (TM-FRET) assay to monitor the eviction of one of these chaperone proteins, Hsm3 from its binding partner in the base, Rpt1. We first produced a single-cysteine version of Hsm3 for labeling at a defined site with the small molecule fluorophore TAMRA. We next engineered two histidines into an α -helix of the base subunit Rpt1 near the Hsm3 binding site to create a Ni²⁺ chelating site. We performed growth assays on these mutants to confirm that they fully complemented deletion strains, indicating the mutations were innocuous. We will use this TM-FRET system to understand how Hsm3 is evicted during proteasome biogenesis. Proteasome dysfunction has been implicated in several diseases, and is a validated drug target in treating multiple myeloma. Understanding proteasome assembly, and specifically chaperone eviction, can be exploited in developing novel drugs.



Relationship between social media and self-concept in college students of African descent.

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Abstract (Posters)

This proposed study will investigate the relationship between social media and self-concept. There is a significant lack of research between social media and self-concept. The study proposed two research questions. The first was if social media significantly predicts self-concept in college students at an HBCU. The second was if upperclassmen and lowerclassmen college students at an HBCU have significantly different levels of self-concept. A correlational research methodology will be used in the proposed study. The sample will include 100 students at a southeastern HBCU. A correlation, simple linear regression, and independent samples T-test will be conducted. It is expected that in research question one social media will be found to be significant in predicting self-concept. In research question two, the expected findings are that upperclassmen and lowerclassmen will be found to be significantly different on self-concept.



Relationship between Ethnic identification and Love in college students of African descent.

Jayden Givens

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Abstract (Posters)

The proposed study will investigate the relationship between ethnic identification and love. There is a significant lack of research between ethnic identification and love. The study proposed two research questions. The first was if ethnic identification significantly predicts love in college students at an HBCU. The second was if male and female college students at an HBCU have significantly different perceptions of love? The study will use a correlational research methodology. The sample will include 100 students at a southeastern HBCU. A correlation, simple linear regression, and independent samples. T-test will be conducted. It is expected that in research question one, ethnic identification will be found to be significant in predicting love. In research question two, the expected findings are that men and women will be found to be significantly different on love.



Correlational Study on Social Media and its influence on Stereotypes among the student body

Zakira Gleason

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Abstract (Posters)

The proposed study will investigate the relationship between social media and stereotypes. There is a significant lack of research between social media and stereotypes. The study proposed two research questions. The first was if social media predicts stereotyping in college students at an HBCU. The second was if upperclassmen and lowerclassmen college students have significantly different levels of stereotyping. The study will use a correlational research methodology. The sample provided will include 100 students at a southeastern HBCU. A correlation, simple linear, regression and independent sample T-test will be conducted. It is expected that in research question one social media will be found to be significant in predicting stereotyping. In research question two, the expected findings are that upper classmen and lower classmen will be found to be significantly different in stereotyping.



Evaluation of various short read genome assemblers on sea slug genomic data

Meghan Violette¹, Padmanabhan Mahadevan²

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Abstract (Posters)

Each living organism, such as a human to a fish possess a genome, which is the complete set of genetic material. After sequencing a genome, the process of genome assembly takes fragments of nucleotide (DNA) sequences and places them in the correct order. There are different kinds of programs that allow us to take a great number of these sequences and place them in an order that corresponds to the original sequence. Scientists use the genome assembly to find out information such as the evolution of a species and compare genomes with other species. In this project, we are working with DNA sequences from the sea slug *Elysia crispata*. Interestingly, this sea slug is photosynthetic. We sequenced the genome of this sea slug and we used 13 different genome assembly programs to attempt to assemble this genome. We wanted to determine which of these programs (MEGAHIT, SPAdes, ABySS, MaSuRCA, Clover, Platanus allee, Mini SR, Wengan, IDBA, SOAPdenovo, Geneious, GATB-Minia and Discover denovo) produced the best genome assembly. Our results showed that the top 2 genome assembly programs were MaSuRCA and MEGAHIT. MaSuRCA reference assisted, MaSuRCA and MEGAHIT produced the assemblies with the highest percent of complete and partial core genes with the sea slug data. However, they are still highly fragmented given the high total number of sequences in the final assemblies.



Hydrodynamic form and function of the hammerhead sharks: ontogenetic and ecological considerations

Sam Johnson, Alexandra Butler, Dr. Daniel Huber, Dr. Michael Slattery
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Abstract (Posters)

Hammerhead sharks are well known for their unique head morphology known as the cephalofoil, which has been studied for both its sensory advantages and its possible enhancement of hydrodynamic efficiency, specifically as a lift-generating structure. This project analyzed the cephalofoils and fins of *S. lewini*, *S. mokarran*, and *S. tiburo* (the scalloped hammerhead, great hammerhead, and bonnethead sharks) using morphometric analysis to determine changes in the size and shape of these structures with respect to the habitats used by these species. It was hypothesized that these structures would be smallest relative to body size in the coastal dwelling *S. tiburo* to facilitate maneuverability and largest relative to body size in the pelagic *S. mokarran* to facilitate cruising. Furthermore, it was hypothesized that these structures would grow isometrically in both species given that they spend their entire lives in a single habitat type (coastal and pelagic, respectively). In contrast, it was hypothesized that *S. lewini* would have intermediate-sized cephalofoil and fins relative to body size and that these structures would grow with positive allometry in association with the transition from coastal habitats (juvenile stage) to pelagic habitats (adult stage).



The effect of Bd fungal metabolites on planarian behavior and developmental regeneration

Gretchen Hilt, Tomasina Cardone
The University of Tampa, Tampa, USA

Abstract (Posters)

The fungus *Batrachochytrium dendrobatidis* (Bd), is a major threat to amphibian biodiversity across the globe. This pathogenic microorganism is capable of decimating populations of amphibians with the spread of swimming zoospores throughout freshwater environments. Even though this pathogen has been eradicating populations for decades, attempts to suppress the infections have been unsuccessful. Our research question focuses on the recent development and use of a prophylactic wildlife vaccination against Bd. This vaccine is comprised of purified metabolite from the Bd zoospores and has shown promise in reducing infection rates when tested in the laboratory setting. However, the risks and effects of this vaccine have not yet been understood in regard to the ecosystem and other organisms in the environment. Our study reports an investigation on the effect of Bd metabolite on a soft-bodied organism found in the same freshwater environment: the planarian worm *Dugesia japonica*. This flatworm is a common organism used in developmental research because of their regenerative processes, extensive studies on behavioral responses to the environment and ease of use in the laboratory setting. Here, we present our findings that Bd metabolite exposure has no significant effect on planarian behavior and movement within 24 hrs. and 72 hrs. of exposure. We also explored the effects of metabolite exposure on behavior and movement over the course of 14 days. The results presented here will expand our understanding of the impacts of Bd metabolite exposure on freshwater organisms in the same environment and of Bd metabolite as a safe wildlife vaccine.



Patient Body Composition and Health: The Connection to Frequency, Intensity, and Type of Headache

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Abstract (Posters)

Brain and spinal cord tumors cause great discomfort for patients, namely severe headaches that often disrupt quality of life. In 2020, over 308,000 patients were diagnosed with a primary brain or spinal cord tumor, many of whom require invasive procedures like Craniotomies to access and resect the tumor. The objective of this study was to assess the correlation between headache occurrence, intensity and subtype to patient demographic information and CT-MRI scan results. We aim to establish a retrospective quality outcomes database to examine the outcomes of patients from the Mecklenburg Neurology Group that experienced discomforting headaches between October and November of 2022. All statistical analysis will be performed with IBM SPSS v26.0 (IBM, Armonk, NY) at an alpha value of 0.05. A qualitative and quantitative comparison among admitted patients is to be performed. Ordinal variables can be compared using a Mann–Whitney U test with two-sided and one-sided comparisons and exact significance values corrected for ties reported. Factors that are analyzed include frequency and intensity of headache, type of headache (i.e. Chronic Tension Headache), Neuro-Imaging Study results, age, weight and BMI. Ultimately, we hope to find significant correlations between the frequency, intensity, and type of headache and its relation to patient demographic information, and apply this to the greater Charlotte metro area.



Relationship between mating psychology and abortion in college students of African descent

Alaysia Dukes

Bethune-Cookman University, Daytona Beach, USA

Abstract (Posters)

The proposed study will investigate the relationship between mating psychology and abortion. There is a significant lack of research between mating psychology and abortion. The study proposed two research questions. The first was if mating psychology significantly predict abortion among college students at an HBCU. The second was if upperclassmen and lowerclassmen college students at an HBCU have significantly different levels of suicidal behavior. The study will use a correlational research methodology. The sample will include 100 students at a southeastern HBCU. A correlation, simple linear regression and independent samples T-test will be conducted. It is expected that in research question one mating psychology will be found to be significant in predicting abortion. In research question two the expected findings are that upper classmen and lower classmen will be found to be significantly different in suicidal behavior.



Seasonal Assessment of Local Tampa Bay Nudibranch, *Dondice jupiteriensis*

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Abstract (Posters)

The life history of many sea slugs is not well documented in the scientific literature. It is difficult to study populations of sea slugs, as often they are rare and challenging to observe, Aeolid nudibranchs are a group of carnivorous sea slugs that feed on a variety of cnidarian prey, such as hydroids. *Dondice jupiteriensis* is an aeolid nudibranch found throughout the Caribbean and Florida where it is commonly found feeding on the polyps of the hydroid, *Eudendrium carneum*. In June 2021, we launched a year-long study on the population dynamics of *D. jupiteriensis*. Each month, four hydroid colonies were collected in Tampa Bay and then searched using dissection microscopes to document all sea slugs present. All slugs found were identified to species, counted, and measured for length. A total of 16 different species of sea slugs were found, with *D. jupiteriensis* being the most common. The greatest abundance and smallest average length of *D. jupiteriensis* were recorded in the summer months. This suggests that spawning events occur in late spring and early summer. This study provides an uncommon opportunity to observe population dynamics of a nudibranch as well as important preliminary research to determine the life history of *Dondice jupiteriensis*.



Radular Comparison Between the Nudibranch Species *Doto divae* and *Doto chica*

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Abstract (Posters)

Mollusks use a structure known as a radula, to feed, and the morphology of the radula can often serve as a descriptive characteristic for species identification. The nudibranch sea slug species *Doto divae* and *Doto chica* both live and feed on the hydroid *Eudendrium carneum*. Due to their similar habitat and small size the slugs can often be confused for one another. Descriptive details for slugs in the *Doto* genus is limited, making it hard to compare species that can appear morphologically similar. The aim of this study is to compare the radular morphology of these two species using scanning electron microscopy (SEM) to create a metric for conclusive species comparison. Both *Doto* spp. were collected near the Skyway Bridge in Tampa Bay, FL. The radulae of these species were extracted and photographed using SEM. Overall, the radular morphology of the two species were very similar but differed slightly in denticle shape and spacing. These slight nuances in radular morphology suggest the radula may be a good characteristic for distinguishing between these species. To confirm this, future work should include making intraspecific radulae comparisons to confirm the traits above are unique and have value for species comparison.



How They See Us: Black Women Abroad

Susan Morales, Kalijah Rahming
Florida State University, Tallahassee, FL, USA

Abstract (Posters)

The purpose of this study was to better comprehend the ways that our identities affect and transform the lives we live. This project focuses on how identity can be formed through interactions with other people and the importance of how people view or understand one another. The foundational theory for this project is Michael Omi and Howard Onant's theory of racial formation which we extended to all identities, not just race. Throughout this experience, we learned that there are still stereotypes towards the types of identities we hold but they are manifested in a curious light. Additionally, we realized that sharing similar identities with others was often not enough to create a true sense of community.



How They See Us: Black Women Abroad

Kalijah Rahming, Susan Morales

Florida State University, Tallahassee, Florida, USA

Abstract (Posters)

The purpose of this study was to better comprehend the ways that our identities affect and transform the lives we live. This project focuses on how identity can be formed through interactions with other people and the importance of how people view or understand one another. The foundational theory for this project is Michael Omi and Howard Onant's theory of racial formation which we extended to all identities, not just race. Throughout this experience, we learned that there are still stereotypes towards the types of identities we hold but they are manifested in a curious light. Additionally, we realized that sharing similar identities with others was often not enough to create a true sense of community.



Do native parasitic pea crabs infect invasive green lipped mussels in Tampa Bay? A test of the predator release hypothesis.

James Heiser, Louis Ambrosio
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Abstract (Posters)

This pea crab is one of many organisms known to infect the internal body cavities of various bivalve species, such as oysters, mussels, and scallops. The pea crab species native to Tampa Bay is *Tumidotheres maculatus*. In 1999, Tampa Bay experienced the introduction and population explosion of the incredibly invasive green lipped mussel *Perna viridis*, native to the Indo Pacific. Despite the mussel's initial success, the population of this invasive species has experienced decline in recent years. This project will examine the host use patterns of *T. maculatus* in Tampa Bay and explore its symbiotic compatibility with *P. viridis* as an explanatory factor in controlling the population of this invasive species. Initial investigations began with field and laboratory-based surveys of *T. maculatus*'s known bivalve host, *Atrina rigida*, and the introduced host *P. viridis* to document the population densities and prevalence of parasitic pea crab infection in each host species. If infection of *P. viridis* is observed, parasitic effects will be quantified by comparing the dry body weight of infected and uninfected host animals. If no presence is found, extensive laboratory experiments will ensue to determine if *T. maculatus* can be conditioned to utilize the introduced host *P. viridis*. Findings from this project will greatly contribute to our understanding of native parasite mediated population control of invasive species within Tampa Bay.



The Search for Happiness: Identifying Cortical Biomarkers of Optimism, Agency, and Connectedness using fNIRS

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University of North Florida, Jacksonville, USA

Abstract (Posters)

Previous research using functional near-infrared spectroscopy (fNIRS), a non-invasive brain imaging technique, has shown that depression is correlated with reduced activity in the left prefrontal cortex when completing a verbal fluency task (VFT). Successful treatment of depressive symptoms is associated with increased activity in the left prefrontal cortex and better performance on a VFT. These studies have examined depression levels, but little research has utilized fNIRS to measure happiness. fNIRS uses two different wavelengths of near-infrared light to quantify concentrations of oxygenated hemoglobin, a direct measure of cortical activity. We aim to identify biomarkers for happiness by focusing on three of its major components: optimism, agency, and social connectedness. Participants complete scales that measure these constructs to determine happiness levels, then neural responses in the prefrontal cortex are recorded as they complete a VFT that consists of four blocks. The baseline is a basic VFT where participants come up with as many words as they can that start with a specific letter. The next three blocks ask participants to list as many words as they can think of when it comes to situations that center around optimism, agency, or social connectedness. We expect that happier individuals will have more activity in the left prefrontal cortex and better performance on the VFT compared to those who are less happy. We also expect to find the brain regions associated with optimism, agency, and social connectedness individually.



Critical Dynamics in the Emergence of Agency

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Florida Atlantic University, Boca Raton, USA

Abstract (Posters)

As adults we understand that our actions can affect the world. Less clear is how we become aware of our causative powers in infancy. This study aims to capture and describe the dynamics of the emergence of agency, action towards an end. The mobile conjugate reinforcement paradigm provides an experimental window into this process. Infants begin the experiment as detached observers, but when one of their feet is tethered to an overhead mobile, infants may discover their ability to move the mobile. A sudden increase in movement rate is proposed to mark a moment of agentive insight (Kelso, 2016; Kelso & Fuchs, 2016). Sloan (2022) collected 3D movement data at 100 Hz from 16 babies (age: $M = 100.33$ days, $SD = 15.57$) and calculated cumulative displacement of the tethered foot during infant~mobile interaction. This was differentiated twice across 1-min.-wide intervals with 10ms shifts (using the Matlab function `movingslope.m`) to produce 1-min. changes in movement rate (acceleration). We will apply linear regression to cumulative displacement in the minute preceding and following the infant's peak acceleration to explore dynamics related to agentive discovery. We predict that the magnitude of fluctuations will be greater before maximum acceleration than after since fluctuation enhancement is a hallmark of complex systems nearing phase transitions (Kelso, et al., 1992). Identifying mechanisms underlying the emergence of agency may help develop an array of novel treatments as aberrations in agency are involved in movement disorders (Kranick, et al., 2013) and mental illness (Szalai, 2016; Jeannerod, 2009).



First report of the introduced isopod *Ligia exotica* Roux, 1828 in rocky intertidal habitats of Midway Atoll, Papahānaumokuākea Marine National Monument as confirmed by morphological and molecular approaches

Anngelyk La Luz¹, Alexandra Larson¹, Louis Ambrosio¹, Keegan Rankin², Carlos Santamaria¹

¹The University of Tampa, Tampa, USA. ²U.S. Federal Fish & Wildlife Service, Honolulu, USA

Abstract (Posters)

The Papahānaumokuākea Marine National Monument (PMNM) is one of the world's largest marine protected areas and covers marine habitats as well as the islands and atolls of the Northwestern Hawaiian Islands. Despite its protected status, the biodiversity of the PMNM face several threats to its preservation, including the presence of introduced species. Given its history as a shipping and military outpost, Midway Atoll represents a potential entry point for introduced species to the PMNM. Thus, monitoring for new introduced species in Midway is of importance for the management and preservation of the PMNM. In this study, we use morphological and molecular approaches to confirm the presence of the coastal isopod *Ligia exotica*, a species of Asian origin that has been introduced to coastlines around the world, in Midway Atoll and thus the PMNM. The presence of *L. exotica* in Midway Atoll is of concern as islands of this marine monument harbor endemic species of *Ligia* isopods.



Relationship between Ptsd and Anxiety in college students of African descent.

Chedine Blair

Bethune-Cookman University, Daytona beach, USA

Abstract (Posters)

The proposed study will investigate the relationship between PTSD and anxiety. There is a significant lack of research between PTSD and anxiety. The study proposed two research questions. The first was if PTSD significantly predicts anxiety in college students at an HBCU. The second was if upperclassmen and lowerclassmen college students at an HBCU have significantly different anxiety levels. The study will use a correlational research methodology. The sample will include 100 students at a southeastern HBCU. A correlation, simple linear regression, and independent samples T-test will be conducted. It is expected that in research question one PTSD will be found to be significant in predicting variable anxiety. In research question two. The expected findings are that upper-classmen and lower-classmen will be found to be significantly different in their levels of anxiety.



Examining the Role of Spatial Interactions for Screen Reader Users on Web User Interfaces

Avery Reyna

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Abstract (Posters)

Making the Web equivalently accessible to blind and visually impaired (BVI) users remains a major challenge. While assistive technologies (ATs) such as screen readers have enabled users to better interact with websites over the years, desktop web users still receive information about the contents of a page in a linear manner, which makes it hard to understand visual paradigms such as layout. In this work, we explore the benefits and drawbacks of incorporating spatial interactions into desktop screen readers—interactions such as navigating directionally (vs. semantically) and hearing content via spatial audio—with a focus on both consuming and producing web content. Our research contributes design guidelines for integrating spatial interactions into desktop screen readers by observing user preferences with our system. We also reveal opportunities that BVI users see for incorporating spatial interaction into computer applications beyond the web, including mapping services (e.g., Apple Maps), STEM education, and live presentations.



Comparative Whole-Genome Analysis of Methicillin-resistant *Staphylococcus aureus* to Understand Genetic Features Associated with Host Adaptation and Dissemination in both Humans and Food Animals

KC Jeong^{1,2}, Yuting Zhai^{1,2}, Grace Oldham³

¹University of Florida, Emerging Pathogens Institute, Gainesville, USA. ²Department of Animal Sciences, Institute of Food and Agricultural Sciences, Gainesville, USA. ³University of Florida, Gainesville, USA

Abstract (Posters)

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a typical human and animal pathogen, causing various diseases that pose great concerns to public health. We aim to understand genetic features that enable MRSA for successful colonization in humans and animals. We conducted whole-genome sequencing of 50 MRSA strains isolated from hospitalized patients (HM RSA), as well as the genome sequences of 50 food animal MRSA (FAM RSA) from the NCBI database and identified their sequence types. Then, we constructed a core-genome based maximum-likelihood phylogenetic tree for FAM RSA and HM RSA. Strains isolated from the same host species have closer phylogenetic relatedness. Only two strains isolated from humans were clustered with four other strains from food animals. We further conducted comparative genome analysis to identify the antibiotic resistance and virulence profiles of these strains, with an emphasis on the differences between human and animal hosts. Multiple antibiotic resistant mechanisms were identified in the MRSA strains. Regardless of the host types, methicillin resistance and efflux pump encoding genes were shown in all the strains. There was no specific host-related resistance gene identified. Various virulence factors were also identified in the MRSA strains. Interestingly, strains isolated from the same host species have more similarity in their virulence profiles. In a future study, we are going to investigate the mobile genetic elements of these MRSA strains to further understand the dissemination and specificity of MRSA in different hosts.



Investigating Fruit Quality Traits of Wild and Cultivated Blueberries (*Vaccinium spp.*) in Central Florida

Anisa Khalid, Chase Mason
University of Central Florida, Orlando, USA

Abstract (Posters)

Blueberries (*Vaccinium spp.*) are valued for their high nutritional quality and flavor. There are five species in the *Vaccinium* genus native to the state of Florida but only three are palatable to humans: *V. myrsinites*, *V. darrowii*, and *V. corymbosum*. While *V. darrowii* has been studied extensively due to its successful hybridization with northern highbush blueberry cultivars, *V. myrsinites* and *V. corymbosum* (to a lesser extent) have been understudied. **This study aims to 1) quantify the abundance of various phytochemicals in fruits of these blueberry species and compare fruit quality both among the wild fruit and to two varieties of cultivated blueberries (*V. corymbosum*) and 2) compare variation of fruit traits across sampling sites.** Wild berries were collected from seven different sites across Central Florida and cultivated berries were collected from a local blueberry farm. Chemical analyses scored for titratable acidity, sugar content, phenolic content, and anthocyanin content. Additionally, physical analyses scored for traits such as fruit size and water content. Results indicated that *V. myrsinites* has the highest sugar content and a significantly higher sugar:acid score than all other sample types. *V. corymbosum* and *V. myrsinites* equally shared high values of total phenolic compounds. *V. corymbosum* had the highest anthocyanin content and was significantly different from the two cultivars, Jewel and Primadonna. This exploratory analysis provided new insight into the phytochemical profiles of native understudied Florida blueberries and yielded results that can be further explored by future studies.



Deliberative Cues within the Context of Religious Communities

Andrea Mullin¹, Michael Stagnaro²

¹University of Central Florida, Orlando, USA. ²MIT, Cambridge, USA

Abstract (Posters)

Recent research in the field of the Cognitive Science of Religion has indicated a negative relationship between the willingness of an individual to engage in deliberation and religious belief. A number of potential mechanisms driving this relationship have been investigated; however, here we focus on the communal and interpersonal aspects of religious life. Specifically, we ask how religious individuals perceive and treat religious community members who signal a strong inclination to engage in deliberation. If those more inclined to deliberate are also more inclined to push back on religious/ideological ideas, they may receive disproportionate social costs in their religious communities.

We will conduct an experiment that systematically manipulates the perceptions of a target individual's thinking style while holding their reported religious belief constant. The study will recruit 1,000 individuals to take part in a two-condition (deliberative target vs non-deliberative target), between-subjects design. Participants will rate how dedicated the target is to their religious belief and how well they would be able to follow the religious teachings and traditions. Further, all participants will be asked how much they like the target individual.

We hypothesize that both religious and non-religious participants will view the target individual described as being more deliberative, and will be perceived as being less dedicated to, and less able to comply with, their religious belief compared to the non-deliberative individual. Further, we predict that religious participants will show a much stronger liking for the non-deliberative target, compared to the deliberative target individual.



Obsessive-Compulsive Disorder and Behavioral Urges

Andrea Mullin, Steven Berman
University of Central Florida, Orlando, USA

Abstract (Posters)

Obsessive Compulsive Disorder (OCD) has been linked to a dysmorphic construction of self that is closely tied to mental illness (Bhar & Kyrios, 2007). Additionally, thought-action fusion (TAF), has been shown to be more prominent in OCD than in other disorders. Although associations have been found, no study has determined the impact of OCD on one's self-perception, to better understand how to resolve patients' dysmorphic construction and fear of oneself. College students (N = 410; Meanage = 20.60, sd = 4.27) completed an anonymous online survey. The survey consisted of a demographic questionnaire, the Obsessive-Compulsive Inventory-Revised (Foa et al., 2002), the Ego-Dystonicity Questionnaire (Purdon et al., 2007), and the Self-concept Identity Measure (Kaufman et al., 2019). To determine if scores on the Obsessive-Compulsive Inventory predicted scores on the Identity Measure and if the Ego-Dystonicity scale would account for a greater percentage of the variation in Identity subscale scores than Obsessing scores alone, multiple regression analyses were utilized. The first regression was conducted with gender and age entered at step 1, the Obsessing subscale entered at step 2, and Lack of Identity as the dependent variable. A second regression was conducted with gender and age at step 1, the Obsessing subscale at step 2, and Unstable Identity as the dependent variable. The third regression was repeated, except the dependent variable was Consolidated Identity. These regressions were repeated with Personality variables in step 3. Implications for intervention and prevention efforts in regard to the effects of OCD on identity will be discussed.



Applying Baited Underwater Remote Video Techniques to Document Behavioral Responses to Ecologically Relevant Prey Chemical Stimuli

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Abstract (Posters)

Baited Remote Underwater Videos (BRUVs) can be used to document species abundance and diversity, and are more appropriate for surveying cryptic species, offering a more robust technique for surveying cryptic species than traditional SCUBA survey methods. However, BRUVs are often deployed using environmentally unrealistic bait quantities to draw in maximum species diversity. As such, these deployments do not give us a clear understanding of the behavioral responses to odor cues of ecologically realistic prey quantities. Similarly, BRUVs have not been used to assess species-specific responses to chemical signatures from different prey items. The goal of this research was to further our understanding of chemoreception in the marine environment. We deployed BRUVs across multiple habitats, using two prey species at ecologically relevant concentrations. This allowed us to 1) better understand which predatory species may use olfactory cues during foraging and 2) assess differences in olfactory-sensitive predator guilds between rocky reef and sandy bottom habitats. We found that kelp bass (*Paralabrax clathratus*) and California moray eels (*Gymnothorax mordax*) were most successful at using chemoreception to locate potential prey, evidenced by the latency to arrive at a cue and the duration spent investigating the cue compared to other fishes. Kelp bass have not been previously reported to use chemoreception during foraging, yet were capable of responding to olfactory stimuli from two prey cues. Our results indicate that the kelp bass is highly capable of chemoreception when compared to many other predatory fishes observed in this study in both sandy and rocky habitats.



The General Population's Perception of Factors Associated With Positive or Negative Perceptions of Physical Therapy Care in Those With Low Back Pain

Jada Strowbridge

University of Central Florida, Orlando, USA

Abstract (Posters)

Low back pain (LBP) has a global impact on health and is a substantial contributor to long-term disability. The economic burden of LBP is immense and is advancing annually. Costs attributed to LBP in the United States are about \$84.1 to \$624.8 billion. Physical therapy (PT) is commonly recommended for those with LBP since it is linked to improved clinical outcomes. However, patient perceptions can influence how this treatment approach is perceived. It is unclear if these perceptions can influence outcomes for patients suffering from LBP. Therefore, the purpose of this study is to identify factors associated with positive or negative perceptions of PT care in those with LBP. This will be accomplished by developing and administering a comprehensive Qualtrics survey to participants in the Orlando area. Participants who take the survey will be screened for eligibility requirements with exclusion criteria being those from vulnerable populations including pregnant women, minors, prisoners, and any person unable to provide informed consent. Screening, demographic, clinical, and perception questions will be embedded within the online survey. Those participating must be 18 years or older, located within the Orlando area, able to provide informed consent, and speak English. Data collection for this project is forthcoming; however, the research team will review the survey's data. All data collected in the survey will be de-identified for participant privacy purposes.



Incidence and Risk Factors of Gastrostomy Tube Placement in Infants Following Surgery for Congenital Heart Disease

Kaitlyn Jade Ong¹, Sreekanth Viswanathan²

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Abstract (Posters)

Congenital heart disease (CHD) is the most common birth defect occurring in nearly 1% of newborns in the United States. About 25% of newborns with CHD undergo cardiac surgery annually. Many do not develop skills to feed orally enough to meet energy demands and are discharged home on gastrostomy tube (G-tube) or nasogastric feeds. Oral feeding difficulty is a significant contributor to prolonged hospital length of stay (LOS) with associated increased health care costs and need for G-tube placement. The objectives of this descriptive study were to determine the incidence and risk factors for G-tube placement in infants following surgery for complex CHD at Nemours Children's Hospital in Orlando, Florida. This was a single-center retrospective cohort study (Jan 2016 to Dec 2020). Infants who required tube-feeding at discharge (TF group) were compared to infants who reached independent oral feeding (IOF group) before first hospital discharge. The final sample size included 82 infants, of which 71 (86.6%) were in IOF group and 11 (13.4%) were in TF group. Compared to IOF, TF group had higher occurrence and/or durations of prenatal CHD diagnosis, surgery in the newborn period, prolonged pre- and postoperative respiratory support, delayed pre- and postoperative oral feeding, and pre-post clinical gastroesophageal reflux disease (GERD) diagnosis ($p < 0.05$). TF group had a higher LOS compared to IOF group (107 vs 23 days, $p < 0.05$). Future intervention studies on mitigating the effects of identified risk factors associated with delayed oral feeding can improve outcomes for these infants and their families.



Examining the sustainability of the Florida stone crab (*Menippe mercenaria*) fishery: testing intraspecific interactions between single- and two-clawed individuals.

Talia Barry, Kristian Taylor
The University of Tampa, Tampa, USA

Abstract (Posters)

The Florida stone crab (*Menippe mercenaria*) is an economically important species native to the southeast coast of the US and Mexico. The fishery is unique in that only a single claw is harvested and then the crab is released. Due to such regulations the fishery is considered sustainable. This project sought to examine the interactions between single-clawed and two-clawed individuals. It was hypothesized that smaller, two-clawed individuals would outcompete larger, single-clawed individuals that were impacted by the fishery. Large (carapace > 80 mm), single-clawed individuals were paired with smaller (< 80 mm), two-clawed individuals and placed simultaneously in a tank with a single artificial burrow. A 'winner' was recorded as the crab remaining in the burrow at the end of one hour. A total of 27 trials were run using 54 specimens and all behaviors were recorded and coded. Smaller, two-clawed individuals outcompeted larger, single-clawed individuals 41% of the time, compared to larger individuals securing the burrow only 29% of the time, with no set winner for 30% of interactions. The significance with which smaller, two-clawed individuals outcompeted larger, single-clawed conspecifics brings into question the impact of this fishery on population dynamics and whether it is truly sustainable. Although smaller individuals might be juveniles, this research demonstrates that genetically smaller individuals can outcompete larger individuals impacted by the stone crab fishery. This work should be continued to examine how the stone crab fishery might be directly impacting the population genetics of this economically important species.



The Use of Machine Learning Algorithms to Contribute in Social Good

Danny Alice

Florida Atlantic University, Boca Raton, USA

Abstract (Posters)

Artificial intelligence and machine learning can be utilized in conjunction come together to solve problems in society. In today's world, the need for AI and ML can create a positive outcome for situations in today world such as predicting wildfires and floods for people in your community, tracking endangered species, and detecting plant disease for farmers and create solutions for the future use if needed. Insight from AI and ML can assist with future problems such as poverty, climate change, crime, education, healthcare and much more. Artificial Intelligence and Machine Learning multiple profile aspects received lots of success drawing attraction to companies and businesses to future problems in our society. As technology is being used in majority of sectors in the world, business owners seek the help of AI and ML to fasten the process of automating asks and or gain insight through the company data systems. The call for AI and ML to take part in these challenges has risen and continues to be as time moves forward and issues in our society appears.



MCMC Thermophysical Modeling of Recovered Data from the NEOWISE Mission

Isabella Macias

University of Florida, Gainesville, USA

Abstract (Posters)

I present results from my work identifying previously undiscovered near-Earth asteroid (NEA) detections in the NEOWISE archive. Identifying the composition and orbital path of NEAs will provide a greater understanding of the origins of our solar system and improve our safeguards against these hazardous planetesimals. While a survey of threatening NEAs is currently underway under the NEOWISE mission, our manual search of unreported epochs of asteroids from the NEOWISE archive complements this program and enables us to construct a complete framework of the NEAs' characterizations. We recovered data from the NEOWISE mission's Infrared Science Archive (IRSA) database to be inputted into a Markov Chain Monte Carlo (MCMC) modeling code, which fits a triaxial ellipsoid model to constrain thermophysical properties such as diameter, thermal inertia, and albedo. We reported the observed epochs to the International Astronomical Union's Minor Planet Center's (MPC) database and built tools for locating missing epochs in NEOWISE's search for NEAs.



Application of bioorthogonal chemistry in SNAP-tag protein labeling

Christelle Bucag, Lei Zhu

Florida State University, Tallahassee, USA

Abstract (Posters)

Bioorthogonal, “Click” chemistry makes use of specific reactions in living systems which do not interfere with other biochemical processes. One application of bioorthogonal chemistry is protein-labeling, a technique used in monitoring the localization, transport, and dynamics of a target protein in a cellular environment. SNAP-tag is a self-labeling protein that is often used in live-cell labeling due to its substrate selectivity and short reaction time. Protein-labeling with SNAP-tag can either be done through one-step or two-step (with an intermediate ‘handle’) protocols, with the latter being preferred as complications of a bulky cargo may render the one-step method ineffective. SNAP-tag probes can be used in understanding cellular processes such as endocytosis through following the uptake of a fluorescent dye which is attached to a benzylguanine (BG) moiety. Two bioorthogonal reactions between an alkyne and an azido group, Copper-Catalyzed Azide-Alkyne Cycloaddition (CuAAC) and Strain Promoted Azide-Alkyne Cycloaddition (SPAAC), have been used in the second step of the two-step labeling experiments. Two types of azides, chelating (BG-PyAz-2) and non-chelating (BG-Azide), were used in both SPAAC and CuAAC reactions to determine which substrate produces the better imaging quality. Fluorescence microscopy was used to visualize the protein that was labeled via either non-chelating or chelating azide-mediated SPAAC or CuAAC chemistry. Mass spectrometry was conducted to characterize the labeled proteins. It was determined that the chelating azide BG-PyAz-2 gave the better labeling quality in both CuAAC and SPAAC.



The Relationship Between Locus of Control and Religiosity Factors.

Olivia Schalk, Leilani Goodmon
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Abstract (Posters)

External locus of control is a belief that life is contrived by outside factors which cannot be controlled, while internal control is the belief that one can handle one's own life (Rotter, 1954). The current purpose was to determine if religious orientation, attachment to God, and religious coping style can predict external locus of control (based on research by Batson et al., 1993 and Iles-Caven et al., 2020). The sample included 180 participants. Consistent with the hypothesis, altogether the religious variables predicted locus of control, $F(5, 174) = 5.94, p < .001$, explaining 12% of the variance, with an anxious attachment to God emerging as a significant predictor, $p = .037$. Those with a higher external locus of control exhibited lower religiosity scores, more negative attachment to God and more negative religious coping. Specifically, participants with higher external locus of control reported less intrinsic, $r = -.16, p = .032$, and extrinsic religious orientation, $r = -.15, p = .05$. Participants with higher external locus of control also reported more avoidant attachment to God (e.g., "don't feel a deep need to be close to God"), $r = .21, p = .005$, more anxious attachment to God (e.g., "worry about whether God is pleased with me"), $r = .22, p = .033$, and more negative religious coping ("wondered what I did for God to punish me"), $r = .27, p < .001$. Results are consistent with previous research on the relationship between external locus of control and aspects of religiosity.



Leadership Style, Job Satisfaction, and Stress During COVID-19

Allison Johnson, Natalie Roth, Leilani Goodmon, Victoria Lew
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Abstract (Posters)

The study aimed to determine how supervisors' leadership style (Transactional, Transformational) and response to COVID-related issues in the workplace were related to employee job satisfaction and stress during the COVID pandemic. Higher levels of supervisor transformational leadership were associated with more positive responses to COVID work-related issues, higher employee job satisfaction, and lower stress levels. However, these relationships did not emerge for employees who reported higher levels of transactional leadership styles among their supervisor(s).



"So Many Grey Days Around Me...": Queer Women, Gender-Non-Conforming Women, and Trans Men in Weimar German Periodicals

Shannon Scott

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Abstract (Posters)

In 1932, an article in the German queer women's magazine *Die Freundin* complained about the arrest of "Mrs. Einsmann", or Josef Maria Einsmann, who had used their estranged husband's ID and adopted his name for twelve years while living with their girlfriend and her two children. The author stated that "she [Josef], as a man, has provided for herself and her girlfriend as well as their children in a positively exemplary manner, as perhaps some other family men in Germany do not otherwise do."

Stories such as Josef Maria Einsmann's demonstrate the unusual nature of the lived experiences of queer women, gender-non-conforming (GNC) women, and trans men during the Weimar era, who were simultaneously able to find support from the organizations that arose in this time but also the subjects of social and political stigma. By examining underexplored mainstream and queer periodicals and building on past research of Weimar Germany's queer rights movement, this project brings self-perception and public perception of queer women, GNC women, and trans men into the parallel discussions surrounding contemporary medical views, legal debates, and social ideas of sexuality and gender.



β-Glucosidase B Mutation at Site K61N

Amanda Pena

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Abstract (Posters)

β-Glucosidase B (BglB) is a heterogeneous group of phylogenetically conserved, hydrolytic enzymes widely distributed in the living world. This enzyme is responsible for catalyzation and other biochemical reactions. BglB allows for the alteration of chemical stability and aids in biotechnological applications in the scientific community. Characterizing mutants in this enzyme can add to the ongoing research of protein modeling so that scientists can better understand their interactions and functionality. Using the design-to-data methodology, site K61 of BglB from *Paenibacillus polymyxa* was mutated to K61N for the design of a new, undiscovered, novel protein mutant. Wild type and mutant were then compared using catalytic and thermal stability parameters to test their structure-function relationship and expression. Results show that the relationship between stability and energy is inversely proportional, increasing the Michaelis constant (K_m) and decreasing catalytic efficiency (K_{cat} / K_m). K61N presents full expression at 3.72mg/mL with low kinetic and thermal stability parameters.



Surveillance of FFP-2 Masking Compliance on Modes of Public Transportation throughout Italy

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University of South Florida, Tampa, USA

Abstract (Posters)

The COVID-19 pandemic spurred revisions in public health policies, prompting travel bans, lockdowns, mask mandates, and social distancing. Through literature review and field research focused on the epidemiology of COVID-19 and the impact of policy enforcement on community behaviors, this project will evaluate the effectiveness of public health systems in Italy during the pandemic. The data collection process took place from July 2022-August 2022 in Milan, Bologna, Florence, and Rome, cities determined to be epidemiological hotspots during the first wave of the COVID-19 outbreak. Qualtrics was utilized to conduct an observational cross-sectional survey to analyze the association between the mandatory FFP-2 masking mandate in all modes of transportation and mask wearing behaviors - primarily on metros and buses. Data was collected on demographics, public health policies, group social distancing behaviors, and mask-wearing compliance. A regression analysis will reveal if the implementation of a mandatory masking policy will increase the odds of travelers fully wearing an FFP-2 mask on modes of public transit throughout hotspot cities in Italy. Understanding how foreign public health policies influence community behavior can inform the implementation of future global health initiatives.



Wilderness Therapy Among Victims of School Violence: An Innovative Approach

Benjamin Aggarwal

The Pennsylvania State University, College of Health and Human Development, State College, USA

Abstract (Posters)

This presentation will examine in depth the recent development of wilderness therapy programs, including, but not limited to, various aspects of the development of such programs, including treatment methodology, and treatment effectiveness among victims of school violence. This presentation will additionally examine effectiveness of implementation among victims of school violence, and potential for growth among adolescents and young adults. Wilderness therapy is a recently developed intensive therapeutic that places participants in the setting of nature for treatment, under the methodologies of outdoor behavioral health. The intensity of such programs vary between programs, ranging from full immersion in the wilderness, programs that allow participants to reside in a residential setting and participate in wilderness programs during the day, and outpatient programs that allow participants to engage in therapeutic programs during the day. Such outdoor behavioral health programs have a 60.4% higher cost-benefit ratio than traditional treatment programs, and 424% higher treatment outcomes when compared to traditional treatment programs. (Michael Gass et.al., 2019)



“Save the Bees” - Effects of Urbanization and Local Habitat Characteristics on Bee Populations in Texas

Sarah Toole

Florida State University, Tallahassee, USA

Abstract (Posters)

The purpose of this proposed study is to evaluate the effects of urbanization and local habitat characteristics on bee diversity/richness and bee overall population abundance over five years in fifteen cities in Texas. Understanding the impact of different environmental elements on the bee population is vital as bees are pollinators and, therefore, critical to crop growth and human food consumption. My project proposes to study the bee population over a five-year time frame in fifteen cities in Texas, and how the richness/diversity and abundance of the bee population would be affected by the distance of resources from the bee nests, the number of resources that the bees had access to, and the amount of construction (development). The anticipated results would be consistent with the negative effects of urbanization on local habitat characteristics, with increased urbanization leading to fewer female bees, a decline in the overall abundance of bees, and a decline in species diversity/richness. Any future work should focus on reducing the environmental impacts of urbanization and aiming to protect the bee population by providing human assistance if needed.



Utilizing flexible linkers for the synthesis of Metal-Organic Frameworks

Damian Hernandez

Florida Gulf Coast University, Fort Myers, USA

Abstract (Posters)

A relatively new and popular class of porous materials known as Metal-Organic Frameworks (MOFs), are crystalline structures constructed from coordinative bonding between an organic ligand and a metal ion. Over the years, MOFs have gained significant attention due to their incredibly versatile applications and implementation in various scientific fields. Their cage-like structure can be utilized for gas storage or filtration, liquid purification, catalysis, drug delivery, magnetism, and sensing. Due to MOFs being a rapidly growing field of study, this research involves in the synthesis and analysis of organic ligands and resulting MOFs. Previous work in our lab utilized resorcinol to synthesize a flexible dicarboxylic acid ligand which was investigated for the construction of porous MOFs. This project expands upon that work and attempts to synthesize a flexible dicarboxylic acid ligand from 1,1-bis(4-hydroxyphenyl)cyclohexane and ethyl bromoisobutyrate for the preparation of a novel MOF. Solvothermal reactions were performed to investigate the coordination chemistry of the ligand using a variety of metal salts. These ligands and MOFs were analyzed via ^1H NMR, single-crystal X-ray diffraction and powder X-ray diffraction.



Non-binge-related Dangerous Drinking Behaviors

Bix Meyer

Beacon College, Leesburg, USA

Abstract (Posters)

Abstract

Similar to other drugs, accepting alcohol from strangers is often considered dangerous. There have been studies on sexual and physical assault when under the influence of alcohol, but very little recorded data on first-hand experiences with the adverse effects of accepting alcohol from a stranger. This study aims to examine how people examined a sealed beverage that was offered to them. They then described if they had suffered negative experiences accepting alcohol or other drugs in the past.



The Correlation between Sex and Mental health

Faith Townsend

Beacon College, Leesburg, USA

Abstract (Posters)

Over the past few months the present sudie have researched and talked to 10 people about sex and how their mental health having has been affected by them having sex I have learned by having sex that it effects your mental health and goes up but it also has more health benefits. The study has shown that sex is still, unfortunately, is something that we still have trouble talking about it people can talk about it behind closed doors but when it's brought up in to a conversation people immediatly. I've learned over the semester is most people are afraid to talk about their sexual experiences and their mental health.



Correlations Between ASD and Gardner's Eight Types of Intelligence

Anthony Lenamon

Beacon College, Leesburg, USA

Abstract (Posters)

The present study is about the correlation between Gardner's eight types of intelligence and ASD. The imperativeness of this study is based on society's view on mental illness, more specifically ASD. Neurotypicals seem to be under the impression that people with ASD are less than intelligent. The point of this study is to counter this stereotype. In this study five people were interviewed. Results indicated people with ASD are drawn to specific types of intelligence. Future research ideas and research limitations are discussed.



EQ and Autism

Laney Leichter

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Abstract (Posters)

People often have the misconception that people with Autism or who are diagnosed with ASD are either socially inept or can struggle with social cues. Well, that isn't always the case when it comes to higher functioning individuals or ones that have received help. When asked questions that pertained to this topic, the four participants had no issue with expanding on the topic and helping to give insight.



African American Healthcare Mistrust

Jurnee Coleman^{1, 2}

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Abstract (Posters)

The purpose of this study is the African American perception in healthcare. Perceptions in healthcare refer to experiences individuals have with regards to medicine. This research is important because African American hesitance towards vaccinations, therapy, and healthcare providers needs to be discussed. African American face health disparities and do not trust the medical field. It has a lot to do with unfair medical testing and with unfair medical exploitation. Eight participants of varying ages were interviewed. Overall the participants were in agreement that there is mistrust and each individual had different reasons for that mistrust. Future research ideas and limitations are discussed.



The Use of Sea Urchin Immune Cell Populations as Indicators of Environmental Stress

Lydia Francis, Michelle Roux-Osovitz
The University of Tampa, Tampa, USA

Abstract (Posters)

Echinoderms are spiny skinned animals including the charismatic sea urchin, iconic sea star, sand dollars, and the sea cucumber. Sea urchins play an important role for developmental biology research, genome breakthroughs, invertebrate immunity discoveries and international cuisine! Sea urchins' immune systems can provide us knowledge for detection and quantification of the effects of stressors on sea urchins in Tampa Bay and in aquaculture. Sea urchin immune cells (coelomocytes) can be found in the coelomic fluid within the coelomic cavity of the animal. There are four essential types of coelomocytes, the red amoebocyte, the white amoebocyte, vibratile cells, and phagocytes. The immune cells are involved in defense functions including phagocytosis (engulfing and destroying foreign particles), encapsulation of pathogens (disease causing microbes), production of antimicrobial compounds (to fight infection), clot formation (for wound healing) and removal of synthetic substances and chemicals (i.e. microplastics). The practice of isolating, identifying, and measuring changes in urchin *Lytechinus variegatus* coelomocytes is important for studies involving non-memory based or innate immune response during environmental stressors such as harmful algal blooms (red tide), microbial infections (balding disease) and seasonal sea grass habitat loss. In this research study we have isolated, identified and are quantifying coelomocytes under field and laboratory conditions. Our quantification of cells in a controlled laboratory urchin population versus a wild urchin population, will help us understand how changes in coelomocyte abundance, diversity, and function fluctuate in response to environmental stressors.



Tallahassee Music Map: Mapping the Local Music of Tallahassee, Florida

Brenna Miller

Florida State University, Tallahassee, USA

Abstract (Posters)

The city of Tallahassee, Florida, is home to vibrant and diverse music communities. From old time and blues to country, rock, folk, and classical music, musicians and music organizations from across Tallahassee engage thousands of participants and audience members in the local music scene each year.

The Tallahassee Music Map project aims to highlight the city's rich musical history and serves as a resource for residents to learn more about Tallahassee and even participate in music-making. While the target audience for the Tallahassee Music Map is local, this project also hopes to reach audiences beyond Tallahassee who want to learn more about the musical history of the area or get involved with music in the city. By visually representing the locations of various genres of music, the map will also help inform visitors how the policies and politics of Tallahassee's city government and regional policies in the Southern United States affect and influence where and how musicians perform and host different musical genres.

This project also crosses disciplinary boundaries by incorporating skills in the digital humanities like website development, video editing, and graphic design alongside musical scholarship. Through a mixed methodology approach, the Tallahassee Music Map includes ethnographic, archival, and oral history to preserve and share the history of music in the city.



Another Long-Term Effect of Slavery? Erasure of African American Ancestry and Individual Self-Worth

Kaela Braxton

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Abstract (Posters)

In the past few decades, the term “Black American” has been replaced with the term “African American”; this change was widely accepted in the Black community and was advertised as a way to reclaim a heritage that was erased due to the absence of record-keeping during the time period of American slavery. In recent years, African Americans have attempted to uncover their lost lineage through the use of genealogy websites and DNA tracing. Even with these advanced technologies, African Americans have often run into “the brick wall” which signifies the lack of census records of African descendants dating before 1870, which was the year that the federal Census began keeping records of African descendants. The focus of the study was to investigate how not having knowledge of one’s ancestry affects African Americans’ self-worth and their sense of identity. African Americans’ experiences were compared to the experiences of Black Americans who do have knowledge of their ancestry in order to investigate how having knowledge of one’s ancestry affects one’s self-worth and sense of identity. Furthermore, I investigated whether or not people who have unsuccessfully attempted to trace their ancestry experience heightened feelings of low self-worth and a weaker sense of identity in comparison to those who have either been successful at tracing their history or not tried to do so. Ultimately, the goal of the study was to investigate whether there are some more long-term effects of slavery that has affected African Americans’ self-worth and sense of identity.



Analysis of The Heighten Poverty in Greater Miami.

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St. Thomas University, Miami Gardens, USA

Abstract (Posters)

As of 2020, the U.S. Census Bureau says 11.4 million American people live in poverty. In South Florida, “15.4% of the population live below the poverty line” (Lipscomb, 2017).

We aim to address and analyze the foreseen problems we are faced with in Greater Miami and to suggest solutions to achieve SDG 1: NO POVERTY. It also explores how poverty in Greater Miami has contributed to the marginalization and hardships of those below the poverty line will be provided. Research has highlighted the housing unaffordability, and job availability. Miami has the second-lowest median household and second-highest percentage of people living in poverty of any major metro area (Lipscomb, 2017). Unfortunately, the housing does not align with Greater Miami’s needs as the rise in rental prices along with a stagnant living wage. Greater Miami is a destination for immigrants, which statistically face higher consequences.

The poverty rate in Miami is 25.8% with the minority groups being the greatest majority of the population, Black: 38.3%, American Indian: 13.8%, Asian: 19.8%, and Hispanic: 25.0% (www.welfareinfo.com). Despite the poverty rate being most of the minority groups there are many traits and cultural background that can be incorporated to elevate themselves with the necessary resources. We have brought forward recommendations that seek to not only solve the problem but also incorporate a community led initiative to alleviate poverty in Greater Miami. The recommendations are built to promote individual, community and self-awareness while strategically strengthening and cultivating the independence and sustainability within the community.



The Mexican Government's Negligence, Manifested as a Polluted and Powerless River

Michelle Evangelista

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Abstract (Posters)

The Santiago River or Rio Chignahuapan, the power of nine rivers in Nahuatl, is one of the most polluted rivers in Mexico that winds through the towns of El Salto and Juanacatlan in Guadalajara, Mexico. As El Salto grew into the industrial hub for Guadalajara, so did problems of pollution with little enforcement of environmental laws and corruption. The frothy foam and overpowering stench from waste and toxins disposed into the river permeates homes and residents' bodies, leading to cancer and other health complications. The river can be seen as a case of environmental injustice, thus requiring acknowledgment of others' experiences to understand the cultural significance of this case. With document analysis and interviews, the culture, knowledge, and histories of the people living in El Salto and Juanacatlán are used to recognize how pollution has affected the relationship between the river and local communities and how governments recognize and acknowledge different identities, like local Indigenous identities. Through this project, more is understood on how through self-determination, the people have taken back their power to achieve environmental justice and reveal if one day, the power of the nine rivers can be restored to the Santiago River.



A Computational Analysis of Transcription Factors Involved in the IL-21 Gene Expression in the Context of Type 1 Diabetes

Lorena Milian

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Abstract (Posters)

Type I Diabetes (T1D) is a chronic disease caused by an autoimmune attack of pancreatic beta islet cells by autoreactive T-cells. These immune cells change their natural behavior resulting in the loss of immunological self-tolerance. Previous studies indicated that several genes including IL-21 may play an important role in autoimmune diseases such as T1D. CD4+ T-cells produce the cytokine interleukin-21 (IL-21), which is a co-stimulator of T-cell proliferation contributing to the production of Th1 and Th2 responses. Furthermore, studies show that the production of IL-21 by CD4+ T-cells is increased in patients with T1D. In this study, the role of the IL-21 gene was investigated by determining the transcription factors that could regulate this gene. With the use of computational tools that evaluate DNA sequences and potential protein binding, human conserved noncoding sequences (CNSs) of the IL-21 gene were retrieved to find the possible transcription factors that could bind in those sequences. STAT4 is a transcription factor expressed in the pancreas that has the potential to regulate Th1 cell differentiation. STAT4 was found on three of the CNSs with a maximum dissimilarity margin of 2 percent or lower. Based on the data collected, it can be concluded that STAT4 may be an important element in the regulation of IL-21 through noncoding DNA sequence interactions. These results may allow further understanding of how T-cells are regulated in the context of T1D.



Retention Pond Recovery Practices and their Effects on Water Quality and Littoral Vegetation

Tori Guarino*, S. Carter Oleckna*
Florida Gulf Coast University, Fort Myers, USA

Abstract (Posters)

There are more than 8,000 retention ponds in Lee County, which are critical for pollution reduction. Many of these retention ponds, however, do not fulfill this task and experience an imbalance in their nutrient levels and vegetation die offs. Vegetation has value in acting as a filter to sequester nutrients which mitigate pond pollution. By comparing the water quality and plant biodiversity of differing retention ponds, the effectiveness of various pond management strategies can be evaluated.

In this study, three different Lee County retention ponds with various management practices and implementations were compared. The pond labeled FGCU Library Pond served as the control because it is specifically designed to mimic natural conditions and resembles a wetland with lower nutrient levels and higher plant biodiversity. The ponds labeled Fairwinds and Southland are in different stages of restoration. Since November 2021, Fairwinds has had a “no-mow” zone, eliminated pesticide and copper dye applications, and has removed an invasive plant species. Until May 2022 when Southland implemented the same recovery program as Fairwinds, Southland mowed the littoral zone and used pesticides and copper dye which killed all vegetation.

Water quality data analysis evaluating these restoration strategies has shown significant lowering of nutrient levels after the change in management practices. As of May 2022, Fairwinds showed similar nutrient levels as FGCU Library Pond while those of Southland are steadily decreasing. The next phase of research—the continuation of plant composition surveys—looks to determine the impact of lower nutrient levels on plant biodiversity.



Indirect Effects of Compost on Pollinators in Suburban Native Plant Landscapes

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¹Valencia College, Orlando, USA. ²University of Central Florida, Orlando, USA

Abstract (Posters)

Bees and other pollinators are critical for natural resource conservation and evaluating biodiversity in urban areas. Pollinators benefit from sustainable landscape designs that promote greater use of native plants, and native plants may perform better in urban soils with soil amendments like compost. The purpose of this experiment was to investigate how using compost in sustainable suburban landscape designs may indirectly affect pollinator communities by improving native plant performance. Research was conducted on 16 experimental landscape plots in Central Florida, with 4 replicates of 2 compost and irrigation treatments applied to the plots in a randomized, complete block design. Flower-pollinator interactions and total number of flowers per plot were recorded for the 15 plant species flowering in June 2022. Pollinators that could not be identified visually were collected with a net and identified in the lab. Data were analyzed using analysis of variance with compost as the main treatment effect. Results suggest that soil conditions can have a large indirect impact on the pollinators, mediated largely by increases in flower number. Plots treated with compost had nearly twice as many total flowers and pollinator visitation as plots without compost. Pollinator families differed in the flowers they visited, but pollinator abundance on specific flowers was related positively to pollinator species diversity on those flowers. This analysis provides new insight into the indirect effects of soil conditions on pollinator communities and could contribute to optimizing sustainable landscape design guidelines.



The Role of snaR-A non-coding RNA in Breast Cancer

Jessi Effinger-Morris, Tianqi Li, Mingyi Xie
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Abstract (Posters)

Non-coding RNAs are RNAs that do not code for a protein but play important roles in gene regulation and cancer. The snaR (small NF90-associated RNA) family of non-coding RNAs are highly structured with conserved sequences. snaR-A is the most abundant of this family and has been shown to interact with the RNA binding protein NF90. snaR-A is upregulated in most immortalized cell lines, including cancer cells. The function of snaR-A is ambiguous, as well as the biological function of its interaction with NF90. We will study their interaction by generating conditional knockouts of the endogenous NF90 in both the MCF7 and MDA-MB-231 breast cancer cell lines. These cell lines will be used due to their differing levels of snaR-A expression. MCF7 has high expression of snaR-A, while MDA-MB-231 has relatively low expression of snaR-A. The goal of this study is to identify the role snaR-A and NF90 interactions may play in breast cancer. Previously published research indicates that snaR-A expression may be downregulated after the NF90 knockdown. Our preliminary data suggest that snaR-A knockdown inhibits cell proliferation. To probe this phenotype, we will be examining the NF90 knockout's effect on two cell lines that differentially express snaR-A. This project seeks to identify the role of NF90/snaR-A interactions in breast cancers and provide a better understanding of the pathological mechanisms.



Development of Ligands for Rare Earth Element Extraction and Lanthanide Luminescence Applications

Victoria Pacanowski, Erin Kelly, Eric Werner
University of Tampa, Tampa, USA

Abstract (Posters)

The separation and extraction of f-elements from natural sources and discarded consumer products have recently garnered attention due to their extensive applications among areas including technology, nuclear energy, and medicine. One application of the rare earth elements (REEs) explored in this study requires complexing the metal ion with a suitable organic molecule to develop luminescent compounds as biomedical sensors. To obtain the metals needed for sensor applications (e.g., Eu and Tb), improved procedures for separating REEs, which are notoriously difficult to separate and isolate in pure form, are therefore required. This study focuses on liquid-liquid extraction methods utilizing a tripodal ligand with three carbamoylmethylphosphine oxide (CMPO) groups attached to a tris-alkylamine capping scaffold. The extraction process presented here involves pulling the metal from the aqueous layer into the organic layer as the CMPO-based ligand binds the metal ion, forming a complex that remains soluble in the organic solvent. Modifications of this process, including variation of aqueous/organic phase stir time, acid concentration within the aqueous phase, and ligand concentration have been explored and have led to different extraction selectivity across the REE series. In addition to developing improved REE extraction methods, further luminescent sensor applications of the isolated metals are also being pursued in our lab. For example, stable macrocyclic REE complexes enable utilization in a variety of biomedical and sensor applications. This presentation will also describe new macrocyclic REE complexes consisting of a tetraiminodiphenolate (TIDP) ligand and its structural variation leading to a wide range of luminescent properties.



Towards a Prototype Paleo-Detector for Supernova Neutrino and Dark Matter Detection

Austin Anderson

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Abstract (Posters)

Using ancient minerals as paleo-detectors is a proposed experimental technique expected to transform supernova neutrino and dark matter detection. In this technique, minerals are processed and closely analyzed for nanometer scale damage track remnants from nuclear recoils caused by supernova neutrinos and possibly dark matter. These damage tracks present the opportunity to directly detect and characterize the core-collapse supernova rate of the Milky Way Galaxy as well as the presence of dark matter. Current literature presents theoretical estimates for these potential tracks, however, there is little research investigating the experimental feasibility of this technique. At the University of North Florida, we contribute to the field by searching for and analyzing these damage tracks in prototype detectors constructed from selected minerals, including halite and Muscovite mica. This preliminary research seeks to characterize the applicable backgrounds in these prototype detectors. We employ non-destructive techniques, including scanning electron microscopy, atomic force microscopy, small angle x-ray scattering, and laser profilometry to identify and characterize damage tracks in the minerals. Chemical etching of the mineral surface enhances the detectability of these damage tracks at the expense of altering some of their geometrical attributes. We will measure two matched surfaces from a cleave (one etched and one unetched) to determine the effectiveness of the proposed techniques against the chemical etching standard. Our data will be compared to current theoretical predictions to pursue the practical implementation of paleo-detectors as local core-collapse supernova neutrino and dark matter detectors.



Design of an innovative semi-robotic knee arthroscopy device for stable intraoperative assistance

Thai Hua, Sang-Eun Song, Yuanli Bai
University of Central Florida, Orlando, USA

Abstract (Posters)

Knee arthroscopy is a surgical procedure used to treat many knee pathologies in a minimally invasive manner, such as meniscus tear, anterior cruciate ligament rupture, and osteochondral lesions. Many technologies have been developed to assist during surgery, such as small continuum robotics for flexible arthroscopes and real time augmented virtuality using computer navigation. However, surgeons still suffer from poor ergonomics, and physical and cognitive strain, which could induce iatrogenic damage to the surrounding tissues in the patient's knee. This research presents a semi-robotic knee arthroscopy support device which can assist in the procedure. Using the device, surgeons can pause the movement of the working tool with a braking system and re-engage as needed by releasing the brake. Also, fixed tool entry positions can create a single coordinate system, providing a stable camera view and tool movement. The goal is to provide a stable surgical task space and allow the surgeon to take their hands off from the surgical task, plus eliminate extra medical personnel to provide a stable intraarticular camera feed, giving the surgeon more control over the procedure. The device mechanism is designed and evaluated to preserve the range of motion of conventional arthroscopy and support the forces applied during surgery.



Remembering the People You Meet: The Cross-Race Effect During Introductions

Ava Piper, Isabella Eiland, Benjamin Marsh
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Abstract (Posters)

It is common that people remember the faces of those with whom they share race better than the faces of those with whom they do not share race. This phenomenon, called the cross-race effect (CRE), is rarely studied in settings that require explicit memory for the context in which a face was seen. Hence, this study tests a participant's memory for the faces in two ways: first by a simple recognition test where they indicate if they remember seeing the face previously, and second by asking them to identify which faces they were introduced to. Participants were introduced to eight faces (i.e., Asian, Black, Latino, and White faces) with brief introductions and then studied 48 faces. Their recognition memory was tested by identifying whether they recognized each face after intermixing introduced and studied faces with faces not previously seen. Then, another test phase was presented, where participants identified which faces they were introduced to by picking four faces from a grid of 16 faces. Analysis found remembering who you were introduced to was noticeably more difficult than remembering whether you previously saw a face. To identify that a face has been seen only requires a feeling of familiarity with the face but identifying the specific context in which the face was encountered requires higher memory processes. In addition, the CRE was more prevalent when participants had to recall which faces were given introductions compared to recognizing whether or not a face was seen before.



Mozart Study Disentangling the Rhythm from the Melody: What really induces happy moods in Mozart music?

Madison Meares, Leilani Goodmon
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Abstract (Posters)

The Mozart Effect refers to enhanced spatial ability following listening to 10 minutes of Mozart music (e.g., Rauscher et al., 1993). Researchers have shown that a positive mood/arousal induced by Mozart music improves spatial task performance (e.g., Thompson et al., 2001), however it is unclear whether the effect is the result of the melody or the rhythmic pattern of the music (Shi, 2019), and/or whether the benefits emerge via other spatial tasks (e.g., 2-D mental rotation). Therefore, participants completed a 2-D mental rotation task after listening to 10 minutes of one of three types of music: 1. Mozart Sonata for Two Pianos in D major K. 448 (the original upbeat, happy Mozart sonata), 2. A Lo-fi version of the Mozart sonata with a slower rhythmic pattern but the same chords as the original, or 3. Albinoni Adagio in G Minor for Organ and Strings. Mood and arousal was assessed before and after music exposure. It was hypothesized that if the Lofi version also induced differences in mood and arousal and resulted in enhanced mental rotation performance (compared to the Albinoni Adagio music), then this would provide support for the rhythmic pattern explanation of the effect. Consistent with the hypothesis, the two Mozart conditions improved mood and cognitive arousal, but failed to result in differences in spatial reasoning ability compared to the Albinoni Adagio condition. To summarize, it is unclear whether the rhythmic pattern or the melody is responsible for cognitive enhancement in other spatial reasoning tasks.



"Memery": Pedagogical benefits when using neuroscience-based memes in the classroom.

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Abstract (Posters)

Neuroscience has become a popular interdisciplinary major that often incorporates vocabulary from multiple domains (Ramos et al., 2016), but students sometimes struggle with such content, promoting elevated anxiety (Gaudier-Diaz et al, 2019). We previously demonstrated how targeted memes improve memory for neuroscience content (Shibilski et al., 2021), but it was uncertain as to whether memes alleviated anxiety while aiding with memory. The purpose of the current study was to investigate the effectiveness of memes in alleviating anxiety while comprehending neuroscience content. It was hypothesized that targeted ancillary memes (i.e., linking neurotransmitters to functions) improve memory while decreasing anxiety for text-based passages about the content. 55 introductory-level psychology students were first given a short-form anxiety test (see Marteau & Bekker, 1992) to measure baseline levels prior to any content exposure. Participants were then given a 20-item pretest on the functions of ten neurotransmitters not covered in introductory psychology (e.g., phenethylamine) and were given the same anxiety scale while answering these items. Participants were then randomly assigned to one of two groups who received memes that did or did not reflect content from the passage. Memory of content and anxiety scales were administered two more times as a short-term (immediate) and long-term (2 weeks later) measures. Results indicated significant differences between meme groups in short-term retention of the content ($p > 0.004$) but not for anxiety ($ps > .05$). These findings suggest that memes have pedagogical merit, but the underlying mechanisms behind such a benefit need to be further explored.



Controlled Phase Behavior of the Responsive Polymer Poly(N-isopropylacrylamide) at Variable Temperature and Pressure

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Abstract (Posters)

Responsive polymers undergo significant changes in their physical properties (e.g. a reversible demixing transition) in response to external stimuli such as temperature and pressure. Poly-N-isopropylacrylamide (PNIPAM) is water-soluble near physiological temperatures. However, as the temperature is increased, it undergoes a phase separation, and the solution becomes cloudy at the lower critical solution temperature (LCST). At the transition, the polymer chains collapse and are accompanied by hydration changes. This phase transition can also be induced by pressure, where the formation of larger scale structures (mesoglobules) in the two-phase region is observed. Our group studies the temperature-and-pressure-dependent phase behavior of the thermoresponsive polymer, PNIPAM, and its dynamic self-assembly qualities. PNIPAM was dissolved in aqueous solution and securely sealed inside a microcapillary cell. The formation of mesoglobules is investigated using optical microscopic imaging at variable temperature and pressure. Micro-Raman spectroscopic measurements provide information on changes in chemical bonding and hydration across the transition. The formation of mesoglobules is explored along different pathways in the temperature-pressure plane. This research contributes to an understanding of liquid-liquid phase separation in responsive polymers with relevance for the design of smart materials including biosensors, drug delivery systems, and other microscale biomedical implementations.



Identity, Belonging, and Christian Community in Protestant Responses to the Aryan Paragraph in Nazi Germany

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Abstract (Posters)

Examining Christian representative denominations through the lens of Nazi Germany is central to understanding how Christian groups interacted with a government which institutionalized the death of millions. The focus of past scholarship has centered on debates over the extent to which institutional Protestant Christianity and individual Protestants opposed Adolf Hitler's regime and Nazism. The focus of this research examines how four Protestants / Protestant groups employed definitions of what makes one Jewish, what Jewish means, and who is included within the larger Christian community in their responses to the Aryan paragraph in 1933. These responses originate from the Lutheran pastor, Dietrich Bonhoeffer, the General Synod of the Protestant Church of the Old Prussian Union, the faculty of theology at the University of Marburg, and the German Christian movement. Though each response to the Aryan paragraph utilized a unique definition of Jews and Christian community, they all reveal a Protestant church which was unprepared to provide a unified answer to the question of whether Jewish converts to Christianity—also known as baptized Jews—belong in the church. Protestants' lack of a unified response to baptized Jews demonstrates a lack of preparedness not only to answer whether baptized Jews belonged in the church, but also who belongs in German society. The consequences of not belonging in Nazi Germany could and did lead to discrimination, persecution, and genocide.



Vanadium-based Alkylidenes for Olefin Metathesis

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Abstract (Posters)

Olefin metathesis is among the most powerful tools for forming new C-C bonds and is comprised of ring-closing metathesis (RCM), ring-opening metathesis (ROM), and cross metathesis (CM). These techniques can be used in industry in the synthesis of plasticizers and pharmaceuticals. Current catalysts include Ru, Mo, and W, which are non-abundant transition metals, elevating production costs. Vanadium, a more abundant metal, can be used as a greener, more cost-effective alternative. We have previously synthesized a bis-phosphine vanadium alkylidene catalyst, which yielded a turnover number (TON) of 6.4 for RCM of N,N-diallyltosylamide. We screened a variety of imido and neutral ligands on the bis-phosphine vanadium alkylidene and synthesized a mono-phosphine, mono-iMes NHC catalyst, which yielded a TON of up to 170 for RCM of N,N-diallyltosylamide. The presence of the PMe_3 ligand in our catalyst allows for formation of the bis-phosphine catalyst in solution, which is known to allow β -hydride elimination to occur, leading to decomposition. We anticipate that using a bidentate ligand will erase the possibility of β -hydride elimination by synthesizing a class of phosphine-free catalysts. O-methoxyphenol potassium salt, O-methoxymethylphenol potassium salt, and mono-methylated-binol potassium salt show promising bidentate alkoxide activity at NMR scale reactions. Additionally, the three phenol complexes are being evaluated at the trialkyl stage to release a tetramethylsilane and, in the presence of iMes NHC and styrene, undergoing α -hydride abstraction to form an alkylidene. By removing phosphine, we eliminate the possibility of forming the bis-phosphine complex, allowing for a higher TON and more catalytic activity overall.



Cross-race effect is mitigated by poor memory for same-race highly attractive faces

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Abstract (Posters)

This study investigated the relationship between the cross-race effect (CRE), wherein individuals better recognize faces of their own race as compared to faces of a different race, and physical attractiveness on facial recognition. Research looking at how facial attraction influences memory of faces is ongoing, but it is suspected that more attractive faces leave a stronger impression and are therefore may be better remembered. Therefore, it is anticipated that the CRE will be eliminated in highly attractive faces.

Thirty-four White female undergraduates were first shown 48 White, Latino, Black, and Asian faces, ranging from high-attractiveness, average-attractiveness, to low-attractiveness. Throughout the study, an eye-tracking device measured participants' visual scanning patterns. Next, participants were presented with 48 new faces that were intermixed with the original 48. While being presented with these faces, participants indicated via a survey to the right of each face if they remembered the face.

The results confirmed that the CRE does exist as white faces had the most accurate recognition scores. In contrast to our prediction, participants were better able to recognize faces categorized as having low attractiveness rather than high attractiveness. However, it was found that the CRE occurred only in faces that were low attractiveness, due, unexpectedly, to poor memory performance on White faces of average and high attractiveness. The eye-tracking data revealed that participants looked at attractive faces more frequently during the memory test, which may support our initial thought that attractive faces were attention grabbing, or is just a sign of their uncertain memory.



Examining distinct suicidal crisis triggers in individuals who struggle with substance misuse

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Abstract (Posters)

The Substance Abuse and Mental Health Services Administration (SAMHSA) estimates that 57.2 million people, or 20.8% of the country, struggled with substance misuse in 2019 (SAMHSA, 2019). Studies show that substance misuse plays a major role in suicide risk and confers ten times higher risk of death by suicide, when compared to the general population (Esang & Ahmed, 2018). Substance misuse and suicidality are common comorbidities, which highlights the importance of safety planning and crisis intervention. There is a lack of research regarding specific triggers prior to an emerging suicidal crisis in individuals that struggle with substance misuse. This study involved 522 individuals evaluated to be at risk of suicide throughout two healthcare facilities in Florida. A correlational analysis was used to determine if there was a significant relationship between substance misuse and twenty-four possible crisis triggers in patients at risk of suicide. Group differences between those that misuse substances and those that do not were examined to determine if substance use affects triggers leading to suicidal crisis. The results found through this analysis suggest a significant relationship between certain crisis triggers (increasing use of substances, feeling restless and fidgety, relationship break-ups, financial/legal problems, health problems, feeling humiliated and ashamed) and substance misuse. These results could prove valuable in developing safety plans for those struggling with substance misuse, as well as helping to identify an emerging suicidal crisis.



MONOLINGUAL VS. MULTILINGUAL: WHO BENEFITS MOST AND TO WHAT CAPACITY IN ELEMENTARY AGED CHILDREN?

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Abstract (Posters)

The purpose of the study is to distinguish the difference between monolingual and multilingual executive function in elementary-age children and to determine whether there is a benefit to engaging in second or multi-language acquisition at the elementary-age level. In the United States, there is a wide range of linguistic diversity among the student population. In elementary-aged students, the development of executive function is an important factor to consider when facilitating student learning. Language abilities, both monolingual and multilingual, and their effects on the way students operate, comprehend, and interact in a classroom must be considered to design a curriculum that serves all parties involved. This idea raises numerous questions in regards to what is considered best practice. This research paper explores typical monolingual brain development; specifically, the effects of acquiring a single language on executive function, as well as multilingual brain development in the same regard. After distinguishing variances in executive function among monolingual and multilingual students, the question becomes, 'who is at a greater advantage' when it comes to necessary skills for elementary aged students to master, like self-control, emotional growth, and organizational skills. If a deficit in one party over the other is identifiable, educators must consider how best to maintain a quality, customizable education while refraining from ostracizing any student due to linguistic differences. Educators must also consider whether increased executive function is a large enough benefit to employ bilingual or multilingual education for all students, and whether executive function may be increased by other means.



Second Language Acquisition and Music Education

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Abstract (Posters)

This literature review aims to analyze and present the connection in which music aids in second language acquisition. Through a detailed explanation as to how and where the brain is affected when both music and language are involved, this thesis will showcase how music can directly aid in improving a language learner's comprehension, listening, and reading skills from a neurological perspective. Because music consists of so many skills such as rhythm, pitch, music notation, and improvisation, they can act as supporters to language learning. The building blocks of music will be dissected and explained to further help support this thesis.



Misconceptions About Second Language Acquisition In Elementary Students

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Abstract (Posters)

The purpose of this study is to expose the myths that are present surrounding ELL students while acquiring an L2. Further, this study will dispute the myths of the silent period, how younger students acquire an L2 faster, how once children have acquired an L2 they can speak it, and if all students learn an L2 the same way. Research shows how these common misconceptions can affect young English language learners. Learning a second language involves complex cognitive and social skills. In this paper misconceptions of L2 acquisition will be discussed such as perceptions of the silent period, how younger students acquire an L2 faster than adults, how once children have acquired an L2 they can speak it, and if all students learn an L2 the same way. Further scholarly articles will be integrated throughout the paper to oppose the myths that are discussed.



Word Parts Helping Students Translate

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Abstract (Posters)

This linguistics paper aims to examine how learning word parts can benefit elementary-age students in translating Spanish to English. This research is important for emerging educators because it will help to better understand how they could go about assisting their ELLs in learning the English language. This research is important for emerging educators because it will help to better understand how they could go about assisting their ELLs in learning the English language. This paper looks further into what word parts are and how they are used, similarities and differences between the two languages, and reasons as to why integrating this in the classroom would be effective. Strategies that help students to associate the two languages begin with learning each alphabet. As students further develop their languages, they can use tools such as root words, social elements, and audio to assist in that association. By learning more about these elements in both languages, educators can guide students in making connections that help them to master the English language. For educators to understand how to teach a new language effectively, they must understand how the language parts collaborate.



Applying neurolinguistics in a K-2 classroom

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Abstract (Posters)

The purpose of this study is to determine the best neurolinguistic supported learning strategies for kindergarten through second grade English Language Learners (ELL) that best support their learning. Neurolinguistics is a branch of linguistics that studies how the brain learns a second language and the path a person takes to become bilingual. The knowledge of neurolinguistics sets the foundation for teachers and how they approach the education of an ELL student. Research shows that the brain undergoes complex factors when learning a second language. Bilingual students can become a challenge in the classroom due to language barriers but it is an educator's job to help them learn equally to their peers. Knowing how to teach an ELL student using the background knowledge of how the brain learns a first (L1) and second language (L2) will impact the students tremendously. In this research paper we will breakdown neurolinguistics, identify K-2 ELL student's challenges, and create strategies for teachers to use in their classroom that aid the L2 research of the brain.

Keywords: Neurolinguistics, K-2 ELL Students, Teaching Strategies, Second Language (L2)



Second Language Acquisition with Learning Disabilities

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Abstract (Posters)

The purpose of the study is to raise awareness and inform educators on learning disabilities in ELL students. The research will help educators learn about the complex issue of learning disabilities and how it influences second language acquisition in students. The results of the study will provide information on assessment, differentiation, identification, and support of learning disabilities in ELL students. The study goes into depth on the influence a learning disability has on a student's academic progress and what can be done to support these students and remove learning barriers that are negatively affecting them. Language acquisition is related to many factors and many students learning a second language struggle but there are other reasons than language. This paper answers questions regarding English language learners with learning disabilities. English language learners are often given incorrect interventions to support their language development but sometimes the students struggle for another reason; learning disabilities. Students are not given the support they need since they have not been identified as a student with a learning disability. Many schools label English language learning students and do not encourage further testing or intervention.



The Use of American Sign Language in Second Language Acquisition and the Effects it has on Language Skills

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Abstract (Posters)

American Sign Language is an amazing tool that helps the barrier between people who are deaf to be able to communicate with others. Have you ever thought about how beneficial this can be for ELL learners as well? American Sign Language can be extremely beneficial to those who speak another language. It helps that communication barrier by using signaling to get words/sayings across. The purpose of this study is to help spread awareness of the effective use of American Sign Language in assisting English Language Learning students in the USA. Using this method can help build inclusivity in classrooms, and build a way of communicating with all students. With ELL students making up a huge portion of students all around the nation, it is important to continue finding helpful strategies in order to help these students become successful English speakers. This study has highlighted the important factors of using American Sign Language in the classroom, and incorporating positive body language when teaching. This strategy can help ELL students in every classroom reach their success in not only the English language, but also in all content areas in school. As the number of ELL students continue to rise in the US, we as teachers must continue finding new and effective strategies in creating an inclusive classroom while also making sure EL students are learning English at an efficient rate.



Taking a Break and Self-esteem: Implications for Physiological Well-being

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Abstract (Posters)

The end of romantic relationships typically results in declines in self-esteem. However, it is unclear what the consequences are for self-esteem regarding temporary breakups, referred to as “taking a break.” Preliminary studies have shown that temporary breakups predict anxiety and depression, which may prompt declines in self-esteem. Thus, the goal of this study is to examine how self-esteem changes before, during, and after a temporary break, and how changes in self-esteem impact physiological health. Participants completed an online survey asking questions about whether they took a break in their romantic relationship, their self-esteem before, during, and after their break, and their physical and psychological health during and after their break (N = 252). Of these participants, 99 (39.3%) reported taking a break in their romantic relationship. Data was analyzed using paired sample t-tests, correlations, and regression analyses. Results revealed that one’s overall self-esteem decreased after experiencing a break. Additionally, a pattern emerged where taking a break was negatively associated with psychological health, which is then positively associated with physical health, suggesting that psychological health moderates the relationship between experiences of taking a break and physical health. Trust issues did not predict physiological health during temporary breaks. Data suggests that temporary breakups are not beneficial for physiological well-being. Some limitations exist with the homogeneity of the sample and the variance in time on a temporary break, which ranged from 1 to 730 days. Future studies should examine more diverse experiences of temporary breakups. Additional implications for relationships will be discussed.



Growth Mindsets and Emotions in SLA; A Literature Review by Richard Hilpert, Teonna McCullum, Jayson Bakshi

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Abstract (Posters)

Factors such as socioeconomic background, age, personal history, previously known languages, and one's mindset can influence second language acquisition (SLA) (Riasati & Rahimi, 2018, pp. 1-2). [EO1] Through SLA, these factors can serve as possible hindrances or advantages for language learners. The mindsets of language learners can be modified or influenced in various ways to increase their overall SLA performance (Lou & Noel, 2019, pp.1-2). Factors such as language-speaking anxiety, language-speaking confidence, language enjoyment, and overall performance can be measured as indicators of an effective language-learning process. To influence these factors, interventions can potentially transform mindsets of second language learners. For example, various researchers have concluded that mindset can predict L2 speaking and, interestingly, reading outcomes and performance (Khajavy & Pourtahmasb, 2021, p. 2). Additionally, manipulative steps such as the face-to-face intercultural exchange between English learning students of similar cultures resulted in increased confidence levels of English learners (Saito et al., 2020, p. 225). For the current study, researchers utilized forty-nine peer-reviewed articles; topics included foreign language speaking anxiety, self-esteem self-confidence, second language (L2) speaking confidence, and language mindsets. From this systematic review of the literature, it can be predicted that interventions that positively affect individuals' growth mindsets will have beneficial effects on their speaking performance through increased self-confidence, an increase in positive emotions, and a decrease in negative ones. Our research aims to evaluate the different factors that can potentially be influenced by mindsets and improve overall language performance as a potential consequence of holding a growth mindset.



Mapping Orexin-A Processes Within The Mouse Olfactory Bulb.

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Abstract (Posters)

The neuropeptide Orexin is released by a small population of neurons located primarily in the lateral hypothalamus, which send far-reaching axons to numerous brain regions. One target of the orexin-expressing population is the main olfactory bulb, the first stage of olfactory sensory processing. Previous work has demonstrated that one likely target of these neurons are olfactory bulb projection neurons, as direct application of the orexin-A isoform modulates mitral/tufted cell spiking activity. However, it remains unclear whether orexin-A can influence other parts of the olfactory bulb circuit. We tested this possibility by carrying out a quantitative mapping of all the orexin-A processes located within the olfactory bulb.

Orexin-A-expressing fibers were visualized in sequential sections of the mouse olfactory bulb using fluorescence immunohistochemistry. Sections were also counter stained for DAPI, a cellular marker that fluoresces in a different wavelength. We next generated quantitative plots of the orexin-A processes using Stereo Investigator. DAPI fluorescence was used to draw contours around each olfactory bulb section, as well the glomerular, external plexiform, mitral cell, and granule cell layers. All orexin-A processes were then manually plotted at high magnification (40x). Our preliminary analysis of the data suggest that orexin-A processes are distributed across all layers of the main olfactory bulb. The results support a model in which orexin-A can modulate the olfactory bulb input-output transformation.



Impact of Feral Hogs on Restored versus Natural Mangrove Shorelines in Canaveral National Seashore

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Abstract (Posters)

Feral hogs (*Sus scrofa*) are an invasive species in the United States that alter habitats by overturning soil, trampling, and uprooting plants. In previous studies, *S. scrofa* was observed only on dry land in Canaveral National Seashore (CANA). However, unexplained dislodgement of some “living shoreline” breakwater structures encouraged utilizing wildlife trail cameras to determine if hogs were the source of this new damage. Eighteen cameras were deployed from February 2022 - June 2022 along a 3-kilometer shoreline north of CANA Parking Area 5. Treatments included three types of breakwaters: plastic mesh shell bags, cement-jute volcanoes, and galvanized metal gabions, as well as a positive control (vegetated), and negative control (highly eroded, plant-free) shorelines. Raccoons (*Procyon lotor*) contacted breakwaters more than hogs, but only hogs damaged breakwaters by moving them with their snouts. Overall, hogs negatively impacted every treatment type by trampling plants, with most breakwater damage to plastic mesh shell bags.



What's in your diet? Diet analysis of Gray Snapper (*Lutjanus griseus*) among habitats in Tampa Bay, Florida

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Abstract (Posters)

Gray Snapper (*Lutjanus griseus*) is an important recreational and commercial fishery in the Gulf of Mexico. Adult Gray Snapper reside in the shelf waters of the Gulf of Mexico with postlarvae Gray Snapper moving into estuarine habitats over dense grass beds of *Halodule* and *Syringodium*. Juveniles are marine, estuarine, and riverine dwellers, often found in estuaries. However, little information is known about their diet. The purpose of this project was to provide valuable information about diet preferences of juvenile Gray Snapper in Tampa Bay. Sixty juvenile Gray Snapper were collected using rod and reel over multiple locations and habitats in Tampa Bay, Florida. All fish were dissected and stomachs were initially put into 10% neutral buffered formalin, then transferred to water for 24 hours, and then finally transferred to 70% denatured ethanol. The stomachs were sorted through using a dissecting microscope and stomach content was categorized. Using the weight of each prey item, the percent stomach content was determined for each category. Diet composition was similar among locations and habitats. The overall diet composition consisted of 55% crab, 19% shrimp, 18% sediment, 6% fish, and 1% shell. The majority of juvenile Gray Snapper collected along seawalls and oyster beds had diets composed primarily of crabs and those collected in artificial reefs/bridges had diets composed mostly of fish. This project provides important information in understanding the ecological role that juvenile Gray Snapper play in Tampa Bay and aids in crucial information needed for management.



Influence of Celebrity Self-Disclosures on Mental Health Stigma and Help-Seeking

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Abstract (Posters)

Abstract

Past research has suggested that hearing stories of celebrities' struggles with mental health is associated with decreased stigma towards mental illness and help-seeking behaviors. However, because celebrities may be viewed as dissimilar to oneself or as less likeable, this may weaken the impact celebrity disclosures may have on reducing stigma and improving help-seeking. This study investigated how celebrity self-disclosure of mental health difficulties can decrease stigma and improve help-seeking behavior. Participants (n > 200) were randomly assigned to one of three conditions. The first group read celebrity self-disclosures, the second group read the same self-disclosures but with made-up non-celebrity names, and the third group was the control group and viewed philosophical quotes unrelated to mental health. Participants then completed self-report surveys on their attitudes and beliefs toward mental illness and help-seeking. We hypothesized that college students who read the celebrity quotes will have less stigma toward mental health and treatment and will have a greater willingness to seek help. Data collection is currently in progress and will be completed by early December. Results from the data analysis and the implications will be discussed.



Design Digital Forensics Hands-on Labs via Kali Linux Security Tool

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Abstract (Posters)

This explosion of mobile devices has spurred a significant increase in tasks of digital forensics. Digital Forensics plays a critical role in crime investigation. Teaching digital forensics has always been a challenge as the creation of suitable hands-on digital forensics labs has always been the core of these training programs. Kali Linux is a Debian-based Linux distribution geared towards various information security tasks, such as Penetration Testing, Security Research, Digital Forensics and Reverse Engineering was chosen as the main operating system of the environment because it provides many applications from password crackers to digital forensics software and is completely customizable.

This research describes the execution of a free security testbed from Kali Linux to replicate various scenarios for the acquisition of digital evidence and the implementation of this testbed via hands-on labs designed to introduce concepts of digital forensics. We discussed the design of open-source tools to teach IT students about digital forensics and proposed directions for future work.



The impact of maternal obesity on perinatal cancer outcomes using electronic health records

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Abstract (Posters)

Cancer is one of the leading causes of mortality for women of reproductive age. Obesity is one of the most common risk factors for cancer; however, population-level data suggests that cancer patients that are overweight or obese have lower mortality rates. Despite this, population-level investigations that relate obesity to cancer risk in diverse patient populations are limited. The objective of this project is to understand the impact of maternal obesity on perinatal cancer outcomes. We used electronic health record (EHR) data available through UFHealth with linked maternal-infant health records spanning 2011 to 2021. Maternal obesity status is the primary predictor and was estimated from pre-pregnant BMI and BMI recorded at the time of delivery. Perinatal cancer status was estimated using ICD9/10 codes and outcomes included the most prevalent cancers in our cohort. Analysis included statistical tests to study the relationship between maternal obesity and cancer outcomes. Our preliminary analysis of 28,530 EHR records revealed that 78% of records contained pre-pregnant BMI recorded during the initial prenatal visit. We identified 400 deliveries with a cancer outcome. The 3 most prevalent cancers in our cohort included breast cancer, lymphoma, and leukemia. An ANOVA test comparing these cancer outcomes detected a significant relationship between cancer type and BMI measured at delivery ($p=0.042$), and pre-pregnant BMI ($p=0.008$). Our preliminary results demonstrate that pre-pregnant obesity and obesity at the time of delivery are associated with perinatal cancer outcomes. Our results have a translational impact to improve the management of cancer in perinatal populations with obesity.



Using Limulus Amebocyte Lysate (LAL) to Discover the Presence of Endotoxins in the Tanks at the Pritzker Marine Biology Research Center

Sydney Haas

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Abstract (Posters)

Endotoxins are harmful for marine organisms. Research has been conducted to show that Limulus amebocyte lysate (LAL) is an effective way to determine the presence of endotoxins. LAL was used as the main reagent to detect if endotoxins were present in the tanks at the Pritzker Marine Biology Research Center. It is believed that LAL will be able to detect the presence of any endotoxins. The first part of the procedure was to collect 5mL of water from each tank at Pritzker. After the LAL reagent was dissolved in LAL Reagent Water, the gel-clot assay was then produced. 0.1mL of the reagent was added to each assay tube. 0.1mL of each product sample or control was transferred into each assay tube, beginning with the negative control and ending with the highest endotoxin concentration. The contents of the tubes were mixed and incubated undisturbed in a 37 C heating block for 60 minutes. After incubation, each tube was examined for gelation. A positive test is defined as the formation of a gel capable of maintaining its integrity when the tube is inverted 180 degrees. A negative test is characterized by the absence of gel or by the formation of a viscous mass which does not hold when the assay tube is inverted. Endotoxins were detected in an average of 13 tanks at the Pritzker. To expand upon these findings, quantifying how many endotoxins are present in the tanks and what types of endotoxins are present will be tested.



The Measurement of Nitrates and Phosphates in the Sarasota Bay

Sydney Haas

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Abstract (Posters)

The purpose of this study was to measure the nitrate and phosphate levels in the Sarasota Bay and determine if there was a relationship between the levels and location. First, 30mL of water was collected from the surface and from the bottom, using the horizontal water bottle sampler, for each of the 28 test sites. 0.105mL of sodium hydroxide was added to each tube to preserve the samples. The samples were analyzed for phosphate and nitrate levels using the Hanna Checker for Nitrate for Phosphate. To analyze the phosphate levels, 10mL of the seawater sample was added to a cuvette and placed into the checker. After the powder from the reagent packet had dissolved in the samples, the cuvette was placed into the checker and left for 3 minutes. To analyze the nitrate levels, the same procedure was performed with the nitrate reagent packet and it was left for 7 minutes in the checker. The average amount of nitrate was 0.0ppm and that the average amount of phosphate was 0.0096ppm. The results may be reading 0.0ppm for nitrate due to the detection limit of the checker not being low enough. However, this data is still significant because any major changes will be detected by the nitrate checker. Further research is being conducted to check how nitrate and phosphate levels change during the day, week, and month at one location. The relationship between macroalgae populations and nitrate and phosphate levels will also be researched.



Preference and its Impact on Musical Aesthetics

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Abstract (Posters)

The purpose of this study is to explore the influence musical preference has on an individual's emotional response to different genres of music. In alignment with existing studies on brain activity associated with listening to music, I examined the role preference plays in our physiological response to music. Must we like the music to have an aesthetic experience, or is music itself powerful enough to overpower preference completely? Aesthetic expression manifests itself in both emotional and physiological ways, both of which collaborate to evoke a deeply personal response to Art. We are all surrounded by music in our daily lives, and I believe this research provides answers as to why music impacts us all in different, but all equally strong, ways. For this study, high school participants were asked to listen to twenty excerpts from ten different musical genres. They were asked to list their musical preferences prior to listening, and to answer questions about their experience after listening. The results show strong emotional responses, both negative and positive, to all excerpts even though all participants were given the option to choose neutral as their expression. Generally, scores for preferred genres were higher, as to be expected; however, for the purposes of this study all score ranges were considered. Most of the participants provided scores of both negative and positive extremes for genres not indicated as a preference, thus supporting the hypothesis that music is powerful enough to elicit an emotional response regardless of preference.



Speaking of Organic Chemistry: A Faculty Metaphor Analysis in Organic Chemistry Education

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Abstract (Posters)

Organic Chemistry has a notorious reputation of being a difficult class. Understanding the factors that contribute to this phenomenon can inform the chemistry education community of what can be done to improve organic chemistry education. This work is part of a larger study focused on student and faculty perceptions of organic chemistry at a large public university in the southeastern United States. Specifically, this presentation focuses on a series of metaphors from interviews with faculty members who teach organic chemistry courses at this university. Over the course of the interviews, the faculty members compared experiences in organic chemistry to learning a new language, practicing an instrument, and organizing clothes. The analysis of these metaphors was based on the Improved Metaphor Analysis (IMA) framework. The connections made by these metaphors gives greater insight into the feelings of the organic chemistry faculty members as well as possible action research interventions in organic chemistry education.



A Sibling's Intuition: The Role of Sibling Approval for Romantic Relationships

Katherine Ayers, Mickey Langlais
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Abstract (Posters)

Research has shown that family and peer relationships have an impact on the stability and quality of one's romantic relationships. One variable that contributes to relationship quality is approval and support from one's parents and social networks. However, little exploration has examined the association between dyadic sibling relationships and the quality of one's romantic relationships, despite calls from researchers. According to family system's theory, family dyads are likely to impact the stability of romantic dyads within a system. Thus, the goal of this study is to understand how sibling approval of one's romantic relationship impacts the quality of that relationship. We hypothesized that sibling approval would positively predict siblings' relationship quality. Participants (N = 168) and their siblings (N = 118) were recruited to participate in an online survey, which included questions regarding their current and previous romantic relationships, if applicable, and their relationship with their sibling. Perceived sibling satisfaction in current and previous relationships was positively correlated with sibling approval. Regression analyses revealed that sibling approval negatively predicted the quality of one's previous romantic relationship, and sibling closeness did not moderate these relationships. Based on findings of this study, participants are likely to perceive their siblings' relationships are lower in quality if they do not approve of these relationships. Yet, approval does not appear to significantly predict the actual quality of these relationships. Implications regarding sibling relationships and romantic relationship quality will be discussed.



Application of High Resolution UPLC-MS-MS Towards the Prioritization of Marine Bacteria-Derived Crude Extracts for Natural Product Drug Discovery

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Abstract (Posters)

Natural products are a prolific source of new pharmaceutical drug leads. Prioritization of organisms and extracts to maximize efficiency and success rate is an enduring struggle in the utilization of natural products in the drug discovery process. One evolving method is the application of tandem mass spectrometry (MS/MS) data sets for high-throughput prioritization. In this project, a methodology using UPLC-MS-MS to prioritize marine bacteria-derived natural product extracts for further chemical and biological investigations was developed by utilizing statistical analysis, molecular networking, and free online crowd-sourced tools. This work provides a proof of concept for the use of high-level MS data sets in the undergraduate research laboratory.



Creating Inspector Gadget: Advancing Technology and its Potential for Autism Spectrum Disorder

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Abstract (Posters)

Cybernetics can function as a valuable tool for children with Autism Spectrum Disorder (ASD), cybernetics assist children with ASD by giving the child a cheat sheet of how to handle different social interactions, technology has programmed and reliable responses that calm the children and make social situations easier to handle, studies show, assistive technologies do not stunt development, however, because ASD and prolonged screentime both cause inflammation in the nervous system, experts advise boundaries. ASD is a neurological disorder that typically presents in developmental delays and issues socializing. Many journals and websites provide new information about ASD. Cybernetics enhances or aids living organisms by adding to or replacing with technology. With cybernetics, children with ASD would have the ability to register and recognize social cues and give appropriate responses. A study by Autism Speaks shows assistive technology does not impede a child's learning. Children with ASD find the predictability of technology comforting. The importance of caution and limits must be stressed, unsupervised screen time has proven detrimental to an individual's health.



The Shogun's Grand Niece

Sarah Brophy

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Abstract (Posters)

The Shogun's Grand Niece aims to capture the intricacies of a Japanese immigrant family living between two identities in the United States during the early-to-mid twentieth century. The family's former status as rural samurai is taken into account when their only daughter is courted by a Japanese nobleman overseas right before WWII. This research focuses on the historical background and geographical setting of the family to better understand the elements and obstacles they faced. Ultimately, a Japanese family that gains prominence in Los Angeles is at the mercy of tense relationships and war between Japan and the United States while also grappling with the daily challenges for Japanese immigrants making the US their home. The presentation starts in 1920s Los Angeles and follows leftist, progressive activities in the area and the larger Japanese community, and the family's possible intersection with it. It examines the successful business of Japanese produce distributors and the devastation of relocation to internment camps after the Pearl Harbor Attacks. The family, who owned a lucrative produce business, was stripped of assets and their patriarch was sent to Ft. Missoula for internment. Eventually, the couple's daughter chose to live in relative obscurity in a predominantly white, right-leaning rural Oregon town, where she recently decided to share her story. Government documents, journals, news sources, and books revealed that the success and distinct culture of the Japanese-American community were the main causes behind the vitriolic societal and governmental response to the Pearl Harbor Attacks.



What makes a good Youtube programming video tutorial?

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Abstract (Posters)

In order to improve knowledge acquisition from video tutorials by professional software developers and computer science students, our project seeks to understand what makes a high-quality programming video tutorial that viewers enjoy and can easily learn from. For this purpose, we gather data on the habits, behaviors, and opinions of programmers of various experience levels related to their use of video tutorials. We conducted a survey sent out to a variety of programmers and computer science students across a broad range of demographics to identify how they seek out useful video tutorials, as well as the importance of various video tutorial characteristics in their decision to choose one tutorial over another. Participants also commented on aspects they believed would improve video programming tutorials. We also performed a series of interviews with programmers and students that helped us further our understanding of programming video tutorial preferences and potential general improvements to this kind of resource. Future work includes performing an observational study in which participants are given programming tasks of varying difficulty and are monitored for what resources each participant seeks out for aid. These participants will then be questioned on their actions and resource preferences. Our work is limited in that the majority of our responses are from open-source software developers and students from the Computer Science Department at Florida State University, therefore showing that this survey may suffer from selection bias. Future work will seek to expand the participant population.



The Phenomenon of the Infantilization of Women

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Abstract (Posters)

The sexualization of women in advertisements remains a controversial form of media, specifically infantilization. Infantilization is defined as the portrayal of adult women acting and looking childish through attire and demeanor. This study examines consumers' perceptions of infantilized women in advertisements. Students (n = 100) from a 4-year university participated in an online questionnaire examining five advertisements' scales of morality, objectionability, and ubiquity. Three out of the five advertisements display infantilized female models. The others display women in a non-infantilizing manner. A single chi-square conducted on the participants found significant differences in if students can correctly identify infantilization in ads. Additionally, a series of analyses of variance (ANOVA) also found significant differences between males and females in their perception of the infantilization of women in advertisements. Overall, the results indicate that participants incorrectly identified infantilization, and males rated it lower in morality and higher in objectionability than females. These findings support the need for a more critical analysis of the infantilization of women.



“Ow, that Hurts!”: Pubertal Timing and Injury Risk

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Abstract (Posters)

Several variables contribute to when puberty begins, including the timing of one’s birth, whether an individual participates in sports, and stress. However, it is unclear how the timing of puberty is related to injury risk. Theoretically, as the body produces more hormones, such as gonadotropin-releasing hormones (GnRH) which serve to combat stress, the body may be more prepared to protect itself from injury. Accordingly, some researchers have hypothesized that experiencing an injury during puberty can expedite recovery, but state that more research is needed to understand the relationship between these two variables. Thus, the goal of this study is to understand the relationship between pubertal timing and injury risk to address this call in the literature. Data was collected through an online survey administered at a large public university in the Southeastern United States (N = 356). Participants answered questions regarding when they started and ended puberty and identified the frequency and intensity of injuries they experienced as teenagers using heat maps. Data was analyzed using bivariate correlations. Front knee, chest, and stomach injuries were positively correlated with the length of puberty. Additionally, injury prevalence was correlated with length of puberty. This study provides information that can be useful for health practitioners working with adolescents, as well as parents regarding potential pubertal consequences. It should be noted that this data is correlational, and therefore cannot discern cause and effect. Additional studies are recommended to better understand the relationship between timing of puberty and risk of injury.



Exploring the role of twist during myogenesis in tardigrades

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Abstract (Posters)

The gene *twist* regulates myogenesis in animals. The protein encoded by this gene is a basic helix-loop-helix transcription factor. We wondered whether *twist* regulates myogenesis in Tardigrada. We identified a single candidate ortholog of *twist* in the tardigrade species *Hypsibiusexemplaris* and *Ramazzottius varieornatus* by reciprocal BLAST search and confirmed that this gene was an ortholog of *twist* by phylogenetic analysis. In order to precisely characterize the expression patterns of *twist* during embryogenesis in *H. exemplaris*, we used Hybridization Chain Reaction in situ to determine the expression patterns of *twist* relative to two gut markers, forkhead (*fkh*) and Hepatocyte Nuclear Factor 4 (HNF4). We investigated embryonic stages that fall between early and late gut development. HNF4 was expressed in the foregut region and *fkh* was expressed throughout the developing gut. *Twist* expression was associated with specific cells that presumably represent developing muscle cells. Next, RNAi experiments targeting *twist* will be performed to directly test the role of *twist* in regulating myogenesis. The expression data for *twist* was identified in the endomesodermal layer of the developing mid-trunk region. This region represents where muscle cells originate in *H. exemplaris*. We are now interested in locating *twist* alongside transcription factor regulators forkhead (*fkh*) and hepatocyte nuclear factor 4 alpha (HNF4).



Volunteer Undergraduate Research Experience at AdventHealth Translational Research Institute

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Abstract (Posters)

The purpose of volunteering as an undergraduate researcher at Advent Health's Translational Research Institute (TRI) was to gain knowledge about study protocols relating to metabolic diseases and exercise. Dr. Bret Goodpaster provided mentorship and is the scientific director at the TRI with a focus on the health benefits of exercise. Andrea Brennan, a graduate student provided guidance throughout the volunteer experience alongside Dr. Bret Goodpaster. The two main studies that were observed were the REST study and the MIRAGE study. Some of the procedures used were histology staining and high resolution respirometry. An O2K machine was utilized for the high resolution respirometry experiment, and the use of Oil Red O and fluorescent stains were used for determining fat and tissue types in muscle samples. The results of the Histology staining indicated the varying types of tissues and the quantity of fat in muscle. Additionally, the high resolution respirometry showed the effects of adding different substrates to simulate Oxidative Phosphorylation. Volunteering at the TRI provided hands on experience in a lab setting for multiple study protocols. Volunteer experience at the TRI is also very meaningful, as it allows students to meet professionals in the health field and observe a variety of different subjects.



Examination of Tonic Immobility in a Lab-Based Experimental Paradigm

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Abstract (Posters)

Research in the area of threat responding has modeled a continuum of autonomic, survival-based behaviors including the stages of freeze, fight, and flight (Barlow, 2002; Bradley et al., 2001; Lang et al., 1997). Tonic immobility (TI) is a type of freeze response characterized by continued motor and vocal inhibition. The present study aims to gain a better understanding of the physiological reactions and subjective experiences of TI by examining the associations between self-reported TI and postural sway in participants with previous trauma exposure. Participants completed self-reported measures assessing tonic immobility experienced during the individual's worst trauma, across stressful experiences, and in response to a laboratory-based task, among other psychological correlates. The image-viewing task consisted of a series of neutral and affective images while assessing for postural sway recorded through the Nintendo Wii Balance board (WBB). Multiple linear regression analyses indicated prior experience of TI significantly predicted a reduction in postural sway when viewing mutilation images as opposed to neutral and positive images, as well as significantly predicting self-reported tonic immobility. Understanding the motor attribute of TI holds implications for future research examining freeze responses in trauma-exposed populations.



Tipping Culture in America

Taylor Youngblood

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Abstract (Posters)

In America there is a striking escalation of tipping in coffee shops, restaurants, salons, and more. According to articles in Forbes and New York Times, there are many passionate users debating about tipping and other writers revealing their own beliefs on tipping. This common etiquette has strong controversy on its necessity and effect. The purpose of this study is to analyze people's views on tipping. I believed that there would be more agreeance about tipping among the older generations. To test this hypothesis, I wrote a survey of 15 questions using Survey Monkey and collected the data through Amazon MTurk with the sample for the analysis consisting of 196 participants over 18 years of age residing in the United States. The results indicated a statistically significant difference in responses among the participants' gender and age and how these demographics affected their idea of the amount and necessity of tipping. This survey can help to understand consumers and the reasoning for the amount of gratuity they leave behind.



The Power of Party over Purchasing Plans

David Hayes

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Abstract (Posters)

In recent years, home prices have risen by a shocking 43.7%. The median home price grew from \$268,606 in January 2020 to \$385,959 in July 2022. Americans looking for a home are faced with a difficult question: as prices continue to increase, is it better to buy or rent? According to my survey, 66.8% of Americans believe that it's better to buy. With this in mind, I wanted to find out how one's political affiliation influences purchasing decisions. I believed that if someone was a Republican, then they were more likely to purchase a house in the next year than a Democrat. To test my hypothesis, I wrote a survey using Survey Monkey and gathered 200 responses from Americans over 18 using Amazon M-Turk. While the results showed that about 67% of Republicans and Democrats think it's better to buy a home than rent one in the current market, their actual likelihood of buying tells a different story. Surprisingly, 50.8% of Republicans were very likely to buy a home within the year compared to only 37.2% of Democrats, which is statistically significant at the 1% level. This stark difference between parties' short-run purchasing plans is surprising, and public officials can use this contrast to garner support for housing-related policy in the future.



Is the student loan forgiveness fair?

Adam Trout

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Abstract (Posters)

Recently, President Joe Biden signed an executive order forgiving student loan debt for millions of eligible students. People are eligible for between \$10,000 and \$20,000 based on the types of federal loans they took. This executive order has created significant debate among the population and the major news networks on the topic of fairness. This survey had the goal of discovering the public's opinion of fairness on this executive order. My hypothesis was that Democrats would support the bill more than Republicans and independents. To test my hypothesis, I wrote a survey on Survey Monkey with the data being collected through Amazon Mturk. My survey consisted of 197 completes from Americans aged 18 and older. The results revealed that for the question of fairness for students who have paid off their debt, Republicans and Independents disagree more with fairness than Democrats. Republicans disagreed 12.2% and Independents disagreed 24.2% compared to Democrats disagreeing with 0.9%. This is statistically significant at the one percent level. Since the executive order is stuck in the courts, this is valuable to all lawmakers because it shows which Americans are more likely to support this executive order and other similar orders.



American's Knowledge of International Affairs

Kyle Webb

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Abstract (Posters)

A global pandemic, a war in Europe, and a global climate crisis mark the beginning of this new decade, where international events are of great consequence to the everyday lives of Americans. Based on a similar study by Gallup in partnership with the Council on Foreign Relations and National Geographic, this study seeks to understand how much attention Americans pay to international affairs. This study hypothesizes that there is an age and gender gap in who pays the closest attention to international affairs. To test this hypothesis, a 13-question survey was created using Survey Monkey and distributed using Amazon MTurk. A total of 197 responses were collected from Americans over the age of 18 for the analysis. The results show a statistically significant difference in the correct answers to questions about current events based on age and gender. These findings help to identify gaps in education and public information for public and private entities concerned with knowledge of foreign affairs. Additionally, when it comes to political messaging about foreign policy, this survey identifies which demographic groups of the population are most knowledgeable about current events.



Future for Assisted Suicide in the U.S

Mya Barsoum

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Abstract (Posters)

In the United States, 10 states have legalized physician assisted suicide for individuals diagnosed with a terminal illness. This prolongs constant debate between American's on whether physician assisted suicide should be a constitutional right in the United States or not which is a current controversy within the nation. The purpose of this study is to examine American's views on whether physician assisted suicide should be legal or illegal throughout the United States. I hypothesized that there is a difference in views regarding who is more accepting of physician assisted suicide as opposed to those who are against the process based on gender, age, and political party. To test this hypothesis, I conducted a 15-question survey and administered it using 'Survey Monkey' and 'Amazon MTurk'. My sample consists of 193 respondents in the United States over the age of 18. I found that there is a statistically significant difference in response regarding physician assisted suicide based on gender, party affiliation, and age. Specifically, I found that those who are 50 years old and over are more in favor of physician assisted suicide yet still believe it violates the ethical norms of the physician. I have also found that registered Democrats are more in favor of physician assisted suicide in comparison to registered Republicans, independents, or those affiliated with another party. In conclusion, a vast majority of recipients support the idea of physician assisted suicide; therefore, policy makers should look to legalizing the process in more states throughout the country.



Purchasing Intent on Electric Vehicles

Anthony Beltran

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Abstract (Posters)

With electric vehicles projected to make up 13% of all new car sales in 2022, they are said to be a revolutionary step in transitioning to a greener planet with less dependence on fossil fuels.

However, there has been heavy debate on electric vehicles and whether they benefit the environment and the overall vehicle market. The purpose in creating my study is to understand the opinions of the customers, determining the state of the economy. The purpose of my paper is to see people's views on owning an electric vehicle and their reasoning for it. To do so, a survey was written through Survey Monkey, collected using Amazon MTurk with a total of 197 responses. The results show that 49% of those between 18 and 34 years old plan to purchase an electric vehicle in the next 5 years, while 42% of those 35-49 and 48% of those 50+ plan on purchasing in the next five years.

Furthermore 67.2% of those between 18 and 34 years old drive electric vehicles for environmental purposes, 45.8 % of those between 35 and 49 years old drive them for environmental purposes, and 59.3% of those between 50+ drive them for environmental purposes. Understanding the driving factors of why people choose to purchase an electric vehicle is why we must determine if it could be a positive or negative trend to the saturation within the market, potentially impacting marketers, advertisers, and politicians on the forthcoming market saturation of electric vehicles.



Should drugs be legal?

Kerri Cohn

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Abstract (Posters)

According to the National Center of Drug Abuse Statistics, 22% of men and 17% of women have used illegal drugs within the past year. Americans are using illegal drugs at a higher rate than they ever have before while simultaneously the government is legalizing marijuana. This sparked the question: what Americans really think about the legalization of marijuana? I hypothesized that party affiliation would influence people's opinions and there would be a difference in the opinions between different political parties. To test my hypothesis, I conducted a 12-question survey in Survey Monkey and collected data using Amazon M-turk. I gathered data from 186 Americans aged 18 and over with varying ages, gender, political affiliation, and education levels. The results show the vast majority of Americans were in opposition of the legalization of marijuana. Furthermore, I found a statistically significant difference between political parties and the extent of support regarding the legalization of marijuana. Policy makers can use the results of this survey to better understand who supports drug legalization and response accordingly.



Subscription Models Taking on the World

Dylan Lewis

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Abstract (Posters)

For a little over a decade the rise of subscriptions-based models has seemed inevitable. This has become even more so with the Covid-19 pandemic. When faced with uncertain territory of fighting a global pandemic, the world locked down to help curb covid-19 transmissions. This lockdown led many to evaluate the way they were using their discretionary income when it came down to day to day purchases. This prompted both businesses and customers to attempt to squeeze more value, in part by offering subscription-based payments instead of one-time purchases in uncertain times. The purpose of my study is to see the people's preferences between subscription-based models and one-time purchases. To do so, I conducted a 12-question survey and collected data using Amazon M Turk, which compiled over 195 responses. The results show that there is a statistically significant difference between age and the usage of subscription-based models. In addition, I found there is a difference between gender and subscription-based models. These results are important because they highlight the strict breakdown of who has been most effected by the switch in spending patterns.



How Social Media Has Impacted the Perception of Investing

Ivan Yuk

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Abstract (Posters)

There has been a surge of interest in finance-related topics and investing after the COVID-19 pandemic, which is attributed to the rise of easy-to-access trading platforms such as Robinhood. Social media platforms have significantly increased public interest in investing. For example, the internationally reported event of the GameStop short squeeze brought over 5 million new members to reddit group WallStreetBets. This event was organized on Reddit, which propelled other social media platforms like Instagram and TikTok into the investing sphere. The purpose of this study is to analyze the impacts of social media on investing trends and investor sentiment. Furthermore, this study examines if there is a shift from mainstream media to social media as a source of investment advice. To do this, I conducted a 16-question survey through Amazon Mechanical Turk and collected 189 responses. Then, I ran statistical analysis and crosstabulation in order to identify if there was any statistically significant difference with gender and age in relation to how often one views investing related news or posts on social media, and how that impacts how individuals themselves view investing as a whole. I found that while younger individuals have a positive view on how social media impacts their financial literacy, the percentage that maintain this positive view decreases as age increases. I also see a statistically significant difference in the responses of males and females, with more males investing because of social media than females.



Public Opinion on Florida's Parental Rights in Education Bill

Valerie Ong-Tua

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Abstract (Posters)

Florida's Parental Rights in Education Bill prohibits public school teachers from instructing students in grades K-3 about sexual orientation and gender identity or, "in a manner that is not age-appropriate or developmentally appropriate," as stated by the Bill. It allows parents to choose how they want to introduce LGBTQ+ topics to their children and sue schools if they feel the policy has been violated. After Governor Ron DeSantis signed the bill in late March 2022, it has faced criticism from parents, students, and public officials alike, with opponents calling it the "Don't Say Gay" Bill.

I hypothesized that there would be a difference in support of the Bill among individuals with and without K-3 children. To test this hypothesis, I wrote a 14-question online survey using Survey Monkey and collected data using Amazon MTurk. The sample for analysis consists of 196 adult respondents within the United States. The results show that there is a statistically significant difference in opinion about the Bill among people with and without K-3 children. In addition, I found a statistically significant difference among individuals who believe the Bill is beneficial and also believe that it could potentially increase suicide rates among LGBTQ+ youths.

My results give further insight into the controversy of Florida's Parental Rights in Education Bill and show that there is widespread prejudice and bias against LGBTQ+ individuals; however, more research should be done to further understand the impact of these differences in the long run.



Americans' Opinions on Organized Labor

Mikhail Perminov

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Abstract (Posters)

The popularity of labor unions has declined sharply over the years; at the same time, inflation, wealth inequality, and a shrinking middle class have been causes for concern. Because of these reasons, there has been somewhat of a renewed interest in organized labor.

I hypothesized that support for organized labor would differ based on political party and occupation of respondents. I also hypothesized that Democrats would be more accepting of organized labor than Republicans, and that those with hands-on professions would be more accepting of organized labor as opposed to office workers, executives, government workers, and self-employed workers. To test these hypotheses, I wrote a fourteen-question survey using Survey Monkey and then received data from adults across the United States using Amazon MTurk.

The results showed a statistically significant difference on support for labor unions among different occupations. Workers in manual professions were more supportive of worker strikes, thought labor unions were more successful in achieving their goals, and were more likely to say employers try to dissuade workers from organizing. I also saw a statistical significance in responses of different political parties; Democrats and especially independent voters were far more likely to advocate for greater union power, but surprisingly, Republicans were more likely to say unions benefit the economy. While my hypotheses were supported, there is still more research to be done as political and economic conditions surrounding labor continue to change in the United States.



What Master's Programs Look for in Letters of Recommendations

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Abstract (Posters)

Letters of recommendation are widely used and a large part of graduate application cycles. However, there is little known about what components in letters of recommendation are valued the most. What do graduate programs look for in letters of recommendation? What should recommenders write about their applicant? This study aims to answer these questions and investigates how graduate faculty view and rank different components within letters. We investigate trends in how graduate programs evaluate letters of recommendation and how these interpretations impact applicants. Participants in the study were current or past faculty members with experience reviewing applicants for admission into psychology and mental health-related graduate programs. The results of this study will likely be useful for the authors of letters of recommendation and the applicants



Investigating the Impact of Sonication on the Oral Microbiome and Biofilm Formation

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Abstract (Posters)

The human mouth is home to numerous microscopic organisms making up complex communities. Collectively, these organisms are referred to as the oral microbiome, and are found on the teeth, gums, tongue, hard tissues of the mouth, and in saliva. Some of these organisms are harmful while others are beneficial. Dental plaque is formed when bacteria adhere to the surface of a tooth and form a community called a biofilm. Since plaque accumulation leads to periodontal disease, these biofilms must be removed regularly through brushing. This study analyzes the effects of sonication on the oral microbiome. Six individuals who use a manual toothbrush were given a sonicating toothbrush and samples were collected prior to changing toothbrushes, and after one week, three weeks, and six weeks. Three individuals continued to use a manual toothbrush and served as a control group. The 16S ribosomal RNA gene sequence was amplified and used to determine microbiome composition, while a biofilm assay was also conducted to see if sonication affected the bacteria's ability to establish biofilms. The results of this study elucidate how sonication affects both the oral microbiome and biofilm formation.



"A Mathematical Model of Student COVID-19 Cases at Florida Gulf Coast University"

Jordan Bryan, Cara Brooks
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Abstract (Posters)

From Fall 2020 to mid-Spring 2022, daily COVID-19 case numbers reported by Florida Gulf Coast University (FGCU) students were made public on the FGCU website. To better understand student case reporting during the pandemic, several methods were used to develop a mathematical model of weekly student cases based on the Fall 2020 data set. The resulting differential equation model was tested to see how well it could predict reported case numbers in subsequent semesters. We present the model, demonstrate its success in predicting future trends, and discuss its implications and the challenges encountered in its development.



The Relationship between Perpetrator and Witness Race and Change Blindness Rates

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Abstract (Posters)

Change blindness refers to a failure to observe significant changes that happen directly in view (Rensink, 2005). The current purpose was to determine if there was a difference in change blindness as a function of the perpetrator's race/skin-tone in a perpetrator swap - change blindness paradigm involving a crime. Consistent with the own-race bias or cross race effect (Zhou et al., 2015), we hypothesized that when the race/skin-tone of the witness and perpetrator were more similar, witnesses would exhibit less change blindness and more accurate line-up identifications. Participants watched a video that depicted a perpetrator stealing a laptop who walked behind a large oak tree and was occluded from view for 3 seconds. In half of the videos, the perpetrator swaps with another person in similar clothing who then emerges from behind the other side of the tree. In the other half of the videos, there is no swap of perpetrator. We also manipulated the skin-tone of the perpetrator (dark, medium, light) between subjects. Because the sample consisted of predominantly white students (n = 160), we expected the highest rates of change blindness in the darker skin tone conditions. However, inconsistent with the cross-race effect, more participants in the light condition exhibited change blindness and made more incorrect line-up identifications than those in the darker conditions. Perhaps perception and facial recognition short-cuts that help us quickly categorize individuals work differently when someone is witnessing a crime on a video, so that there is less deindividuation for certain out-groups.



DNase Activity of Cytolethal Distending Toxin on Methylated vs Unmethylated DNA

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Abstract (Posters)

Cytolethal distending toxin (CDT), released by several Gram-negative pathogens, is notable for its DNase activity. This induces cell cycle arrest at the G2 checkpoint, causing cells to swell, followed by apoptotic cell death. Actively dividing T-cells are preferentially targeted by CDT, which explains the immunosuppressive effect of CDT on an infection. CDT thus contributes to prolonged colonization and chronic infection.

CDT does not kill non-dividing naïve T-cells that do not contribute to the immune response. Naïve T cells have their DNA in a highly methylated state, but the DNA from activated T cells is in an undermethylated state for the ease in replicating their genetic material and increase in number. We hypothesized that CDT preferentially targets hypomethylated DNA, and that DNA methylation status is associated with CDT sensitivity. This would explain why naïve T cells with hypermethylated DNA are resistant to CDT, while activated T cells with hypomethylated DNA are highly sensitive to CDT. To test this hypothesis, we purified the enzymatic component of CDT (CdtB) and mixed it with bacterial or mammalian methylated and unmethylated DNA substrates. We ran those samples in agarose gels to analyze DNA break patterns. However, the data we collected did not support our hypothesis. In fact, CdtB attacked methylated DNA more preferentially. Our new model proposes that the DNase activity of CdtB may be influenced by histone modifications that are specific to activated T cells and were absent from our experimental procedure.



The Mediating Effect of Surface Acting on Mistreatment-Exhaustion and Mistreatment-Sabotage Relationships

Jiani Fan

University of Central Florida, Orlando, USA

Abstract (Posters)

Although ample research has been conducted to explore employee emotional labor and customer incivility at the workplace, there is limited literature examining the role of surface acting in the stressor-strain relationships associated with customer incivility. The current study focuses on the mediating effect of surface acting between customer mistreatment-emotional exhaustion and customer mistreatment-service sabotage relationships. Based on several theoretical models regarding mental and emotional resources, including the Conservation of Resources Theory and Ego Depletion Theory, it is hypothesized that a significant mediating effect of surface acting can be identified in the customer mistreatment-emotional exhaustion and customer mistreatment-service sabotage relationships. A total of 173 UCF-affiliated participants with at least a month of service working experience were recruited from the UCF SONA system and surveyed their emotional stress and interaction with customers at work to test the hypotheses. The concept of service sabotage was studied at both the individual and environmental levels to obtain a comprehensive understanding of the relationships. Deep acting as a different type of emotional labor was also inspected in the current study. Results revealed the significant relationships between surface acting and customer mistreatment, emotional exhaustion, as well as individual-level service sabotage. Results also supported the hypotheses regarding the mediating effect of surface acting on customer mistreatment predicting emotional exhaustion and individual-level service sabotage, but not environmental-level service sabotage. Theoretical and practical implications, limitations, future research directions are discussed.



College Students' Perceptions of and Experiences with Delta-8 THC

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Abstract (Posters)

Delta-8-THC is a cannabinoid that is unregulated at the federal level and in many states, including Florida. The U.S. Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) have noted growing concerns about Delta-8 THC due to the unregulated status of the substance and multiple overdoses in several states. The current study investigates college students' perceptions of Delta-8 THC, including perceived benefits and drawbacks (such as its influence on social and academic outcomes) and perceived differences from regular marijuana. Furthermore, this study explores the onset of college students' Delta-8 THC usage.

These variables are assessed through a brief online survey administered to General Psychology undergraduate students via Qualtrics and Sona Systems, a participant pool software program. Inclusion criteria are fluency in English and a minimum age of 18. Data collection is currently underway, with over 200 participants thus far. Qualitative analyses will be conducted to identify prevalent themes, including the most common motivators for using Delta-8 THC. The results of this analysis will also help the researchers to design a psychoeducational video for a second study that explores a brief intervention designed to improve college students' knowledge and to change beliefs of riskiness, intentions to use, and attitudes towards legislation concerning Delta-8 THC.

In our poster presentation, we (a) present the results, conclusions, and implications from the survey exploring students' perceptions and motivations regarding Delta-8 THC consumption and (b) describe how these results will inform the video intervention study.



Mucin-Type *O*-Glycosylation Affects APP Processing and Aggregation Fate

Gustavo Mundim

Florida Atlantic University, Boca Raton, USA

Abstract (Posters)

Alzheimer's disease (AD) is one of the most common neurodegenerative disorders linked to aging. New evidence continues to emerge supporting the idea that deficiencies in amyloid- β precursor protein (APP) trafficking and clearance of A β peptides are the initiating events of AD pathogenic processes. Efforts to understand the role of APP proteolytic cleavage by α -, β -, and γ -secretases into the toxic amyloidogenic pathway have sparked interest in the role of MUC-type *O*-glycosylation in production and clearance of A β peptides. With this goal in mind, we have synthesized native and Swedish-mutated (Lys⁶⁷⁰Asn/Met⁶⁷¹Leu) (glyco)peptides with *O*-GalNAc moiety on Tyr⁶⁸¹, Thr⁶⁶³ and/or Ser⁶⁶⁷ to explore the role of glycosylation on conformation, secretase activity, and aggregation kinetics of A β 40. The chosen peptide sequences incorporate the β -secretase (BACE-1) (M⁶⁷¹~D⁶⁷² or L⁶⁷¹~D⁶⁷²) and/or α -secretase (ADAM-10) (K⁶⁸⁷~L⁶⁸⁸) cleavage sites, located near and within the A β 40 domain, respectively. CD analysis was carried out in four solvent systems to evaluate the peptide environment and *O*-glycosylation-induced conformational changes. Atomic force microscopy was used to image the morphology of the A β 40 aggregates formed without or in the presence of APP (glyco)peptides. The Swedish mutation and *O*-glycosylation were the key factors driving conformational changes. Furthermore, the level of β -secretase activity significantly increases for the glycopeptides containing the Swedish mutation compared to their nonglycosylated and native counterparts. Lastly, the glycopeptides impact the kinetics of A β 40 aggregation by significantly increasing the lag phase and delaying aggregation onset, however, this effect is less pronounced for its Swedish-mutated counterparts.



Syntheses of a Biochemically Important Aldehyde, 3,4-Dihydroxyphenyl-acetaldehyde (DOPAL), a Toxic Dopamine. Metabolite in vivo: Implications for Parkinson's Disease Pathogenesis.

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Abstract (Posters)

3,4-Dihydroxyacetaldehyde (DOPAL) when injected into rat brains results in neuronal cell death that is more selective for cells in the substantia nigra (cells that are primarily dopamine-producing cells). Despite the significance of DOPAL, it is scarcely commercially available and must be synthesized. There are several published methods, but they all share one widespread problem. DOPAL is unstable and exceedingly difficult to isolate. The present study is to synthesize DOPAL through the Pinacol-pinacolone reaction. using montmorillonite K10 clay as a strong acid catalyst. In this research, montmorillonite K10 clay was used with epinephrine through the Pinacol-pinacolone reaction.



Effects of Cognitive Strategies on Psychological and Stretch Performance Outcomes

Anamaria Astudillo, Elizabeth Perez, Arian Fraile, Ariel Gelman, Jason Kostrna
Florida International University, Miami, USA

Abstract (Posters)

Extensive research supports the positive effects of stretching on joint flexibility. During stretching, an individual's perceptions of stretch related discomfort and pain influences their affective response resulting in changes in motivation and future adherence to stretching. The purpose of this study is to examine the effects of a dissociative attentional strategy on performance and perception during stretching. To induce dissociation, participants completed a cognitive load task (mental math) during passive (application of an external force) and active (no application of an external force) static stretching. Participants (n = 16) stretched in the following conditions: (1) passive static stretch-cognitive load, (2) passive static stretch-no cognitive load, (3) active static stretch-cognitive load, and (4) active static stretch-no cognitive load. To avoid order effects, participants stretched in a block randomized order (i.e., Latin Square Design). While stretching, ROM was assessed using a twin-axis goniometer. After stretching, participants reported their perceived stretch intensity, attentional allocation, and emotional response. Data collection is ongoing, but researchers hypothesize that participants who engaged in a task-irrelevant, simultaneous, secondary cognitive task will have an improved joint ROM, lower muscular resistance, lower perceived stretch intensity, higher dissociative attention, and positive affective valence during a passive static stretch. Through this research, we aim to provide empirical evidence to support the use of cognitive dissociative strategies to improve affective responses and thereby, provide a potential avenue for increasing adherence to stretching.



Characterization of Lung and Pancreatic Cancer Mechanosensation Utilizing CRISPRa/i Technology

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Abstract (Posters)

Cellular mechanosensation is an important cellular function and area of biomedical research as it is part of the process by which cells detect, respond, and adapt to their changing environments. However, the factors which drive cellular mechanosensation remain largely unknown. One possible explanation is the expression level of EMT markers within cells.

Most primary tumors originate from stationary epithelial cells. However, for cancer to metastasize and migrate to distant organs throughout the body, epithelial cancer cells must sense new environmental pressures (via mechanosensation) and undergo EMT to transform into invasive mesenchymal cancer cells. Since this conversion is driven by the progressive loss of epithelial markers and gain of mesenchymal markers, EMT markers are predicted to play a role in cancer cell mechanosensation and are ideal protein candidates for testing.

This research study aims to identify factors that activate or suppress mechanosensation. It is hypothesized that modulating the expression of certain EMT markers in the A549 lung cancer and MIA PaCa PDAC cancer cell lines will affect their mechanosensation. This study's unique experimental design focuses on establishing CRISPRa/i technology in A549 and MIA PaCa cells to activate/repress the expression of EMT markers. Then, changes in cancer cell morphology, growth rate, and mechanosensitivity will be analyzed. This study can better explain the mechanism driving cellular mechanosensation and how to potentially induce or suppress the level of mechanosensitivity of any cell line. These results have broad biomedical research applications and demonstrate methods to prevent invasive mesenchymal phenotypes or even cancer metastasis.



Efficacy of combining home-based transcranial direct current stimulation with mindfulness-based meditation for pain in older adults with knee osteoarthritis

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Abstract (Posters)

Transcranial direct current stimulation (tDCS) involves a directed low-amplitude electrical current to affect the activity of the motor cortex and supraorbital region in the brain. Increasing ranges of literature supports that mindfulness-based meditation (MBM) assists in providing analgesia-like effects for pain. In this study, 30 subjects with chronic osteoarthritis (OA) knee pain aged 50 to 85 years utilized self-administered tDCS and performed meditative exercises to treat their pain symptoms. Combining MBM and tDCS has rarely been studied, despite knee OA being the most prevalent joint disease. On every weekday for two weeks (10 days), subjects remotely participated in 20-minute sessions of tDCS at a constant current intensity to the motor cortex and supraorbital regions along with MBM exercises. Researchers measured the subjects' heat, pain, and pressure tolerances using a visual analog scale, pain questionnaires, quantitative sensory testing, and current stimulation devices for 3 days within 10 days, in addition to their pain symptoms. Pain levels and OA symptoms were measured using a Numeric Rating Scale and the Western Ontario and McMaster Universities Osteoarthritis Index. The results indicated improvement in osteoarthritis pain symptoms and sleep quality, no effect on anxiety or depression, and no adverse effects caused by tDCS. Self-administered tDCS monitored remotely was found to be successful with older patients. tDCS combined with MBM decreased results on the Numeric Rating Scale and Western Ontario and McMaster Universities Osteoarthritis Index.



Graph Based Tractography Algorithms Applied to Diffusion Tensor Images to Establish White Matter Tracts Between Brain Regions Using a Micron Resolution Dataset

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Abstract (Posters)

In the past decade, neuroscientists have been attempting to develop more efficient methods for identifying irregularities in the neural pathway system. Identifying irregularities in the neural pathway system has the potential to allow better understanding and diagnosis for psychiatric and neurological disorders. Current research concludes that white matter fiber tracts can be identified reproducibly. However, connections within gray matter have not been, due to lack of high resolution data. Diffusion Tensor Imaging (DTI) tractography is an MRI technique used to estimate white matter fibers connecting different parts of the brain, based on the direction and magnitude of water diffusion. Our research proposes that by studying a unique high resolution dataset consisting of both submillimeter resolution DTI and micron resolution microscopy images stained for neurons in the human brain, we can identify these complex pathways. Using three standard graph-based algorithms (minimum spanning trees, Dijkstra's algorithm, and Viterbi's algorithm), we developed computational tools for estimating pathways between pairs of brain regions. We test the hypothesis that while minimum spanning trees will compute fastest, there will be a gap in accuracy when compared to microscopy data. We hypothesize that other algorithms are slower, but will match better with microscopy. Our platform will serve as a starting point for developing and validating novel tractography algorithms in the future.



Potential Antiviral targets against SARS-CoV-2: Genetic Analysis of the NSP10 and NSP16

Vivian Vazquez, Areanna Tellez, Erma Despierre, Galilea Mayorga
Florida International University, Miami, USA

Abstract (Posters)

The necessity for developing efficient treatments against SARS-CoV-2 and other lethal coronaviruses that have previously surfaced, or may do so in the future, has come to light due to the COVID-19 pandemic. This research aims to identify an antiviral target that may be exploited to combat SARS-COV-2, its future variations, and other coronaviruses. The addition of sequences to the SARS, MERS, and outgroup clades, will allow a thorough analysis of amino acid conservation and evolutionary context in proteins NSP10 and NSP16. Utilizing statistical analysis, the protein with the highest score of amino acid conservation was identified and further examined for drug ability. It was found that NSP16 contained characteristics of a good antiviral target because, on average, it produced a higher amino acid conservation score than NSP10 which entails fewer evolutionary modifications. The best drug probability scores were then found for each pocket within the protein using Pockdrug. Three pockets, identified as: pocket 1, pocket 5, and pocket 6, were determined to be potential drug targets. An analysis of the drug ability probability conservation of NSP16 pockets revealed that pocket 5 had the highest conservation score. Our study provides quantitative experimental data and structural guidance for prospective targets that might reduce or stop the viral activity of SARS-COV-2 and its future variants. The current findings suggest that pocket 5 in NSP16 contains characteristics of a good antiviral target, however more research is required to validate these results.



The Threat of Insularization Facing The Amboseli Ecosystem - Kimana Area Conservancies

Katherine Foree

Eckerd College, St. Petersburg, USA. School For Field Studies - Kenya, Kimana, Kenya

Abstract (Posters)

The Amboseli ecosystem is a region in southern Kenya, centered around Amboseli National Park, sustained by both protected conservancies and corridors, and unprotected dispersal areas. The insularization of the Kimana sanctuary and Osupuko conservancy in the Former Kimana Group Ranch in the Amboseli region is of great concern due to exponentially increasing human development. Our study assessed the degree of insularization by farms surrounding the conservancies. To do this, we cataloged farm size and type across the area in situ, and then analyzed our field data using ArcGIS. Farms made up the majority of developed area around the conservancies, and were primarily fenced and active, though more than a quarter were abandoned with un-viable land. As population increases, so will the density of development around the conservancies if no zoning laws are enacted. Climate change and subdivision have decreased the amount of pastoralism in the area, giving rise to large amounts of agriculture, as evidenced by dominant land use in the area. Farms are responsible for the majority of the fenced land surrounding conservancy boundaries and use massive amounts of water, consequently degrading the land and polluting the environment. Collectively, these actions further degrade the viability of dispersal areas outside conservancies, and subsequently fragmenting habitats within the Amboseli Ecosystem. Without immediate action on the part of the government to halt the encroachment and development around conservancies and other key dispersal landscapes, the Amboseli ecosystem will collapse.



The Florida Undergraduate Research Journal

Emmaline Blikstad

Florida Gulf Coast University, Fort Myers, USA

Abstract (Posters)

This poster presents the Florida Undergraduate Research Journal on behalf of FURA and the student Editorial Board. The dissemination of student research is vital for scholarly advancement and a wider circulation of knowledge. However, many students face a dead end in publishing their research beyond a campus journal. FURJ was created to bridge this gap. Under the umbrella of the Florida Undergraduate Research Association, this poster focuses on the opportunity that FURJ offers students across the state to submit their research for publication, regardless of their discipline. It presents the rigorous, tiered review process consisting of the Executive Editor and Editorial Assistant, the Editorial Board, and a disciplinary reviewer. This process begins with the Editorial Board which consists of undergraduate student volunteers from across Florida who review submissions for general problems, vote to send a submission back to the author or on to a faculty reviewer, and provide input for the journal's cover, while faculty reviewers from across Florida institutions specify their comments to disciplinary content. After student authors clear each tier of the review process, their submissions are published within the annual journal. Finally, this poster presents opportunities for students to serve on the Editorial Board. Students on the state-wide Editorial Board learn to locate major and minor problems within a submission and gain inside access to the process of scholarly publication. The Florida Undergraduate Research Journal is committed to the publication of undergraduate research, the scholarly advancement of students and faculty, and the professionalization of students.



Therapeutic Content on Social Media's Effect on Perceived Anxiety: A Survey Of Daytona State College Students

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Abstract (Posters)

Researchers have previously explored intersections between ASMR viewing and perceived anxiety. Other researchers have found that ASMR may decrease anxiety (Eid et al., 2021; Park & Lim, 2022; Hu et al., 2022). The goal of the present study was to determine if college students who viewed ASMR on TikTok or YouTube were less anxious than those who do not view ASMR. To do so, researchers conducted a survey consisting of 66 Daytona State College students; all of which were asked about their relationships with ASMR content as well as their typical levels of perceived anxiety. The data retrieved from this study indicates that those who consume ASMR content, in contrast with those who do not, experience higher levels of difficulty regarding sleep patterns. Based on these findings, future research is expected to be conducted in order to further document the psychological effects of ASMR content consumption.



Computational Methods for the Determination of Analytical Ground-State Solutions to the Heisenberg Hamiltonian

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Abstract (Posters)

Using a combination of computational methods and a Heisenberg Hamiltonian, we can rapidly iterate through different lattice configurations to build phase diagrams and simulate spin waves. One of the major obstacles to performing detailed analytical calculations for spin waves is the tedious and laborious setup for different lattice configurations. Changing a singular parameter or making a small mistake could drastically alter the results for the entire configuration. The program being developed aims to solve these significant issues by streamlining the entire process. This python library, in the final stages of development, allows a researcher to visually create a sub-lattice with interactions and rapidly simulate those configurations. This program has already saved time and resources to produce simulations for sub-lattices such as the Lieb Lattice, square lattices, chains, and many more. In the past version of the program, we have been able to extract the frequencies and phases diagrams for any valid configuration. This information has been crucial in creating a more holistic understanding of different lattices. Currently, we are working on finding the intensity of each of the waves produced in order to experimentally verify our theoretical results. We hope that, by making the whole process more efficient, other researchers will greatly benefit from this program.



Murine norovirus infection of neonatal mice is a robust model system for studying norovirus pathogenesis

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University of Florida, Gainesville, USA

Abstract (Posters)

Norovirus is the leading global cause of virally induced gastroenteritis across all age groups. Despite the prevalence, there is no licensed vaccine and little is known about norovirus disease mechanisms. Since the investigation of human norovirus is limited, the field uses murine norovirus (MNV) to study norovirus pathogenesis. Our lab discovered that genetically wild-type, neonatal mice develop acute, self-resolving diarrhea upon infection with MNV. This course of infection accurately mirrors that of human noroviruses, enabling the study of norovirus pathogenesis in a natural host. Using this small animal model, we can characterize virulence profiles of multiple MNV strains which will accelerate our ability to identify virulence determinants using comparative virology. We've previously determined that strains MNV3 and CR6 are attenuated compared to strain MNV1, despite their high degree of genetic similarity. Here, we fully characterized a MNV strain called WU23, which was virulent in neonatal mice, causing a transient reduction in weight gain and self-resolving diarrhea. It shared other key properties with MNV1, including infection of subepithelial intestinal cells and extraintestinal dissemination. However, in contrast to other strains, it caused intestinal disease in type I IFN-deficient adult mice, making it the most virulent strain available to date. Overall, continued understanding of these diarrheagenic strains should provide novel insight into the mechanisms causing norovirus disease.



Assessing protein adsorption and electrochemical properties of thin film and nanostructured electrodes

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Abstract (Posters)

Nanostructured electrodes demonstrate decreased impedance, offer larger effective surface area for bioelectrodes, and increase charge storage capacity. This results in safer and more efficient stimulation and recording when compared with non-nanostructured bioelectrodes. With recent developments in nanostructured electrodes as a method of addressing neural injury, there is a need to assess their performance in biological conditions and to measure the interactions of the electrode surfaces with biological molecules such as proteins that are relevant for future clinical application. Protein adsorption plays a significant role in the functionality and properties of these electrodes, and less adsorption is ideal for longer-lasting and functional electrodes. We aim to assess the properties of protein adsorption on untreated and incubated Platinum, Gold, and Titanium thin film (TF) electrodes and provide a comparison with protein adsorption on a Platinum nanostructured electrode. This will be accomplished by incubating the electrodes in a protein solution of 300 ug/mL of BSA in DI water at 37°C. Protein structures will be visualized on the electrodes via ellipsometry and optical microscopy. Then, a Bradford Protein Assay will be conducted using the protein samples to assess protein adsorption onto the TF and nanostructured electrodes. Gold TF electrodes had the lowest protein adsorption compared with Platinum and Titanium TF electrodes, and Platinum nanostructured electrodes had less protein adsorption when compared to TF electrodes. This suggests that Gold is a promising material for developing nanoelectrodes, along with the advantages of incorporating nanostructures into electrodes for increased durability and functionality for clinical use.



Gender And Respectability During The Famines That Ravaged Colonial India: A Social And Cultural Analysis

Maya Topiwala

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Abstract (Posters)

Historically and presently, non-western peoples will change the language and terminology they use while publicly speaking to appeal to a Western audience. Many non-Western works were orally passed down from generation to generation. When these works were written down, parts were whitewashed, rewritten, or parts were erased. While physical works were manually changed, non-Western speakers subconsciously alter their speech to be respected by Westerners. South Asian colonization forced South Asian leaders to reshape their arguments to be acceptable within the boundaries of white, Western standards. Women were largely excluded from speaking about issues, and centuries later, their labor and their work is being recognized and valued by Western and non-Western scholars alike. This project investigates how the impact of British colonization in South Asia impacted the storytelling and language patterns of North Indian men and women. The paper further examines a social and cultural analysis of the relationship between gender and labor, mostly focusing on the famines that ravaged South Asia throughout the late 1800s and early 1900s. The second question on inquiry is how the famine in South Asia affected women. By exploring the differences in gender perception by the West, more specifically the British, and the East, in this case, North India, during various famines in the late 1800s, scholars can better understand how gender was used as a tool to divide South Asians alongside caste, class, and colorism.

Keywords: colonization, respectability, non-Western communication, women's labor, storytelling, famine



Death rate of African American and White Women diagnosed With Triple-Negative Breast Cancer in counties with populations of 250 thousand-1 million in America.

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Abstract (Posters)

Triple-negative breast cancer (TNBC) is a very aggressive disease that affects women and can lead to high death rates. It affects women of different ages, but mostly common in women younger than 40 years old. Triple-negative refers to cancer cells that lack the receptors known to be involved in breast cancer. TNBC show a high rate in African Americans that may be due to racial disparities such as obesity, poverty, or genetic inheritance. This study is important in understanding disparities in TNBC between African American and white women. Utilizing the Surveillance, Epidemiology, and End Results (SEER) database, our previous studies showed that African American women were statistically significantly dying at higher rates than their white counterparts in a larger populated county. While a smaller populated county in Georgia displayed higher death rates, the numbers weren't statistically significant. To study death rates in smaller populated areas, researchers obtained the numbers of white and black females of each age starting from 25-75 years old in 250 thousand to 1 million population counties in the US. The data showed that TNBC found in black and white women did not have a significant difference in rate of death.



Disparities in Death Rate of Younger African American Men Diagnosed with Prostate Cancer in Highly Populated Counties.

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Abstract (Posters)

Prostate cancer is one of the most common types of cancer and is the second leading cause of death among men in the United States. Research has discussed that African Americans have almost double the incidence rate and a greater chance to develop a higher grade of cancer. Prior research shows disparities in prognosis and interventional healthcare. As a result, African Americans are being diagnosed and treated at later periods of time leading to excess mortality rates due to higher grades of cancer prevalence. Research studies such as this shed light and bring attention to the issues at hand to combat these disparities. Utilizing the Surveillance, Epidemiology, and End Results (SEER) database, our previous studies showed that African American men had statistically significantly lower, more poorly differentiated grades of prostate cancer than their white counterparts in a largely populated county in Georgia. This was seen particularly in men under 75 years of age. This research endeavor identified and analyzed the disparity present in American counties regarding demographics and age. It was hypothesized that black men diagnosed with prostate cancer at younger ages would have a higher death rate than their white counterparts. The SEER database was used to extract raw patient data and analyzed according to race, age, and vital status. This data was then used to compare the vital status of African Americans with prostate cancer to their white counterparts. A significant disparity in the death rate was found in ages younger than 50.



Pride Beyond Borders: A Glimpse Into Italian LGBTQ+ Culture

Michaela O'Brien

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Abstract (Posters)

The international LGBTQ+ community has been fighting for human rights for generations. Historically, the United States has served as an international model for progress. And yet, with the passage of laws such as the Parental Rights in Education Act, commonly referred to as the “Don’t Say Gay” bill, and the precarious state of *Obergefell v. Hodges* given the overturning of *Roe v. Wade*, LGBTQ+ individuals around the world fear we are moving backward. In recent years, several countries previously considered to be progressive have become overwhelmingly conservative, politically and socially, including Italy. This study aims to identify the leading causes for this vast shift in acceptance towards the LGBTQ+ community through an analysis of contemporary queer culture in Florence, Italy. Italy is one of the only European nations that has yet to legalize same-sex marriage and install legal protections for LGBTQ+ individuals. My research indicates that the deeply-rooted influence of Catholicism on Italian culture plays a more significant role in the decisions of their parliament when compared to other countries in Europe. During a six-week study abroad experience in Florence, I interviewed four individuals identifying as Florentine and LGBTQ+. These interviews support background research which suggests that systemic homophobia embedded in the religious and political culture negatively impacts members of the LGBTQ+ community. The recent election of the far-right Prime Minister, Giorgia Meloni, further supports the conclusions of this study, and I will be returning to Florence this summer to continue my study in light of this political shift.



Mechanical testing of magnesium composites in applications of bone implants

Queenly Xie, Andres Larraza, Mehdi Razavi
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Abstract (Posters)

Magnesium-based materials have been used in bone implant settings due to their advantage of having similar mechanical properties to the bone and their biodegradability. The biodegradability of the magnesium biomaterials can reduce the need for a second surgery to remove implants when a level of bone regeneration is reached to be self-sufficient, removing the dependence on the implant. We investigate the viability of a magnesium composite (magnesium-bioglass) by testing mechanical properties before and after simulated degradation, evaluate the differences in properties compared to the mechanical properties of pure magnesium. The mechanical properties of our magnesium composite in the design of bone plate-screw, and intramedullary nails were assessed using computational modelling to simulate the biodegradation rates based on monthly time points. In addition, mechanical testing for compression was completed to assess the compressive strength compared to the software simulations' results. The results offer the longevity of using the magnesium-bioglass during specific time points, deriving the best application of the magnesium composites for orthopedic implants with different durations of recovery.



Perceptions of Celebrities

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University of Tampa, Tampa, USA

Abstract (Posters)

Many individuals with mental illness do not receive professional treatment, and fear of being stigmatized can be a deterrent to seeking help. It is possible that hearing accounts of celebrity self-disclosures could affect the public's attitudes and levels of stigma toward mental illness and help-seeking. The current study explored the relationships between hearing reports of celebrity mental illness, stigma toward mental illness, and celebrity reputation (positive vs negative). The participants (n = 356) were given a brief Qualtrics survey to complete, asking them to (a) rate their impression of specific celebrities (positive vs. negative), (b) indicate whether they've heard reports of mental illness in specific celebrities, and (c) provide their impressions of how common mental illness is amongst celebrities. They also completed measures of stigma and prior level of contact with mental illness. It was hypothesized that hearing more reports of celebrity mental illness would be associated with lower stigma towards mental illness and that a celebrity's reputation would not be significantly related to their mental illness. Data collection for this study is complete and the results will soon be analyzed.



Loss of Progranulin Results in Increased Pan-Cathepsin Expression

Abigail Anderson

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Abstract (Posters)

Background: Mutations in the progranulin (PGRN) encoding gene, GRN, cause familial frontotemporal dementia (FTD) and neuronal ceroid lipofuscinosis and is also implicated in Parkinson's disease. These mutations result in decreased PGRN expression. PGRN is highly expressed in peripheral immune cells and microglia and regulates cell growth, survival, repair, and inflammation. As well, PGRN is implicated in regulating lysosome function, however, the exact role of PGRN in lysosomal function and how this contributes to inflammation and degeneration is not entirely understood. To better understand the role of PGRN in regulating lysosome function, I examined how loss of GRN impacts lysosomal and cathepsin activity.

Method: Using mouse embryonic fibroblasts (MEFs), I performed immunocytochemistry and immunoblotting assays to analyze fluorescent signal from LAMP1 (lysosomal marker) and BMV109 (marker for cathepsin activity).

Results: GRN^{-/-} MEFs exhibit increased expression of pan-cathepsin activity relative to GRN^{+/+} MEFs, and significantly impacts expression of LAMP1.

Conclusion: The significant increase in pan-cathepsin activity in the GRN^{-/-} MEFs confirms that PGRN loss does alter cathepsin expression, which may be a result of compensatory mechanisms happening within the cell. Further investigations will include assessing specific cathepsin and GRN expression in MEFs and tissue.



Is there a difference between Self-Reported Stress among College Gamers who play Simulation, Casual, or Action-adventure games?

Nicolas Buxo, Jacinda Alvarez, Nicholas Bosma, Luna Chaker, Marcy Harding, Heather McGee, Gabrielle Rosado
Quanta, Daytona, USA

Abstract (Posters)

Researchers have previously explored intersections between gaming and self-reported stress (Bondoc, 2020; Ajami et al., 2022). For example (Pallavicini et al., 2021) reported that out of fourteen gaming genres, eight of them had reduced levels of stress and anxiety. The goal of the current research is to determine which gaming genres more effectively reduce stress levels among college students. The researchers used a modified version of Sheldon Cohens' Perceived Stress Scale (PSS) (Cohen et al., 1983) to examine the perceived stress levels of Daytona State College students. The data from the survey indicated that more than any other genre, simulation gamers reported the highest levels of stress for most of the PSS Likert Scale statements. These findings supplemented previous studies regarding stress and gaming (Pallavicini et al., 2021; Saleem et al., 2012). Future researchers should investigate why simulation gamers reported higher levels of stress and anxiety by recording the perceived stress of simulation gamers before and after gameplay.



Self-Presentation on Hinge Versus Tinder: A Survey of Daytona State College Students

Sebastian Perkins, Yireh Martinez, Natali Mendez, David Scales, Alicia Farrer, Brendan Colangelo, Richiana Franklin
Daytona State College, Daytona Beach, USA

Abstract (Posters)

Previous research has examined the curation and alteration of profile images in relation to self-presentation on dating applications. Based on previous research, the present study's goal was to determine self-presentation variance in the form of profile curation between Hinge and Tinder users. To determine the differences, the researchers surveyed 70 students at Daytona State College using an online instrument that assessed the POSS Scale (Fullwood et al., 2016), the Social Physique Anxiety Scale (Mattick & Clarke, 1998), and the Social Interaction Anxiety Scale (Hart et al., 1989) in order to measure how participants felt about their self-presentation online and their satisfaction with their dating app profile. The results of this study suggested that Hinge users demonstrated lower confidence in their self-presentation compared to Tinder users. While the researchers' results were limited by a low sample size of Hinge respondents, and dating app users overall, the data suggests that college students with Hinge may be more uncomfortable sharing themselves fully online, while those with Tinder could be more confident in their self-presentation.



TikTok Too Long?: Examining Time on TikTok, Psychological Health, and the Moderation of TikTok Motivations

Veronica von Fedak, Mickey Langlais
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Abstract (Posters)

Despite nearly 80% of adults using social media daily, studies have shown that social media use predicts psychological distress. Additionally, the motivation to use social media has been inconsistently studied, with varying motivations depending on the platform. Moreover, these motivations have not been directly investigated regarding psychological health. Importantly, few studies have focused on how and why people use TikTok and how these variables relate to psychological health, despite the growth of TikTok over the past two years. Therefore, the goal of this study is to examine the relationship between TikTok use and psychological health, and test if motivations to use TikTok moderates this relationship. This quantitative study involved participants completing an online survey (N = 199) answering questions about how and why they use TikTok and psychological health. Regression analyses revealed that time on TikTok was negatively associated with psychological distress, depression, and stress. Although, regression results illustrated that motivations for using TikTok did not consistently predict psychological health, the motivations did moderate the relationship between time on TikTok and psychological health. More precisely, individuals who spent more time on TikTok and were motivated to be part of the information loop reported more stress compared to those without that motivation and who did not spend a significant amount of time on TikTok. Spending time on TikTok appears to be stressful, particularly for those people who are motivated to use TikTok in order to minimize fears of missing out. Recommendations for using TikTok will be discussed.



Higher Incidences of Poorly Differentiated Levels of Prostate Cancer in African American Males Regardless of Age or Population Size.

Na'Chelle Ferkovich, Maya Byfield
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Abstract (Posters)

Prostate cancer (PC) is one of the most prevalent types of cancer in the United States, with African American men being one of the most impacted populations. African American males (AAM) are 67% more likely to develop prostate cancer than European American men (EAM). Existing research shows greater mortality rates for AAM and indicates the need for research on disparities and intervention strategies. This study explores the impact of age on severity for AAM versus EAM. It is important to study this area in order to reveal possible avenues of intervention involving access to care, discrimination, and biological dispositions. Utilizing the Surveillance, Epidemiology, and End Results (SEER) database, our previous studies showed that AAM had statistically significantly lower, more poorly differentiated grades of prostate cancer than their white counterparts in a largely populated county in Georgia. This was seen particularly in men under 75 years of age. It was hypothesized that there are higher incidences of poor grades of PC in younger AAM males. The SEER database was used to collect statistical information focusing on counties of all sized populations. Data was collected on race, age of incidence and PC grade level. It was found that poorly differentiated grades of PC were found in higher proportions of AAM at all ages in counties of all sized populations.



Disparities in the death rates of African American and White women diagnosed with Triple-negative Breast Cancer in American counties with a population above one million.

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Abstract (Posters)

Triple-negative breast cancer (TNBC) is a type of breast cancer that lacks the receptors for estrogen and progesterone hormones that are commonly found in regular breast cancer cases. These receptors make TNBC a type of cancer with less options for treatments. However, chemotherapy is still an effective treatment for TNBC patients. TNBC appears to be higher in African American (AA) women due to the health disparities that may be caused by lifestyle factors such as stress due to poverty or lack of healthcare access that can lead to aggression of the disease. This study is important in understanding differences in TNBC between African American and white women.

Utilizing the Surveillance, Epidemiology, and End Results (SEER) database, our previous studies showed that African American women were statistically significantly dying at higher rates than their white counterparts in a larger populated county in the state of Georgia. While a smaller populated county also displayed higher death rates, the numbers weren't statistically significant. It was hypothesized that younger black women of higher populated areas have more significant percent of death. Using data collected on younger and older AA TNBC patients in >1 million population counties, it was found that TNBC in AA women is higher in both, younger and older patients. However, in younger patients, the gap between percent death is larger and findings also show that there is a significant difference of percent death in a million population counties compared to lower population counties.



Dating Apps and College Students: Effects on Self-esteem

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Abstract (Posters)

Due to dating apps' popularity, researchers have previously explored intersections between dating apps and self-esteem. Previous research has suggested that dating apps may have a negative effect on self-esteem. According to Jessica Strubel and Trent Petrie (2017) 1,300 college students (men = 31; women = 69) were asked about Tinder use and its influence on their self-esteem, the researchers found that "Tinder users, regardless of gender, reported significantly lower levels of satisfaction with face and body and higher levels of internalization, appearance comparisons, and body shame and surveillance than non-users" (p.34-35). The goal of the present study was to examine the self-esteem levels between dating app users and non-dating app users among college students. Researchers surveyed sixty-nine students at Daytona State College using an instrument that assessed Self-esteem. The results of the study suggest that there is a strong relationship between the self-esteem of Daytona State College students and the use of online dating apps. While our results were limited by a small sample size, data still suggested that perceived self-esteem can be affected by the use of online dating apps.



COVID-19 QUARANTINE AND ITS EFFECT ON ROMANTIC RELATIONSHIPS

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Abstract (Posters)

The COVID-19 virus hit in 2020, affecting everyone worldwide. In America, between the time frame of April and July 2020, there was a lockdown initiated that resulted in people being forced to quarantine from others. This forced many geographically-close romantic relationships to become long-distance. This study focuses on how these romantic relationships were impacted due to the COVID-19 pandemic and its resulting quarantine. A survey was distributed asking 256 college students to assess their behaviors before and during the lockdown period. The communication technology used between the couples and its frequency of use was correlated with the satisfaction of the relationship. Both synchronous and asynchronous communication methods were compared and maintenance behaviors between the couples were analyzed. This study found that relationship satisfaction significantly correlated with the use of certain communication technologies, with synchronous proving more effective than asynchronous. In addition, the COVID-19 quarantine did play a role in ending relationships in some way as well as changing the maintenance behaviors couples utilized while being long-distance. This study offers a new way to look at how relationships can suffer or be maintained when couples are forced to be long-distance.



Course Modality and Stress Effects

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Abstract (Posters)

COVID-19 changed the way students learn, with the majority of students transitioning to online education. Other researchers have previously explored the effects of online learning during the pandemic. This study continues to measure the potential difference in stress levels between online and face-to-face course modalities outside of COVID-19. The researchers created a survey using a modified version of the Perceived Stress Scale (Cohen, 1983) in order to measure stress levels in Daytona State College students. The researchers surveyed 86 students and assessed perceived stress between two different groups based on their course modality. Data from the study suggests that an online classroom setting is slightly less stressful compared to a face-to-face classroom, but not to a statistically significant degree. The study was limited to a small sample size and administered at a single college. Future researchers could attempt to improve outreach by surveying students at multiple colleges with larger populations.



Instagram Use and Self-Esteem

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Abstract (Posters)

Previous researchers have examined the impact of Instagram and other social media sites on mental well-being and its impact on users' self-esteem. Previous researchers have found a variety of results, both negative and positive, regarding Instagram's impact on self-esteem. This study aimed to evaluate the relationship between passive and active Instagram use and how it connects to the self-esteem of Daytona State College students. Researchers conducted a survey to assess if or how Instagram was used and utilized a modified Rosenberg Scale (Rosenberg, 1965) to collect the self-reported self-esteem of ninety-nine Daytona State College students. Active Instagram users had a higher average self-esteem when compared to passive users. The results of the study indicated a connection between more active Instagram use and positive self-reported self-esteem of the survey participant. This finding would support the findings of Trifiro and Prena in 2021 which determined that active Instagram users had higher self-esteem and sense of well-being. However, for active use specifically, the results are limited due to a small sample of active users.



Doors of Doom: An International Comparison of Domestic Violence

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Abstract (Posters)

Domestic violence is an ongoing war that women face all over the world. Through a qualitative literature review comparing the United States and India, factors such as social structures and norms, politics, psychology, gender, race, and economic status are studied to analyze the trends of domestic violence in both an individualistic and collectivistic society. The United Nations defines domestic violence as “a pattern of behavior in any relationship that is used to gain or maintain power and control over an intimate partner”. This definition is compounded by factors such as faith, gender, race, and sexual orientation. Domestic violence also involves abuse concerning emotional, economic, and financial elements affecting almost all social perspectives. India is collectivistic, a post-colonial society that follows a patriarchal rule. A multitude of campaigns has been advanced to educate the overall global community about what exactly happens behind the closed doors of a house. Contrastingly, the United States- a country with a more individualistic approach - has expectations of lesser domestic violence. However, this is not what the statistics show. Again, components related to social, financial, and psychological cues were evident, as women from lower socio-economic statuses were seen to be easier targets. The effects of domestic violence are extremely detrimental to a woman’s mental, physical, and emotional health. The bruises on a woman’s body tell a story much deeper than what the media sees or reports.



Are zoning-related height restrictions barriers to affordable housing? A case of the University Village District in Tallahassee, Florida.

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Abstract (Posters)

Housing affordability and insecurity for college students is a grave issue that has often been ignored. Investigating zoning policies in popular neighborhoods for students may help determine how to effectively increase housing affordability. The University Village zoning district, commonly referred to as CollegeTown, is a popular, high-traffic neighborhood for college students at Florida State University and is an ideal case study for analyzing the relationship between building height restrictions and housing unaffordability. The research asks, “Are zoning-related height restrictions barriers to affordable housing? The researcher will determine the effectiveness of the height ordinance by reviewing planning literature, analyzing publicly accessible local building permits, and conducting an observational audit of the district. Preliminary findings indicate that zoning-related height restrictions are uniquely low. From the City’s survey of 40 student housing developments, the average height of housing complexes is 12 stories, well below the current height caps. In terms of public policy recommendations, increasing the height maximum will increase the housing supply and promote housing affordability for Tallahassee students. Revising the zoning regulations up to 17 stories would maintain the “urban fabric” of the area, which is constrained by the Florida Department of Education building and the Doak Campbell Stadium, while also prioritizing housing affordability for students.



Tricks Not Treats: *Wolbachia's* Manipulation of Sex in Infected *D. Subquinaria* Offspring

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Abstract (Posters)

Wolbachia are gram-negative maternally transmitted bacterial endosymbionts that are found in upwards of 60% of arthropods. Here, we aimed to determine the phenotype expressed in *D. subquinaria* when they are infected with a strain of *Wolbachia* originally found in a closely related species, *D. recens*. *Wolbachia* infection is expressed as one of two phenotypes: Cytoplasmic incompatibility (CI), which causes the deaths of most infected offspring, and Male Killing (MK), which causes the death of the sons of infected males. Additionally, we tested how *Wolbachia* interacts with the varied genetic backgrounds of *D. subquinaria* populations, as well as how that would influence which phenotype is displayed in infected offspring. We tested a total of 15 lines of *D. subquinaria* by taking 2 to 3 infected females and crossing them with 1 uninfected male. The F1 offspring from those crosses were collected, and the sex distribution per line's offspring was determined. Ten lines produced a significant number of flies ($n > 10$). We tested for *Wolbachia* infection by using PCR and determined the F1 generation was positive for *Wolbachia*. All lines expressed evidence of the MK phenotype, and four lines showed nearly complete MK (98-100% female). The remaining six expressed partial MK (60-84% female). In the future, we aim to determine whether there is a genetic suppressor of the MK phenotype in *D. subquinaria*, as well as to generalize the results of this project to further understand the population dynamics of *Wolbachia*-infected flies.



Using XRD to Determine Silicate Sources of Sediments Following the DHW Spill

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Abstract (Posters)

Following the Deep Water Horizon Spill of 2010, a large sedimentation pulse known as MOSSFA occurred. The event resulted in increased levels of sediments, siliceous organisms, and foraminifera accumulating on the sea floor. In the years 2010-2012, a significant increase in biogenic silica content in sediment was identified in areas surrounding the spill. The goal of this project was to use XRF and XRD techniques to create a new way of identifying this biogenic silica pulse, as well as find baseline measurements of silicate levels before the spill. Using archived sediments from 3 well documented sites in the Gulf, XRF was used to find the amount of silica in ppm. The sediments were then analyzed using XRD to determine the mineral composition of the sediment. A high amount of Si from XRF corresponding with a low amount of quartz from XRD indicates the missing percentage of silica is contained in biogenic silicates. Our baseline measurements provide new quantifications of sedimentation following the spill, as well as lay the unprecedented foundation for XRD use in determining deep sea sediment composition.



A Case Study of “Just Compensation” in Tallahassee, Florida

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Abstract (Posters)

Residential displacement resulting from large public infrastructure projects can lead to the demolition of close-knit, working class neighborhoods. Such displacement often disproportionately undermines the social and cultural fabrics of Black communities. Local and state governments employ the right of eminent domain to acquire private property for public purposes such as infrastructure and economic development projects. Governments are mandated to provide “just compensation” in the form of moving and relocation benefits to displaced owners and renters of demolished properties. Past literature examines appropriate amounts of compensation for displaced constituents under local, state, and federal requirements to ensure private property rights are protected. This study examines “just compensation” practices by focusing on the displacement of a vulnerable historically Black neighborhood in Tallahassee, Florida. The research evaluates the appropriateness of compensation payments by comparing previously compiled renter compensation agreements to applicable federal regulations, such as: the Universal Relocation Act and the Fair Housing Act. Preliminary findings indicate the City of Tallahassee and Blueprint Intergovernmental Agency, a joint city-county agency, failed to appropriately apply United States Department of Housing and Urban Development’s federal standards.. As compensation levels vary based on funding sources, policymakers should be informed about varying compensation standards, provide incentives to empower local citizens to actively participate in government proceedings, and advocate to protect federal standards to encourage the preservation of historically Black neighborhoods.



“Baby, it’s cold online”: A qualitative investigation about what is and is not appropriate to do on social media in romantic relationships

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Abstract (Posters)

Social media remains popular in the U.S. and globally, with 82% of individuals in the U.S. having at least one social media profile. It is also common that the use of social media in relationships can be beneficial or detrimental for relationship quality depending on the behavior. Although posting photos and sharing one’s relationship status on social media can be beneficial, oversharing information or posting inappropriate content on social media can be bad for relationships. However, these studies have relied on empirical data, without defining what inappropriate or excessive content is. Additionally, sometimes individuals hide their relationships on social media, which likely has implications for the quality of that relationship. Therefore, the goal of this study is to understand what acceptable social media behavior is when in a romantic relationship. Participants in this study participated in one-one-one interviews (N = 41), answering questions about what is appropriate and inappropriate social media behavior in romantic relationships. Data was analyzed using thematic analysis. Qualitative results revealed five themes about individual behaviors and five themes about relationship behaviors that are appropriate on social media. Participants also provided 12 themes about what not to do on social media when in a relationship including posting provocative pictures, posting relationship issues, and responding to thirst traps. Last, participants provided three rules about what not to do on social media and nine rules about what you should do on social media when in a romantic relationship. Implications for romantic relationships will be discussed.



“And Ye Shall Be as Gods”: Japan’s Pop Media Complex (JRPGs, Anime, Manga, etc.) & the Cultural Shift from Adventitious Divine Proclivity to Zealous Rebuke of Providence

Sean Kohut

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Abstract (Posters)

Mediums in the form of Japanese roleplaying games (JRPGs), anime, and manga relay an unorthodox perspective relative to Western society’s traditional values via stories that challenge staunch religious, philosophical, and societal point of views. In SquareEnix’s JRPG Xenogears, Creative Director Tetsuya Takahashi utilizes Freudian, Nietzschean, and Gnostic themes to convey a Humanist message through his tale of troubled characters beset by a doomed world, at the behest of a manmade “Deus.” The “god-slaying” trope apparent within Hideaki Anno’s anime Neon Genesis Evangelion centralizes on three adolescents who are weaponized by the government to combat “Angels,” cosmic terrors seemingly bent on destroying the planet. Japan experienced an economic expansion after WWII; however, an economic crash in the 1980s led to “The Great Regression,” where adults of all ages indulged in traditionally childhood activities. The emerging narrative of slaying God(s) within Sci-Fi & Fantasy narratives began to blossom in correlation with “The Great Regression.” Currently, the West is experiencing “The Great Resignation,” which, like Japan in the 1980s, is eschewing traditional adulthood and work culture. From thriving streamers to cosplayers, from avid fandoms to gamers, is embracing nontraditional paths of adulthood. This shift in Western culture raises questions concerning these seemingly “child-like” overindulgences as a link to escapism and egocentrism, or as a response to the modern age’s greatest fears like that of a doomed humanity, perhaps revealing that the U.S. is experiencing its own “Great Regression.”



“PLZ Tell Me Fangz”: Fanfiction, coded language, and harmful misrepresentation

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Abstract (Posters)

The use of coded language in Sci-Fi & Fantasy fanfiction allows minorities (people of color, the LGBTQ+ community, people with disabilities) to safely discuss their lived experiences without risking exposure and persecution. Fanfiction is utilized by today’s youth as well as by many authors throughout history to covertly represent minorities. The popular fanfiction *My Immortal* (2006) is a satirical piece set in the world of Harry Potter. *My Immortal* has since become a standard of what not to do in fanfiction history. Despite this, that story has led to the creation of thousands of spin-off fanfictions. Hans Christian Anderson’s *The Little Mermaid* used a preexisting motif to tell a story about life as a queer man, without the risk of his exposure and persecution. Currently, many young people use websites such as Articles of Our Own (Ao3) to anonymously post their own written works to express their experiences as underrepresented minorities. We can begin to understand the modern application of fanfiction by examining the current state of minority representation in fictional narratives, the history of fanfiction, and the coded language used in modern fanfiction. Currently, various critiques suggest that the misrepresentation of minorities in fictional narratives are misleading and potentially harmful. Such misrepresentations (queerbaiting, tokenism, disability and POC erasure, racist and antisemitic caricatures) contribute to the growing use of fanfiction. Situating fanfiction in both historical and contemporary contexts reveals why Gen-Z uses fanfiction to create and inhabit a safe space and sense of community for underrepresented minorities.



"Nostalgia-Net: Generative Systems, Nostalgia, and the Resurgence of User-run Online Spaces"

Sophia Alberts

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Abstract (Posters)

The rise of monopolized social media and the modern internet has quelled methods of self-identification via personalized webpages. By using Jonathan Zittrain's generative systems and Mark Fisher's characterization of the internet as nostalgic, we can better understand the movement towards forms of online self-expression mirroring those of the early Internet. Zittrain's generative systems are adaptable networks inherently receptive to spontaneous innovations designed by their users, which propagate user self-expression. Fisher's nostalgia describes a rift between the rapid advancement of online communicability via networked machines and the simultaneous slowing of cultural development, creating the nostalgia which permeates online culture. With these concepts, we can explore the loss of user agency in shaping online spaces; social media users are limited in their ability to freely accessorize their profiles. This restrictiveness is in direct contrast to the generative customizability of personal sites preceding modern social media networks, such as GeoCities and Myspace. In nostalgia-fraught attempts at reviving an online culture paralleling the liberated, generative past, many social media users have appropriated services such as Carrd to create personal biographies and directories that are aligned with the individuality of the old internet. Attempts to recreate user-run online spaces, including the Twitter analogue Mastodon, and the restoration of GeoCities into the passion project NeoCities have been subsumed by the domineering social media networks; however, these new online spaces represent a response of online communities against the restrictions imposed by conventional social media networks.



The Bathy-Drone: An Autonomous Uncrewed Drone-Tethered Sonar System

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Abstract (Posters)

A unique drone-based system for underwater mapping (bathymetry) was developed at the University of Florida. The system, called the “Bathy-drone”, comprises a drone that drags, via a tether, a small vessel on the water surface in a raster pattern. The vessel is equipped with a recreational commercial off-the-shelf (COTS) sonar unit with scanning capabilities and logs GPS-referenced sonar data onboard. Data can then be retrieved post mission and plotted in various ways. The system provides both isobaths and contours of bottom hardness. Extensive testing of the system was conducted on a 5 acre pond located at the University of Florida. Prior to performing scans of the pond, ground-truth data were acquired with an RTK GNSS unit on a pole to precisely measure the location of the bottom at over 300 locations. Accuracy and resolution of the system was assessed with comparison to the ground-truth data. The Bathy-drone measured an average 21.6 cm deeper than the ground truth, repeatable to within 2.6 cm. The results justify integration of RTK and IMU corrections. It was found that there are numerous advantages of the Bathy-drone system compared to conventional methods, including ease of implementation and the ability to initiate surveys from the land by flying the system to the water or placing the platform in the water. The system is also inexpensive, lightweight, and low-volume, thus making transport convenient. An area of more than 10 acres was surveyed using the Bathy-drone in one battery charge and in less than 25 min.



Assessing heterophil to lymphocyte ratios in relation to age and body condition in the Russet-crowned Warbler

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Abstract (Posters)

This study aimed to evaluate the relationship between two metrics of stress (leukocyte profiles and body condition) of stress in relation to age. We expected (1) the H:L ratio to increase in birds in poor condition (low mass-size residuals) and (2) for first-year birds to have a higher H:L ratio and lower condition in comparison to adult birds. We studied the Russet-crowned Warbler (*Myiothlypis coronata*), a common species found in tropical moist montane forests of the Andes. Blood samples and morphological measurements were collected for individuals across eight landscapes spanning a 1,700-3,100 elevational meter gradient in Northern Peru. After fixing blood smears were stained and examine under a microscope to identify and count white blood cells, which were calibrated among trained observers. We found no relationship between the H:L ratio and body condition, although both metrics of stress increased in first-year birds compared to adult birds. These results help inform our understanding of relationships among different physiological pathways and highlight the high levels of stress experienced by animals in their first year of life.



Gender Differences in Diagnostic Experience with Young Adults Diagnosed with Autism Spectrum Disorder

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Abstract (Posters)

The current reported diagnostic gender ratio for Autism Spectrum Disorder is 4(males):1(female), fluctuating throughout the spectrum, however, it has been found that there is likely a smaller overall gender gap than reported (Loomes et al., 2017). Further, there is also a gender-based diagnostic discrepancy addressed directly in The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) stating that "...girls without accompanying intellectual impairments or language delays may go unrecognized, perhaps because of subtler manifestation of social and communication difficulties." (American Psychiatric Association, 2013). This research study focuses on the possible diagnostic gender bias and the effect that this gender gap has on females compared to males throughout the diagnostic process. It is hypothesized that females on the Autism Spectrum will report more negatively perceived experiences than males regarding diagnostic experience. The research is being completed through a survey mechanism that has been emailed to consenting organizations who then shared it with their members. Data from the survey is currently being collected and preliminary analysis reveals that females tend to engage in more mimicking behavior than their male counterparts. Preliminary data also shows that females were diagnosed at much later ages than their male counterparts.



"To test or not to test": A qualitative investigation on the effects of educational assessments on children's development

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Abstract (Posters)

Many children go through formative assessments, particularly when being tested for learning disabilities or giftedness. Testing children for learning disabilities or whether a child is gifted is standard practice in school psychology that serves to best assist children's academic achievement. However, it is unknown if the testing process itself may influence children's wellbeing. The goal of the study is to understand to what extent educational testing impacts children's development. This qualitative study involved interviewing school psychologists (N=3) and students who have been tested by a school psychologist (N=25). Data was analyzed using thematic analysis and axial coding. Out of the students who had been tested, nineteen of them were solely tested on giftedness and the remaining participants were tested for a learning disability, ADHD, and Asperger's. 64% of students were unaware of being tested. Participants reported positive feelings about the testing, such as being relaxed and/or entertained, and negative feelings such as feeling exhausted, anxious, and/or under pressure. Participants reported interpersonal and relational effects on their development, such as feeling pressure from others to succeed, self-conscious, boosting their ego, or developing a superiority complex. Regarding parents' conversations on testing, some discussed the testing with their children beforehand. Some of these conversations were positive, such as encouraging them while others were negative focusing on their success. Many parents waited until after the testing to talk about it with their children. Implications of children's testing in the context of school psychology will be discussed.



Behavioral and Physiological Effects of PFAS Exposure on F3 Zebrafish Larvae

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Abstract (Posters)

Per- and polyfluoroalkyl substances (PFAS) are environmentally significant chemicals suspected to have effects on growth, development, reproduction, and neurobehavior. “Forever chemicals” such as PFAS tend to persist in blood and serum, and may easily cross into the placenta, potentially causing exposure at critical periods of development. This phenomenon is examined generationally in larval zebrafish (*Danio rerio*), an ideal NIH-validated model organism for human genomics and developmental toxicology because of their rapid development and high fecundity. Our goal is to determine the phenotypic and transcriptomic hereditary effects of PFAS exposure on the F3 generation of larval zebrafish by examining survival, behavioral, and abnormality endpoints. In previous studies, the F0 generation of larval zebrafish were directly exposed to PFOS, PFOA, and a mix of both at low, environmentally relevant concentrations from 0-700 ng/L. A subset of these larvae were raised to adulthood and spawned through the F2 generation, producing the F3 larvae. Larvae were not exposed to PFAS after the F0 generation to observe transgenerational effects in the F2 and F3 generations. The significance of survival rates in F3 larvae varied between Days 1, 3, and 5. On Day 5, we evaluated larval behavior, morphological abnormalities, and collected larval samples for downstream transcriptomic analysis. Larval behavioral patterns were affected differentially by each chemical. Outcomes in zebrafish can elucidate biomarkers of exposure in humans, such as changes in metabolites and/or signaling pathways. On a larger scale, outcomes can inform legal limits for PFAS concentration in water, consumer products, and other sources.



Experimental and Computational Study for Notch Effects on the Rotating and Bending Fatigue Behavior of 304L Stainless Steel

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Abstract (Posters)

Experimental and Computational Study for Notch Effects on the Rotating and Bending Fatigue Behavior of 304L Stainless Steel

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Abstract:

304L Stainless Steel is a “18-8” chromium-nickel austenitic stainless steel that is economical, has high heat resistance, and has excellent corrosion resistance. It is widely used in many applications ranging from cooking pans and commercial applications to automotive and aerospace applications. 304L Stainless Steel is also used heavily in load bearing applications where it is subjected to cyclic loading (fatigue loading), such as in automotive and aerospace applications in the form of fasteners or structural components. Most of these applications will be affected by stress concentration due to notches resulting from complex geometry. Therefore, it is necessary to understand the fatigue behavior of this material to better evaluate how notches can influence the life of the component. In this study, the fatigue behavior of 304L Stainless Steel is being investigated under rotating-bending cyclic loading. The testing is performed at different stress amplitudes ranging from 350 – 500 MPa to obtain its durability. A finite element analysis (FEA) for this material was conducted using NX advanced simulation to simulate the stress concentration effects under the specified loading. The experimental results from this study will be compared against the FEA results to verify the validity of the results obtained from the numerical models.



Water Quality and Economic Development: A Review of Time Series Methodologies

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Abstract (Posters)

Wastewater treatment plants use biochemical oxygen to help clean our reclaimed, industrial, and domestic water supply. The United States is expected to see a rise in biochemical oxygen demand (BOD) from industrial, manufacturing firms, and agricultural production during 2021-2022 by nearly one percent. Moreover, there were over four hundred more National Pollution Discharge Elimination System facility permits purchased during the same timeframe. Interestingly, regulators have raised the maximum allowed point source chemical pollutant for permit holders. As a result of the poorer water quality standards, sewage treatment plants require more biochemical oxygen to combat water pollution. In an attempt to uncover and analyze the literature addressing water quality issues, this research asks, "Which model best fits the hypothesized relationship between biochemical oxygen demand and gross domestic product (also known as the Kuznets Curve hypothesis)? Drawing from economic development, environmental, and public health literature, key scholars suggest the 1995 Grossman and Krueger linear regression model best fits the hypothesized relationship and presented the generalized least squares as the recommended technique. In terms of policy recommendations, preparing future researchers with statistical training and proper techniques are precursory steps in addressing today's water quality crisis as well as a call for reformation of the 1972 National Pollution Discharge Elimination System program under the Clean Water Act. Rather than an overarching broad policy, applying acreage and pollutant standards at the local level could decrease the amount of needed BOD needed to combat water pollution in the United States.



The Drama Continues: African Americans and Representation in Hollywood Films

Wilbert Stubbs

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Abstract (Posters)

This study examines how African Americans are portrayed in Hollywood Films compared to their white counterparts. Today, the new technology and social media sites that are around now are different from how it was in the early 2000's. Within this new era of entertainment, viewers can connect with them easier than in the past. This research focuses on how African American talents are overlooked due to the privileges of their white counterparts, such as a white woman playing the role of the President's First Lady, compared to a black woman who plays the role of a maid who struggles to make ends meet. Quantitative Research methodology was used to conduct a sufficient understanding of the uses and Gratification Theory by performing a survey on how college students view African Americans and how they are presented in Hollywood Film compared to their white counterparts. The findings of this study will reveal that black actors are still not well appreciated in Hollywood film. The preliminary results expose that African Americans receive the bare minimum in roles such as maids, butlers, gang affiliates, single mothers and the list goes on. With their white counterparts and actresses selected to play African Americans, these stories perpetuate white supremacy, especially black roles. This often re-enforces the United States racial hierarchy which implements the duality that African Americans are dangerous and violent, compared to being perceived in a positive light.



Statistics at Work: Best Social Media Platforms for Public Information

René White

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Abstract (Posters)

This study examines the use of statistical methodologies to verify the effectiveness of social media and public release. The implications of this research project not only determine which online networking phase is more beneficial to government organizations but can also determine which phase can be progressive in terms of releasing important information worldwide. This study explores how many government agencies and independent businesses deliver information and struggle to determine what social media platform works best in terms of releasing certain information to receive a specified reaction. The initial hypothesis involves Twitter being the most efficient online networking phase in terms of communicating quick messages through to science enthusiasts looking for quick scientific updates from the United States Department of Energy. Quantitative Research methodology accompany an adequate understanding of the uses Gratification Theory along with the execution of an ANOVA test which is a statistical tool used to collect data so that it is compared correctly to reveal a trend. Through the lens of uses and Gratification Theory, this study explores how government agencies and independent businesses struggle to determine what social media platform works best when releasing important information.



Assessing the Detectability of Transiting Planets Around Small Stars

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Abstract (Posters)

While the Solar System has historically been the default blueprint for a planetary system in our galaxy, it is atypical in the Milky Way. Our home star is twice as large as a typical M dwarf star, and these small stars, in reality, comprise 70-80% of the galaxy's stars and host most of its rocky planets. Small M dwarf stars also differ from Sunlike stars in that they are "active" for billions of years or more: rotating quickly, flaring often, and emitting large amounts of UV and X-ray light. Activity makes transit signals more difficult to detect, and M dwarfs exhibit this behavior for thousands of times longer than a typical Sunlike star. It is very important, therefore, to understand our detection sensitivity to planets orbiting small stars. Currently, there are no published studies that quantify the difference in detectability of planets around active versus inactive M dwarfs in transit data in a systematic way. My project seeks to fill this gap in knowledge. I will be presenting my preliminary findings using simulated and TESS stellar data in the form of detectability heatmaps that vary over three parameters: (1) the size of the planet, (2) the size of the planet's orbit, and (3) the age of the star. These sensitivity maps will be broadly useful to the planet community in future searches for exoplanets.



Apparent activity in *Aedes aegypti* mosquito and its correlation with age and social environment

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Abstract (Posters)

Much work has explored the daily activity patterns of the yellow-fever vector mosquito, *Aedes aegypti*, yet both descriptive and experimental research has lacked cross-study uniformity in the most basic demographic variables. Such inconsistency in methods often produces differences in data and their interpretation. The underlying problem is that we don't know which of the many demographic variables are important determinants of activity behavior. We seek to correct this deficit in basic knowledge by quantifying the activity behavior of individual *Ae. aegypti* using "latent activity monitors" (LAMs) while systematically varying the most basic demographic variables: age, sex, and social environment. Our first experiment measures 24-hour activity patterns of individuals of separate sexes as they age. The second experiment compares 24-hour activity patterns within single-sex and mixed-sex environmental chambers. With the conclusion of these trials, a better understanding can be garnered of the possible effects of age, sex, and social environment on daily activity patterns. This work will guide future studies on the genetics that underly the activity patterns of *Ae. aegypti*. The findings will be relevant to public health issues resulting from temporal differences in human exposure to disease vector mosquitoes. Genetically modified mosquito technology might be improved by using this knowledge to better design experiments exploring the effect of genes that underlie activity.



Fishing for Friends on Social Media

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Abstract (Posters)

Trends in self-presentation in social media (i.e., Twitter and Instagram) constantly fluctuate as fads come and go, especially when one's image is being commodified. Specifically, numerous instances of celebrities and social media influencers altering their images to fit popular online trends and "aesthetics" contribute to increased blackfishing, Asianfishing, and Hispanicfishing. Some celebrities and influencers accused of "-fishing" in the presentation of ethnicity include the Kardashians, Ariana Grande, Addison Rae, Iggy Azalea, Selena Gomez, and Gigi Hadid. The present study (N = 685) investigated gender, personality, fame appeal, self-esteem, and need to belong in relation to attitudes towards the "-fishing" culture. Gender was a significant predictor of acceptance of this phenomenon and participation in it, with males less accepting compared to females. Higher scores in any of the dark triad personality types, including Machiavellianism, narcissism, and psychopathy, were significant predictors in participation in "-fishing," but not in attitudes toward it. Fame appeal, self-esteem, and the need to belong were not predictors of either attitude toward or participation in "-fishing."

Keywords: Blackfishing, Asianfishing, Hispanicfishing, social media, influencers



Unmoored: Capturing Identity, Change, and Executive Dysfunction on Film

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Abstract (Posters)

Many of the shifts in our identity are as surprising as they are inevitable. As with our bodies and our minds, it's easy to forget that our identities are in a constant state of change — that is, until a situation forces us to face ourselves and examine who we've become. For adolescents, college students included, reckonings with their sense of self come frequently; they feel seismic each time they occur.

My undergraduate thesis incorporates a short screenplay in which the central character is recovering from severe executive dysfunction, the impairment of basic skills that include working memory, mental flexibility, and inhibitory control. She confronts the question at the heart of the Ship of Theseus: have I changed enough that I am now an entirely different person than I used to be? And if so, what now?

As part of the story development process, I examined the science behind executive dysfunction and the philosophical questions surrounding identity. I also viewed films that told compelling stories about the impact physical changes can have on one's identity. My screenplay explores the ability of a change in mental health to do the same. I am currently in pre-production, preparing to turn my screenplay into a short film and anticipate that I will have a partial draft of the film by the time of the conference.



The Ecological Impacts of Invasive Cane Toads (*Rhinella Marina*) on Native Florida Species

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Abstract (Posters)

Introduced invasive species are becoming an increasingly widespread issue throughout the planet. Cane toads (*Rhinella Marina*) are a species of neotropical toad from South America known to be one of the most invasive species globally. Currently their invasive range is spreading through Florida and while populations have been studied in other countries, little to no research has been done on the toads spreading locally throughout the state. Our study took samples of twelve populations throughout Southern and Central Florida to examine morphometric measurements of their limbs, stomach contents to examine which species are at threat of predation, and examine each toad for the presence of parasites. The limb measurements show that females living on the invasion edge had statistically longer limbs, larger hearts, and less fat suggesting adaptation for increased locomotion and for males it showed larger stomachs and kidneys suggesting adaptation for increased digestion. The examination of their diets exhibited organisms from twelve different taxa including both vertebrates and invertebrates showing their nondiscriminatory predation. Acanthocephalan parasites were found in 50% of the populations including five from the South and one from the North. By examining these factors, we were able to determine how well the toads are acclimating to this new area and what ecological impacts they may have on other native species in the future.



The Role of Gender in Commemorating the White Rose

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Abstract (Posters)

On February 22, 1943, a group of university students in Munich, Germany was executed by the Nazi regime. These students were known as the “White Rose,” a non-violent resistance group that denounced the Nazis’ war crimes through anonymous leaflets and called for the German people to stand against the regime in Berlin. The group began with Hans Scholl, a young medical student who witnessed first-hand these crimes. Upon his return to Munich, he gathered a group of like-minded students – including his sister Sophie – into what would comprise the White Rose resistance. After the war ended, Hans Scholl was initially the face of the group. By the 2000s, Sophie had assumed that position in memorials and films. This study aims to understand the shift toward identifying Sophie as the primary face of the resistance, and the implications this shift has had on how the White Rose is characterized in German memory. This shift will be analyzed in a decade-by-decade study since the end of the war in 1945 and through interviews with relevant scholars. Having identified the major moments of change in the identification of this resistance with Sophie, the next step will be to search for explanations that shed light on why these changes took place. This research is indicating that the increased demand for women to be represented as agents of history may have played a role by the 1980s and 1990s, the point at which interest in the White Rose grew quickly.



The Efficiency of the Transcranial Doppler in Detecting and Categorizing Middle Cerebral Artery Vasospasms Secondary to a Subarachnoid Hemorrhage

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Abstract (Posters)

This study aims to examine the efficiency of transcranial Doppler (TCD) in the identification and categorization of cerebral vasospasms specific to the middle cerebral artery, secondary to a subarachnoid hemorrhage. This paper will also explore the possible intervention strategies, in hopes of standardizing the use of TCD for the detection of cerebral vasospasms after a subarachnoid hemorrhage. In order to collect clinical data for this study, multiple case studies were reviewed. The data collected from each case was used to demonstrate the significance of TCD monitoring, within the 2 weeks in which a cerebral vasospasm may occur following a subarachnoid hemorrhage. TCD data from the case studies was then used to categorize the MCA vasospasms as mild, moderate, and severe.



Effects of menstrual cycle phase on the association between the neural response to rewards and anhedonia.

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Abstract (Posters)

Depression is a debilitating psychiatric disorder that substantially impacts both individuals and society. Incidence of depression is doubled in women as compared to men, so it is important to understand biological factors that may increase depression in women. Anhedonia, or a loss of pleasure, is a core symptom of depression that has been associated with blunted neural responses to reward (i.e., the reward positivity [RewP]); however, there is a lack of research examining the effects of the human menstrual cycle on this association. In the present study, we sought to examine whether the RewP-anhedonia association differed as a function of menstrual cycle phase (early follicular, ovulatory, and mid-luteal) in 73 women. Participants completed a baseline study visit wherein self-reported anhedonia symptoms were collected. Next, during each cycle phase, participants' brain responses to monetary loss and gain feedback were monitored using EEG during a gambling task. Results indicated a significant association between a blunted RewP and increased anhedonia symptoms while women were in the ovulatory phase of their cycle; there were no RewP-anhedonia associations during early follicular and mid-luteal phases. Our study provides novel evidence that the RewP-anhedonia association may be specific to when the RewP is measured in the ovulatory phase in women. The ovulatory phase is characterized by high estrogen—a hormone suggested to enhance reward sensitivity. Thus, lack of sensitivity to the reward-bolstering effects of estrogen may be associated with increased depression. Our results also underscore the importance of accounting for menstrual cycle phases in event-related potential studies.



"Exposing The Falseness of Instagram: The Impact of Instagram vs. Reality on Adolescent Girls' Body Dissatisfaction and Body Appreciation"

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Abstract (Posters)

A recent trend on Instagram called "Instagram vs. Reality" consists of posting side-by-side photographs of the same woman with one photograph idealized and heavily edited and the other photograph in its original form without any editing. This trend seeks to promote the concept that what is shown on social media is not always reality. This study aimed to investigate the effect of this trend on body dissatisfaction and body appreciation of adolescent girls, as they are especially prone to body related issues. Participants included 156 high school girls aged 14-19. Participants' trait body satisfaction was assessed using the Multidimensional Body-Self Relations Questionnaire (MBSRQ), and visual analogue scales (VAS) assessing body dissatisfaction and body appreciation were administered to participants after viewing idealized Instagram images and again after viewing Instagram vs. Reality images. Compared to baseline levels after viewing idealized Instagram images, viewing Instagram vs. Reality images resulted in decreased body dissatisfaction, and this effect remained after controlling for trait levels of body satisfaction. Furthermore, body appreciation increased after viewing images of Instagram vs. Reality; however, this effect no longer remained after controlling for trait levels of body satisfaction. These results demonstrate that viewing Instagram vs. Reality images may help adolescent girls feel better about their bodies in the short-term. Future studies would benefit from examining the long-term effects of exposure to Instagram vs. Reality images on body dissatisfaction and appreciation in adolescent girls and young women.

A Comparison of Screen Time of Children with Autism Spectrum Disorder During Summer versus School Months

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Abstract (Posters)

Background: With increasing prevalence, childhood obesity poses a higher risk for type 2 diabetes and other comorbidities. Compared to neurotypical youth, children with autism spectrum disorder (ASD) are 42% more likely to be overweight/obese. Summer is a 'critical window' for childhood obesity intervention, as studies show significant weight gain in children during summer versus school months. The 'Structured Days Hypothesis' suggests the less-structured nature of summer negatively impacts weight-related behaviors – including screen time – which may contribute to accelerated weight gain. Children with ASD, who prefer more structured routines than neurotypical youth, may find this especially true. This study aims to explore screen times of children with ASD during summer versus school months.

Methods: Parents of children with ASD participated in this within-person repeated-measures study. Parents (N=16) reported daily screen times, including after 8:00_{PM}, for 14 days during summer and school months. Separate mixed-effect regression models compared differences in screen times (daily/after 8:00_{PM}) in summer versus school months.

Results: Fourteen parents/guardians provided their child's summer and school month data (71% boys, 50% non-Hispanic White, mean age 5.7 ±1.8 years, 36% Overweight/Obese). Findings showed +42 minutes of daily screen time (95% CI: 22.1, 62.5), and +11 minutes of screen time after 8:00_{PM} (95%CI: 4.4, 17.1) during summer versus school months.

Discussion: Preliminary evidence suggests children with ASD have higher screen times during summer versus school months. Further research incorporating larger samples and additional measures of weight-related behaviors will allow for delivery of informed interventions in children with ASD.



Can Signaling Intellectual Humility Facilitate Openness Amid Ideological Conflict?

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Abstract (Posters)

Intellectual humility (IH) is a psychological phenomenon that involves recognizing the limits of one's knowledge and the potential fallibility of one's current beliefs. When measured as an individual difference variable, this trait has been shown to correlate positively with a range of personal and interpersonal benefits, including intellectual openness and curiosity (e.g., Krumrei-Mancuso & Newman, 2020; Leary et al., 2017; Porter & Schuman, 2018; Zmigrod et al., 2019), empathic concern for others (Krumrei-Mancuso, 2017; Krumrei-Mancuso, 2018), and perspective-taking (Brienza et al., 2018; Grossmann et al., 2016; Kross & Grossmann, 2012).

While there is now a sizable body of research examining how intellectually humble individuals behave, there have been relatively few studies measuring how they are perceived by others and the subsequent consequences for interpersonal harmony and ideological openness. In one study (Haga & Olson, 2017), an actor made to sound intellectually humble was perceived more positively than an ostensibly intellectually arrogant or diffident actor. However, that study did not examine any downstream ramifications of those assessments. In the current study, we hope to extend the current understanding of how intellectually humble individuals are perceived by testing whether signaling IH in advance of expressing a counterattitudinal viewpoint will improve perceptions of the dissenting individual as well as openness to the counterattitudinal viewpoint. We hypothesize that framing the counterattitudinal viewpoint with a preface that signals high levels of intellectual humility will result in more positive perceptions of the person and greater acceptance of the viewpoint than a preface that signals intellectual arrogance.



Views, Viewers, and Video Games: Media Effects on College Students

Cambridge Anderson

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Abstract (Posters)

This study examines how violence in Views, Viewers, and Video Games in the Media affect College Students. Television, Video Games, and social media play a key role in Mass Media in America. The new technology and new social media sites and the way media is today, are different from how it was in the early 1960's. Social Media sites such as Facebook, Twitter, and Instagram, Video Games such as Call of Duty, Grand Theft Auto, and Fortnite, and Television Shows such as Power, Snowfall, and Squid Games are examples of how violence in media are easily accessible and can contribute to increase violent act in young adults. Quantitative Research methodology was used to conduct competent understanding of the Cultivation Theory by implementing a survey on how College students consume Television, Video games, and social media and how they interact with their peers. The preliminary results expose that Television, Video Games, and social media play a major role on how violence in the media affects college students and with media being a great marketing tool, it makes it easier for young adults to connect with media violence of their liking. Short-term exposure to media violence increases the likelihood of physically and verbally aggressive behavior, aggressive thoughts, and aggressive emotions. Recent large-scale longitudinal studies provide converging evidence linking frequent exposure to violent media in childhood with aggression later in life, including physical assaults and spouse abuse.



Exploring biomimicry inspiration from bird claws for next-generation prosthetic hand design

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Abstract (Posters)

Biomimicry in mechanical design refers to incorporating either the form or function of existing processes in nature into design elements (Lurie-Luke, 2014; Volstad & Boks, 2012). Considering the design of 3D-printed mechanical five-fingered hands, adapting certain aspects of the hand to include features from other natural structures more specialized for grasping may improve the function of the hand to pick up a wider variety of objects (Marshall & Lozeva, 2009; Nabi et al., 2021). Species of birds' claw variations lend biomechanical advantages for motions related to perching, climbing, and hunting.

When creating robotic grasping mechanisms, limiting degrees of freedom and actuators can streamline the design. Bird claws are an ideal inspiration because of their limited joints, reduced number of actuators, and smaller palm size (Nabi et al., 2021). Different bird species' unique toe configurations offer different prehensile movements, which are specialized for their environments and lifestyles (Zhu et al., 2022). Two designs were created, each of which demonstrated a different toe arrangement: anisodactyly (3 forward x 1 backward) and zygodactyly (2x2).

Our research team reports the design of novel 3D-printed grasping claws which demonstrate the capabilities of different claw configurations as a comparison against a traditional five-fingered prosthetic hand. This work builds on the drone landing mechanisms of the Stanford biomimicry aerodrone study (Roderick et al., 2019; Roderick et al., 2021). Our developed designs and comparisons offer insights into how biomimicry can be harnessed to optimize the grasping capabilities of upper-limb prosthetics.



A Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Impacts of Revactin® on Male Sexual Health and Quality of Life

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Abstract (Posters)

Revactin® is an over-the-counter, plant-based supplement for erectile wellness and function consisting of a combination of Paullinia cupana, ginger, Muira Pauma, and the amino acid L-citrulline. This prospective study assesses the effects of Revactin® on sexual health and wellness in healthy male adults between the ages of 35 and 65. In this study 56 participants will be tested - half will receive the test product (TP) and half will receive the placebo (comprising 28 people/group). A total of 3 in-person visits are recommended for this study including a screening and baseline visit (Day 1), an interim visit (Visit 2, Day 22 ± 3), and an end-of-study visit (Visit 3, Day 43 ± 3). Participants are instructed to take two capsules twice a day, preferably with food and water. Efficacy outcomes include participant self-reported validated questionnaires: the International Index of Erectile Function questionnaire (IIEF-15), the New Sexual Satisfaction Scale (NSSS), and the Relationship Satisfaction Scale (RSS). We are also measuring salivary testosterone, estradiol, and cortisol. Finally, the mood is assessed via the NIH Toolbox Emotion Battery. All variables are assessed at the baseline, Visit 2, and end of the study (Visit 3). Another two efficacy outcomes (morning erectile capacity and refractory latency) are assessed at baseline and throughout the study via a daily diary. This study is ongoing, and we have started testing on 21 out of the 56 participants, thus we are unable to immediately report findings. We anticipate further findings in the near future.



Visualizing War in the Digital Age: A Feminist Approach to Open-Source Investigations

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Abstract (Posters)

The rise of civilian-led open-source investigations conducted by agencies and institutions such as The New York Times, Forensic Architecture, and Bellingcat have significantly altered the visualization of violence and political conflict in the digital age. Drawing upon the voluminous amount of user-generated content that floods social media applications from YouTube to TikTok and Twitter to Instagram, such agencies have reconceptualized the depiction of war, producing a marked aesthetic shift in digital reporting on civil and human rights violations. My research examines how new aesthetic techniques born of open-source research present ethical dilemmas in the coverage of war and, more specifically, the depiction of the ongoing conflict in Ukraine. In examining open-source aesthetics, which are often clinical and exacting, I seek to explore how feminist methodologies might offer reparative modes of envisioning conflict to ensure greater social justice. In my analysis of open-source reports produced by Forensic Architecture and The New York Times Visual Investigations Unit, I conduct a close formal analysis of contemporary videos documenting the Ukrainian/Russian conflict and examine the way that truth claims are asserted through the "right to look," as theorized by Nicholas Mirzoeff. Through the prism of this theory, I contend that open-source counter-visualities can effectively challenge state power and benefit from the deployment of feminist aesthetics that humanize digital formations of marginalized subjects with greater empathy, more robust ethical protocols, and efficacious progressive strategies.



A Systematic Review of the Culturally Responsive Classroom Management Model

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Abstract (Posters)

Teachers may be struggling to manage their rapidly diversifying student population. Scholars have conducted an array of culture and classroom management studies attempting to ameliorate this concern. Across these studies, Culturally Responsive Classroom Management (CRCM) has remained a prominent theoretical model suggested by researchers for teachers to equitably manage their diverse classrooms (Milner, 2019). However, in the nearly 20 years since the introduction of the CRCM model (Weinstein et al., 2003, 2004), there has not been a focus on synthesizing this literature to further iterate on this model. This has resulted in limitations for researchers using the CRCM model to describe the CRCM phenomenon and may have limited teachers using this model to manage their diverse classrooms.

Therefore, the purpose of this systematic review is to develop a new parsimonious iteration of the CRCM model. We will fulfil this purpose by thematically analyzing the literature and synthesizing the results. We hope that the findings gained from nearly 20 years of literature on this topic will assist researchers and teachers in better understanding the CRCM model. Furthermore, with a stronger understanding of the CRCM model, this may assist teachers in implementing CRCM in their classrooms so that they may celebrate their students' diversity instead of punishing them for it. This study is the second of three culture and classroom management studies; a series aimed at further understanding the broader phenomenon of the role of culture in classroom management.



Perception of those with ADHD on treatment effectiveness, knowledge of current treatment types, and treatment adherence

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Abstract (Posters)

Background – Attention Deficit Hyperactivity Disorder (ADHD) is a common neurological disorder with symptoms such as impulsivity and difficulty focusing. In most cases, treatment can be crucial for individuals suffering from ADHD to effectively function in academic and in work life. Many studies have tested the efficacy of various treatments or rate of treatment discontinuation. However, more research is needed on what advantages and disadvantages those with ADHD feel regarding the many different modes of treatments, what they know about treatment options, and what causes them to discontinue treatment (e.g. medication side effects, lack of structure or routine). This study will survey those with ADHD symptoms as well as caregivers for those with ADHD to address these questions. From this data, we can understand better the perspective of those who directly deal with ADHD in their everyday lives, with the goal of improving quality of life. Of particular interest is the perception of medicines versus therapy as treatments; for instance, why people chose one over the other, what they think about combining them, and whether there are differences in discontinuation rates between them. Also, of interest is whether people would be willing to try new treatments they might not have known existed. This study could show what influences people to maintain the regimen regardless of treatment type, which can then be shared with others who have ADHD.



ART IN PEDIATRIC PROSTHETIC LIMBS: METHODS AND CREATIVE DESIGN

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Abstract (Posters)

Prosthetic users may develop a physiological affinity to the device, including the feeling of the device as part of their body and self (Murray, 2008; Fraser, 1984). Many factors contribute to electing to wear a prosthetic including personal expression; a brightly colored prosthetic could indicate empowerment and communicate that differences from societal norms are not shameful and should be celebrated (Hilhorst, 2005). Differences surrounding the visuals of a prosthetic arise with shortcomings in fulfilling aesthetic needs (Nguyen, 2013). User involvement in the design process can impact body image and expression (Blom & French, 2018). This creative research is focused on designing artful myoelectric prosthetics for children with the purpose of providing a personalized experience of empowerment (Manero et al., 2019). Applying the elements of art, including line, color, and form to the 3D surface unlocks artistic expression.

Participants begin the design process by designing two interchangeable cosmetics for their prosthesis via a 3D visualization web portal. These designs are fabricated and finished using automotive-grade airbrush paints on ABS plastic. Durability is prioritized, with a layered system including a base primer to promote adhesion of the paint, stylized colors, and a clear coat to protect the finished product. The intention is to shift mindsets towards inclusion and inspire empowerment by disproving societal stigmas. This creative research showcases the methods and artistic work for a customized prosthetic cosmesis, and looks to understand the impact on children's quality of life.



Using environmental DNA (eDNA) to locate and identify pathogenic and nonpathogenic bacteria species in polluted and non-polluted freshwater sources in south Florida.

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Abstract (Posters)

We used environmental DNA (eDNA) to look at the diversity of bacteria species in the freshwater environments of local freshwaters. eDNA is DNA that organisms shed into the environment; it is used to identify what species are in the area in which samples were collected without having to see them. Our goal is to identify bacterial species in previously polluted sites (Superfund sites) and compare them with those in non-polluted freshwater sites. We want to use DNA metabarcoding to identify bacteria in our study. To isolate the eDNA, we used the DNeasy PowerWater Kit. Numerous eDNA extractions were completed from sites such as Amelia Earhart Park in Miami, FL, Optimist Park in Miami Lakes, FL, the pond on MDC's North Campus, Miami, FL, and Spring Garden Point Park, Miami, FL. Polymerase chain reactions (PCR) and gel electrophoresis were performed on the DNA extractions in order to identify candidate samples for sequencing. As a result, we have ~30 samples for sequencing. The significance of this research is to compare bacterial communities in previously polluted and unpolluted waters. We want to determine what types of bacterial communities inhabit both types of aquatic environments using metabarcoding analyses. In the future, we plan to analyze the data to build a database of environmental information that allows more precise monitoring of the types of bacteria found in those environments. Using this new tool of eDNA, we can determine the microbiomes of various aquatic environments.



Analysis of endogenous and transplanted stem cell populations following traumatic brain injury in adult zebrafish

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Abstract (Posters)

Although post-embryonic neurogenesis is limited in the mammalian brain, zebrafish (*Danio rerio*) retain multiple proliferative neurogenic and stem cell niches throughout adult life. The focus of our research is to study how traumatic brain injury (TBI) affects the induction of neurogenic progenitor cell fates in the adult zebrafish brain. We found that TBI induces an endogenous, quiescent population of progenitor cells that migrate from the subventricular zone (SVZ) and integrate in or near the injury zone. We hypothesize that stem progenitor populations that integrate and differentiate at or near the injury may enable the regenerative response normally seen following CNS injury in the zebrafish. Currently, we have developed a stem cell culture methodology using a rotating culture technique that develops aggregates of undifferentiated stem cells after 2-3 days. Using a proof of concept strategy, we have transplanted labeled aggregates into a TBI stab wound injury site and are currently analyzing the efficacy of integration into injury zone tissues.



Investigating the Role of tRNA-Arg-TCT-2-1 in the post-Transcriptional Regulation of Mammalian *Hes7*

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Abstract (Posters)

Vertebrates have segmented body plans that can be seen clearly in the axial skeleton with repeating vertebrae. These structures are created during embryonic development, where gene expression has been seen to be oscillatory. *Hes7* is a gene that has a major role in this oscillatory expression; Through a negative feedback loop, HES7 protein controls periodicity of vertebrae formation. My lab finds that the *Hes7* mRNA transcript undergoes cleavage at the 3'UTR, creating three transcripts with varying translational efficiencies that are used to maintain developmental timing by destabilizing mRNA and increasing its turnover rate. It is believed that a specific RNA, tRNA-Arginine, may have a non-canonical role in impacting this translational efficiency by binding to homologous sequences in the 3'UTR of the various transcripts. I hypothesized that the *Hes7* long and potentially the *Hes7* middle isoforms will be affected by this tRNA due to sequence homology. To test this, luciferase reporter constructs of short, middle, long, *Hes7* 3'UTR sequences and two tRNA expression vectors were used in a luciferase assay to quantify protein production. The results gathered from the assay did not show any statistically significant differences in luciferase expression between the transcripts. potentially due to errors in transfection or the luciferase assay. However, learning how tRNAs may function non-canonically in development will be foundationally important for future work in understanding oscillatory gene expression and the segmentation clock in vertebrates. This information can be translated to human health in regard to skeletal disease as well.



Social Media and Self-Image Perception: Do you Have a “Bangin’ Body”?

Sidney Brown

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Abstract (Posters)

Over the past 15 years, millions of people have created multiple social media accounts across the following popular platforms: Facebook, Twitter, Instagram, and Snapchat. Although there are many positive aspects of allowing people to connect this way, there are also some downsides. There seems to be this growing obsession with being the “thin” body type rather than the “fat” or “thick” body type. Pictures such as male models with muscular six-pack abs and women with very flexible bodies have started to increase across digital platforms, especially Instagram.

Recent research in the field of social media has shown that promoting certain types of body images while ignoring others impacts perceptions about how people feel about their own bodies and self-image.

Utilizing Media Effects and Visual Perception theories this research paper examines the relationship between acumens of body image and how it relates to social media engagement and usage.

Results are in line with other past studies that suggest that over-exposure to “ideal” body types can have negative impacts on how social media users view their own self-image. Findings also reveal how vital it is to start protecting the people so they can have a more tolerable experience while online.



Mental Health of Young Adults in the Social Media Era

Kaitlyn Hale

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Abstract (Posters)

Social media is one of the most widely used forms of mass communication in modern times with nearly five billion users worldwide. Social media websites attract people of all ages, from young adults to the elderly, but since social media is still a relatively new and growing phenomenon, researchers are still learning about the impacts it has on mental health. In that, the purpose of this study is to take a contemporary look at the effects of social media use on the mental health of young adults. A survey was used to collect information from a sample of students and young adults about their social media habits and perceptions of their own mental health. Results show that individuals with increased levels of social media usage were more likely to suffer from symptoms of depression. This study showed that the amount of time young adults spend on social media use has the potential to negatively impact their mental health.



Is the ALK-1 Gene a Missing Link Between Vasculature and Neurodegenerative Diseases?

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Abstract (Posters)

The activin receptor-like kinase 1 (ALK-1) gene is expressed during endothelial tube formation. ALK-1 is a type one receptor of the Transforming Growth Factor family (TGF- β). ALK-1 protein immunoreactivity within hippocampal neurons (CA3) is reduced significantly in subjects with Alzheimer's disease (AD). The reduction of ALK-1 activity in the CA3 of patients suffering from AD may be connected to the lack of vasculature within the brain. Moreover, ALK-1 expression within brain vasculature is also decreased in AD patients. Given that ALK-1 is expressed in brain vasculature and neurons, we hypothesize that ALK-1 may be involved in neurite outgrowth and endothelial tube formation. Since it has been shown that ALK-1 and endoglin (a type III TGF- β receptor) are involved in signaling, they may be involved in both processes. We will test the effects of growth factors NGF, FGF-2, and BMP-9 on endothelial tube formation in human umbilical endothelial cells and neurite outgrowth of PC12 cells. These cells will be co-cultured to determine if neurite outgrowth and endothelial tube formation occur simultaneously. If so, are these processes mutually exclusive or dependent on one another? We will test if ALK-1 and endoglin gene expression are required for each process. Gene expression will be measured by quantitative PCR. This study is the initial investigation of cell and molecular biology of AD.



Missense Mutations in Circadian Rhythmic Controlling Genetics and the Importance of Their Identification

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Abstract (Posters)

Biomedical sciences are the intersectionality of biology, medicine, and technology. Mistakes are made, errors occur, even in the animal kingdom. Errors in biology mostly lead to mutations that can cause both behavioral and physical changes. The human body, like a clock, follows its own schedule through an internal trigger known as the circadian rhythm. This rhythm is one of the largest mechanisms that controls when we wake, eat, sleep, etc. Mutations in genes that regulate this rhythm are debilitating, leading to insufferable disturbances. To identify, change, and even replace these mutations is the goal of current research as we welcome more advanced technology. With the exploration of genetic mapping, scientists and researchers can uncover comprehensive patterns that lead to the solution of systemic dysfunction. The applications of the science could lead to the prevention of impairing genetic sequences potentially In Vivo and In Vitro.



Visceral Reality: The Desire for Bodily Stimulation in Real VR, the OASIS, the Matrix, and the Holodeck.

Brandon Pimer, Dr. Jones Warren
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Abstract (Posters)

Visceral Reality: The Desire for Bodily Stimulation in Real VR, the OASIS, the Matrix, and the Holodeck.

Just as the liminal spaces in Ready Player One, The Matrix, and Star Trek collapse virtual reality and reality into a singular frame of bodily sensations, so is our rapidly advancing technology doing the same. In November 2022, Palmer Luckey, the original Oculus developer, constructed a new VR headset embedded with deadly explosive charges which raises questions concerning the psychological and physiological reasoning as to the human desire and need for visceral and bodily sensations beyond jump scares. The newest mass-produced technological advancements in the newest VR, Meta's Quest Pro, provides real-time eye tracking as well as facial mimicry to merge reality into virtual reality. This embodied cognition is being enhanced through haptic feedback suits that enables players to experience simulated pain and simulated pleasure. However, some people want more stimulation than simulation. They are altering haptic feedback suits to cause real pain and to stimulate real pleasure. Beyond these extremes, other embodied cognition uses concern medicinal applications of VR, such as psychology's use in cognitive behavioral therapy to change landscapes and combat settings. Surgeons use VR for training, physical therapists use it, the military, aeronautics, aerospace—ever-increasing connections of VR and bodily cognition seem to amend Baudrillard's idea into a Stimulated Reality, a Stimulacrum.



The World must be Measured by Eye — Dreams and Madness in the Philosophies of Mary Shepherd

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Abstract (Posters)

Every night humans turn down the lights and fall asleep into a world like nothing anyone's seen before. What is that world? How is it similar to the usual world we navigate? And if dreaming feels the same as being awake, how can we know we're not imagining the waking world? In philosophy, questions of what exists and how we can know about it are part of branches called metaphysics and epistemology, respectively. Mary Shepherd is an early modern metaphysician and epistemologist who engaged directly with these questions in her 1827 volume *Essays on the Perception of an External Universe*. Specifically, in the fourth chapter, Shepherd addresses how dreaming, though a nearly universal experience, presents a potential problem in the study of epistemology. If a dreamer can experience thoughts, images, and sensations while they are separated from the waking world, who's to say the external universe exists at all? And if we can experience something like the external universe while we are separated from it, is the external universe necessary to perception? Could each of our experiences be a form of dreaming? These questions cast the most fundamental aspects of human experience into murky territory. This project examines Shepherd's theory of dreams, considering it within its historical and philosophical context, including how it served as a response to the theories of David Hume, George Berkeley, and Thomas Reid. It argues that Shepherd's account provides a remarkably novel framework through which we might know the world.



Collaborative Group Exams Improve Student Learning and Classroom Experience

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Abstract (Posters)

Modern pedagogical approaches continue to adapt in an effort to facilitate further student learning. Among these are "two-staged" collaborative group exams, which allow students to work together in collective groups after first attempting an assessment individually. Specifically, the implementation of collaborative group exams converts exam-style assessments into opportunities focused on improving content retention and learning.

This study measured the benefits of collaborative group testing on student performance, learning, and perception in selected biology courses at the University of Tampa. Collaborative exams were deployed in general education (4 sections), introductory (4 sections), and upper level (7 sections) courses, with quantitative and qualitative data recorded to evaluate ~417 individual students' performance, perceptions, and experiences longitudinally.

Overall, collaborative exams enhanced student performance, perception, and experience in Biology courses at all levels. Exam scores increased by an average of 55% on collaborative exams relative to individual scores (individual vs. collaborative group), and students expressed an 8% increase in perceived benefits of collaborative exams over time. Collaborative exams also reduced test anxiety (~55% of students reported feeling anxious or highly anxious during the individual exam compared to ~5% during the collaborative group exam).

Our data indicate that students at all levels within and outside the major benefit from collaborative exams and are able to recognize and apply lessons from these learning opportunities to their own studying strategies. Therefore we would suggest that all courses consider incorporating forms of collaborative assessment as a way to enhance student learning and course experience.



Deriving Neural Stem Cells from the Umbilical Cord as a potential treatment for Neurodegenerative diseases

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Abstract (Posters)

Neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD), multiple sclerosis (MS), and bipolar disorders currently have limited treatment with the available drugs to date. Human mesenchymal stem cells isolated from umbilical cord (HUMSCs) are being investigated as a suitable option for future clinical trials due to their non-invasive isolation procedure, immunomodulatory effects and self-renewing properties. The extracellular vesicles they secrete act as a method of cellular communication and can be utilized to derive specialized cells rather than using traditional growth factors. This study explores the properties of HUMSC derived neurospheres grown in different conditions such as plastic, vitronectin (VXF), and poly-L-ornithine (PLO) supplemented with FGF2 beads and FGF2 powder. The cellular growth, morphology, and abundance of the neurospheres were evaluated over a period of four days. The quality of the exosomes isolated from the neurospheres were determined through RNA sequencing and Q-PCR testing.



Black Panther Vibranium: A Valuable Resource to the Lost Land of African Americans

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Abstract (Posters)

The latest Black Panther film, Marvel Comics shed light on a powerful metal that absorbs, archive, and liberate Kinetic Energy, also known as Vibranium. In the same way as Vibranium provides prosperity, stability, and security for future generations, so does land ownership, especially for African American descendants. This study examines just one of the many ways in which a legal dispute led to the seizure of property of African American resources derived from the land on which we had built homes. The concept of heir's property refers to the situation in which the owner of a property passes away, and the deceased person's descendants take ownership of the land. Qualitative Research methodology was used to lead a understanding of the Argumentation Theory using research such as news articles, videos, and journalists on how there is a general trend toward fewer African Americans that have been owning land in large part, to one statute regarding property ownership. The findings of this study will reveal that since 1910, this statute has an impact on the lives of million African American descendants in the United States. Overtime, this has caused future generations to be deprived of their own property, which was earned by practices such as slavery or segregation, due to the way one's resource is taken. The preliminary results expose that more than 80 percent of land has been taken from African Americans since 1910. Security of Vibranium plays an essential role on how the loss of land affected African American.



Associations Between Shame and Guilt, Self-Esteem, and Health Risk Behavior Among Undergraduate Students

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Abstract (Posters)

Health Risk Behavior (HRB) is defined as behavior that increases the likelihood of adverse outcomes: injury, morbidity, or mortality. University students are particularly susceptible to HRB due to their age, academic pressures, social environment, and newly unsupervised lifestyle. Despite major efforts by university campaigns to make students aware of the potential health risks of HRB, students continue to consistently engage in behavior that risks both their short-term and long-term health. Previous literature indicates the importance of self-esteem in positive decision-making and the inhibiting role of shame in increasing withdrawal and social isolation. Shame and guilt are distinct self-conscious emotions often evoked in similar circumstances: shame often debilitating, and guilt adaptive. This study utilizes a cross-sectional design to examine the associations between HRB and the affective emotions of shame, guilt, and self-esteem to better understand HRB determinants. Data was collected from students using a Qualtrics form containing demographic and HRB questions. The Personal Feelings Questionnaire-2 (PFQ2) and the Rosenberg Self-Esteem Scale (RSES) assessed shame and guilt proneness, and global self-esteem, respectively. Mean data analyses, frequency tests, and one-way ANOVA analyses revealed associations between HRB and the three tested affective emotions. Results of this study indicated HRB is associated with higher negative emotion: higher shame and guilt proneness and lower self-esteem. With further research, this information can guide more effective clinical and educational interventions in reducing HRB and subsequent preventable diseases by targeting emotional risk factors in the university population.



Exploring Possible Pathogenic Bacterial Species Residing in the Mouths of Sharks in the Tampa Bay Region

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Abstract (Posters)

With Florida having frequent cases of shark bites, it is important to understand the possible pathogenic bacteria that could accompany the bite. If the pathogenic bacteria from a shark's mouth could be swabbed and grown in culture, antibiotic susceptibility and resistance can be tested for treatment of bite infections. Between April and November of 2022, Bull, Sharpnose, Blacktip, Bonnethead, and Blacknose sharks in the Tampa Bay region were caught and sampled by swabbing the teeth and gums of their mouths. The swabs were streaked and grown on Nutrient agar (NA), Mannitol Salt agar (MSA), MacConkey agar (MAC), and Thiosulfate-Citrate-Bile Salts-Sucrose agar (TCBS). The bacterial colonies grown were recorded for their color and cellular morphology and Gram stained. 701 total colonies from 67 NA, 75 MSA, 17 MAC, and 7 TCBS plates were collected from 82 sharks. Of these colonies, Gram positive cocci accounted for 70% on NA and 87% on MSA plates. Gram negative cocci accounted for 16% of colonies on NA, 83% on MAC, and 60% on TCBS plates. Gram positive bacilli represented 13% of colonies on NA and 13% on MSA plates. Gram negative bacilli accounts for 1% of colonies on NA, 17% on MAC, and 40% on TCBS plates. Based on these properties, select colonies will be chosen for biochemical tests and the Kirby Bauer disc diffusion method for antibiotic resistance and susceptibility against 10 clinically relevant antibiotics. Results will aid clinicians in effective antibiotic treatment options for shark bite victims in the Tampa Bay region.



Idiopathic Facial Aseptic Granuloma: a Case Report and Review of a Developing Pediatric Entity

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Abstract (Posters)

Idiopathic facial aseptic granuloma (IFAG) is a rare, anomalous pediatric entity characterized by asymptomatic erythematous nodules that are primarily located on the eyelids or cheeks. The infrequency in which it is encountered makes it an arduous diagnostic challenge. We describe the rare presentation of a 3-year-old male who was referred to the dermatology clinic with an asymptomatic facial nodule that had been present on the right zygoma for 3 months. The patient was diagnosed with idiopathic facial aseptic granuloma, based on clinical reasonings. Treatment was initiated with topical corticosteroids and topical calcineurin inhibitors. After 8 weeks of treatment, the patient showed marked improvement. The objective of this case report is to highlight the clinical aspects of this atypical entity to avoid the inaccurate diagnosis and raise awareness for the management of this condition, for which we propose a novel treatment combination of topical corticosteroids and topical calcineurin inhibitors.



Factors That Lead Accounting Alumni To Success

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Abstract (Posters)

The field of accounting is one of the most predominant areas in business. Since 1975, over ten thousand students have graduated from FSU with undergraduate or graduate degrees in accounting. Decades have passed, and accounting methods and fields have changed, but the factors that determine the outcomes of those FSU alumni have yet to be analyzed. In a study orchestrated by Dr. Aleksandra Zimmerman, researchers collected the background and career information on alumni who graduated in accounting through websites such as LinkedIn and from FSU's university records. Utilizing the method of surveying, researchers also reached out to alumni with research questions regarding their gender, race, employment history, salaries, and other related and defining experiences. Following the survey results and various data collection, researchers utilized univariate tests and multivariate regression analysis to determine which factors are significant determinants of the career success of FSU accounting alumni. In terms of the study, success was loosely defined as having a higher salary, a higher position in a company or public accounting firm, and the opportunities to work internationally. Researchers found factors such as participation in college activities and being male to lead to a higher salary. Being female, utilizing alternative work arrangements and age led to lower salaries. Whether alumni spent their years in public accounting or not, salaries were not affected. However, those who spent more years in public were more likely to become a partner, and those who spent more years outside public accounting were more likely to become CFOs.



Can Southern Culture Save Democracy?: How small town communities in the Deep South exemplify civic engagement that reconciles with historical marginalization

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Abstract (Posters)

Across the nation, American democracy is threatened by the downfall of civil societies over the past six decades. Robert Putnam's "Bowling Alone: America's Declining Social Capital" argues that with increased community civic engagement comes a positive impact on democracy. The Southern culture I felt could work as this guide to saving democracy is an expectation to support your neighbors, a willingness to connect with complete strangers and a collective belief in serving your community. The Deep South is also known for its historical racism and modern intolerance of difference. To understand how a region can hold a contrary stereotype of hospitality and prejudice, I spent over a month traveling to six small towns in four states across the Deep South to understand this phenomenon. I interviewed individuals in each town that are involved within their community to understand what motivates them to be involved and what is unique about Southern culture that fosters community. From this research, Southern culture within small towns can be used as a guide to saving democracy through their overcoming of historical marginalization through understanding difference, their willingness to serve their community and the collective hospitality that is extended to both friends and strangers.



Site directed mutagenesis and characterization of novel photosensory transducer encoded by alr 3166 in Anabaena PCC 7120

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Abstract (Posters)

Besides the well explored haloarchaeal rhodopsins, the first sensory rhodopsin was observed in eubacteria as the genome of freshwater Anabaena PCC 7120 was reported with a single copy of photoreceptor gene (alr 3165) followed by a transducer, alr 3166. Both genes are in a bicistronic operon reflecting the influence of their regulatory function. Though the structural information along with significance of their interaction in membrane proximity is evident, the detailed signal cascade is obscure. Interestingly, we have outlined the phosphorylation ability of transducer protein. Our detailed bioinformatics study has revealed two possible phosphorylation sites on this novel tetrameric transducer in distinct motifs, at 53-56 and at the 105-108 region. In this project we focused on point mutations, primarily in the region of 53-56 coded by AGCGACAAAGAG for SDKE acid sequence [S53A, E56Q substitution]. Additionally we have designed another mutation for T105A in carboxyl-tail region along with critical beta motif region of 53-56. After initial success of single mutations, we plan to extend double mutant construction. Over-expression of plasmids harboring mutated transducers will be characterized. Preliminary data on wild type transducer's unusual stability and influence on possible role on phosphorylation ability will be presented. Proposed hypothesis, based on structural insight reveal the role of carboxyl helical domain in addition to beta motif of SDKE in stability of transducer molecule. Destabilization of the transducer likely serves as signaling state in photo-mediated signaling in eubacteria, remarkably analogous to mammalian light mediated cascade involving a membrane photoreceptor and a soluble downstream partner.



Stop the Press! The evolution of Digital Journalism and its impact on how young adults get their news

Caitlin Still

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Abstract (Posters)

Abstract

The purpose of this study is to examine the evolution of Digital Journalism and its impact on how young adults engage the news. Digital journalism, defined as news content distributed over the internet, enables interaction and debate at a level that print simply cannot. For example, digital media consumers can comment on news stories and share their thoughts, contributing to the narrative, and in some cases offering up new information to digital journalists. Because of new technologies, digital journalists can also supply a variety of media, such as audio, video, and digital photography, opening up new avenues for storytelling. There are potential downsides to digital journalism too, namely misinformation. Prior to the development of digital journalism, printing took significantly longer, giving time for errors to be found and fixed. This study distributed a survey to over 100 college students to gauge their personal habits and trustworthiness of online news. Results of this study show that a majority of the young adults sampled get their information mainly, or entirely online. However respondents also reported they are less trustworthy of things they read online when compared to the print medium.



Possible unfolding scheme and stabilization factor of Anabaena PCC 7120 Transducer upon kinase mediated phosphorylation

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Abstract (Posters)

Kinase catalyzed phosphorylation of protein substrates is a critical regulatory step in a broad range of biological processes. Photo-mediated signaling in freshwater cyanobacteria, *Anabaena* PCC 7120 involves activation of sensory rhodopsin, ASR and cognate transducer, ASRT. Structural insight revealed an unusual stable tetrameric form of 125 amino acid soluble ASRT. Our earlier work has outlined motifs of ASRT as members of DUF, Domain of Unknown Function family with ability to phosphorylate. We proposed that oligomeric ASRT destabilizes upon phosphorylation, serving as signaling state. This project demonstrates effective transfer of phosphoryl group from ST-Kinase to ASRT using anti-Phos antibody. We have identified two notable consensus phosphor transfer motifs, SDKE [53-56] and TRLD [105-108]. We used recombinant transducer to phosphorylate via model donor and neighborhood kinase. Use to model phosphate donor, acetyl phosphate (AcP), impacted the lone tryptophan fluorescence reflected structural perturbation. Hydrophobic surface exposure upon phosphorylation, probed by use of hydrophobic reporter dye, ANS outlined the increase upon phosphorylated transducer. Purified kinase was characterized by dot blot and ability to phosphorylate using ATP analogue, (2-Azidoethyl)-ATP. The kinase activity was established as highly dependent to divalent Mg²⁺ as anticipated. This is a very first report to successfully employ non-radioactive phosphorylation based assay for kinase activity and transfer using antiphos antibody and/or phos tag [to differentiate phosphor and native proteins]. Additionally, we plan to use size-exclusion chromatography to probe destabilization or dissociation of oligomeric form. Our results are indicative of critical functional state of ASRT upon phosphorylation in eubacterial photomediated signaling.



(La_{1-y}Eu_y)_{1-x}Sr_xMnO₃ Thin Films grown as Random Alloys and Superlattices by MBE

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Abstract (Posters)

Using molecular beam epitaxy (MBE), we grow single-crystalline thin films of mixed-valent manganites. Specifically, we study (La_{1-y}Eu_y)_{1-x}Sr_xMnO₃ thin films where x is set to 1/3 and the europium substitution for lanthanum, y, is changed from 0 to 1/2. The starting compound with no europium (y=0), La_{1-x}Sr_xMnO₃, is well studied and it is understood that lanthanum and strontium are mostly ionic in the crystal, forming La³⁺ and Sr²⁺ ions. At x=1/3 this material is well known for its colossal magnetoresistive properties and its highly spin-polarized ferromagnetic ground state. Adding europium into this crystal can impact its electronic properties in three respects. The valence state of europium, which is not known, can influence doping. The ionic radii of europium can trigger additional lattice distortions that couple to the electronic structure. The f-electrons in europium can influence the spin state of the hybridized t_{2g} and e_g electrons that mediate the double exchange interaction and the resulting ferromagnetic metallic ground state. Here we study this influence of adding europium in both random alloy samples and ordered superlattice thin films. Specifically, we compare the electronic properties due to the addition of europium, y=0 vs y=1/2 as well as between the random vs ordered arrangement of europium in the lattice. In both comparisons, we find that the influence of europium leads to distinct changes in the electronic properties.



Effects of tactile learning blocks on the enhancement of STEAM-based content in children with dyslexia.

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Abstract (Posters)

Dyslexia is characterized by patterns of difficulties in reading despite adequate intelligence (American Psychiatric Association, 2013). Individuals with dyslexia face other deficits when processing verbal stimuli (e.g. Peterson et al., 2013), and such challenges are exacerbated within STEAM (Science, Technology, Engineering, Arts, Mathematics) domains (Schneps et al., 2010). The benefits of using tactile cues (with audio and visual learning materials) in classroom learning have been stressed to help children with learning disorders (see Laasonen et al., 2000). While the usage of tablets have been shown to enhance general classroom learning (e.g. Crescenzi et al., 2014), the relative salience of tactile cues are limited. More recent work in other countries has utilized multisensory blocks to improve literacy in children with dyslexia (Fan et al., 2019; Ismail & Zulkurnin, 2019), providing a more comprehensive multisensory approach. The current study explored whether children with dyslexia may benefit from using multisensory blocks to comprehend and remember STEAM-based content. 30 children from the Roberts Academy (a school for children with dyslexia) were given a pretest of basic structures within the nervous system (and their functions). Participants were then randomly assigned to one of two instructional presentations of the material (i.e., visual blocks of the structures and functions with/without tactile cues). Participants were then tested on the content using short- and long-term testing. Results showed that a small memory benefit when using the tactile-cued blocks during both testing periods. Further work will explore how multisensory materials can aid children with distinct learning disorders.



Assessing Public Participation in Redevelopment Projects: A Case Study of Tallahassee, Florida

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Abstract (Posters)

Public participation in redevelopment projects is a vital tool to address the community's concerns about any potential adverse effects on a neighborhood. The city of Tallahassee, Florida, is home to a rich history of African-American neighborhoods that have endured constant redevelopment pressures over the decades. The use of eminent domain, or the acquisition of private property for public use, has been at the center of the redevelopment discourse. As stakeholder-controlled projects are favored over citizen initiatives and participatory approaches, this study investigates the social impact and the degree of public participation employed during the planning and construction of the Capital Cascades Trail Project. This research uses social impact and participatory tools to analyze public meetings, notes, public records, and project plans to determine the degree of community involvement in the process. Namely, the researcher uses Arnstein's Ladder of citizen participation—a tool that assesses the degree of public involvement and empowerment in various government projects. Preliminary results may indicate low levels of public involvement, according to Arnstein's Ladder. As a result of these preliminary findings, this study suggests the following policy recommendations. As community involvement increases, neighborhoods benefit from more equitable outcomes. Future projects should require that city planners use social impact assessments to address social justice concerns. Funding should be designated to train city planners in cultural competency and allocate resources to empower citizens to be actively engaged in community projects.



A Potential Picasso: A Syncretistic Signature Analysis between Pablo Picasso and a Thrift Shop Find

Alina Hagen

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Abstract (Posters)

Since the summer of 2019, Museum Studies and Chemistry students at the University of Tampa have collaborated on the “Potential Picasso Project,” an interdisciplinary investigation of a “thrift shop” painting signed “Picasso 1905” in the lower left corner. This project installment utilizes art historical and forensic graphological resources to conduct a syncretistic analysis of the signature evidence to determine if attribution of the subject artwork can be made to Pablo Picasso according to his signature conventions from 1904 to 1906. Signed, authentic oil paintings created by Picasso across both stylistic periods (during the years 1904, 1905, and 1906) have been selected to establish a set of qualitative signature conventions to compare the subject artwork against. Concurrently, an analysis of a large sample of Picasso’s main body of work from this period, pulled from a catalog raisonné, determined how often and where Picasso signed his work and how often he dated it. This quantitative analysis establishes a statistical foundation for determining the probability that Picasso made the subject artwork during the period in question. Preliminary evidence collected during the Fall term shows that Picasso often signed his work; however, observed signatures seldom match the one found on the subject artwork. This suggests several possibilities: the subject artwork was not painted by Picasso and is a forgery, the subject artwork was painted by someone close to Picasso who believed they could replicate his painting style, or the artwork may be an authentic Picasso but does not belong to the year 1905.



Dear Unforgotten, YOU ARE ENOUGH! FINALLY, Here Are Your Flowers!

Mychelle Bell

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Abstract (Posters)

“So the last shall be first, the first shall be last; for many be called, but few chosen”(Matthew 20:16).

The project's culminating product will be a stage play (and more) highlighting and celebrating a selected sample of Black women and one man who have positively impacted American society. All stories are interwoven as part of a larger narrative of cohesive nonfiction storytelling. In addition, the project includes a "behind the scenes" video documentation of the creative process.

As a writer and performer allow me to take you on a brief journey through this synopsis A.K.A story. See this study seeks to discover how black women helped build the foundation of the United States, and how despite the challenges of this world has brought from being forced out our homeland with no recollection of our history, to discovering ways to communicate regardless of color, or status . Truly, the interviews with these amazing individuals made me appreciate the difficulty of being a black woman, but also to appreciate that adversary allows us to in a major way "shine". The individuals were channeled spiritually, and this created some meaningful and fascinating stories about their personal experiences in the United States, their struggles with the culture as well as their cultural identity transformations over time. In addition, the participants though never truly recognized, this project allowed me to give them the flowers they deserve.



Charmonium production at HERA with small-basis Light-front Wave Functions

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Abstract (Posters)

We calculate the diffractive photoproduction of charmonium for electron-proton collision at Hadron-Electron Ring Accelerator (HERA) at the Deutsches Elektronen-Synchrotron (DESY). We use the dipole model as our theoretical framework, and use the small-basis Light-front Wave Function for our calculation. In this presentation, we calculate the production of J/Ψ and compare our prediction to the experimental measurements of H1 and ZEUS collaboration. We plan to calculate $\Psi(2s)$ production and compare the production ratio of $\Psi(2s)$ to J/Ψ in the near future and compare it to the recent ZEUS publication.



Antidepressant use and lung cancer risk and mortality: A meta-analysis of observational studies

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Abstract (Posters)

Objectives: Recent preclinical studies suggested potential anticancer effects of antidepressant (AD) use in multiple cancers, but the effect on lung cancer remains unclear. This meta-analysis examined the effect of AD use on lung cancer incidence and mortality.

Methods: Web of Science, Medline, CINAHL, and PsycINFO databases were searched to identify eligible studies published by June 2022. We conducted a meta-analysis using a random effects model to estimate pooled risk ratio (RR) and 95% confidence interval (CI) to compare AD use and non-use. Heterogeneity was examined using Cochran's Q test and inconsistency I² statistics. The studies quality was assessed using the Newcastle-Ottawa Scale for observational studies.

Results: The meta-analysis, including 11 publications involving 1,200,885 participants, showed that AD use increased lung cancer risk by 11% (RR=1.11;95% CI=1.01, 1.22; I²=74.3%;n= 6); had no effect on all-cause mortality(RR=1.05; 95% CI=0.68, 1.58; I²=90.1%;n= 4) and reduced lung cancer-specific mortality by 32% in one study. Subgroup analysis showed that serotonin and norepinephrine reuptake inhibitors were associated with an increased lung cancer risk (RR=1.38; 95% CI=1.07, 1.78), but selective serotonin reuptake inhibitors (RR=1.05; 95% CI=0.91, 1.21) and tricyclic antidepressants (RR=1.09; 95% CI=0.95, 1.26) were not. Additionally, variations in AD use definition could be the source of heterogeneity of observed effects. The selected studies quality was good (n=5) to fair (n=6).

Conclusion: Evidence suggests that AD use was associated with an elevated risk of lung cancer but not all-cause mortality. More research is needed to estimate the effect of AD use on lung cancer-specific mortality.



Uterine Fibroid Prevalence and Health Care Disparities by County. Florida, 2010-2019.

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Abstract (Posters)

Uterine leiomyomas occur in 70% of women. A uterine leiomyoma is a benign growth in the myometrium of the uterus which, if left untreated, can grow and cause complications. Symptomatic women experience pain and debilitating menstrual cycles resulting in poor health, quality of life, and loss of income. Preventative and treatment services in Florida could benefit from the characteristics of women affected most by this disease. Thus, we describe the demographic characteristics and estimate the prevalence rate of uterine leiomyomas among women 18 years and older in Florida between 2010 to 2019. Data was obtained from Florida's Agency for Healthcare Administration and analyses included descriptive statistics with prevalence rate estimation and geolocation. We identified 232,475 cases, almost half (49.2%) of which were reported among white women, with women in their forties having the highest frequency. Counties with the highest prevalence rates (e.g., Miami-Dade, Broward, and Palm Beach) are the seat to densely populated cities. Over the decade analyzed, the prevalence rate (95% CI) was estimated at 283.72 (283.13, 284.31) cases of uterine leiomyomas per 100,000 women. Compared to non-Hispanic white women, black, Hispanic, and other women of color presented with higher prevalence rate ratios (4.84, 1.87, and 1.58, respectively). While most women diagnosed with uterine fibroids in Florida were non-Hispanic white in their forties, results evidence noticeable disparities by race, ethnicity, age, and county of residence. Counties with the highest prevalence rates were urban and densely populated with more access to healthcare, unlike counties with the lowest prevalence rates.



Disordered eating, self-objectification, anxiety, and their association with specific aspects of social media use.

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Abstract (Posters)

Social media use is extremely prevalent in the modern world, yet has also been associated with mental health issues, including anxiety, disordered eating, and self-objectification. However, little is known about how aspects of social media use are associated with mental health factors in college students. The present study involved secondary data analysis of a previously published study (Wick & Keel, 2020) to determine the association between specific aspects of social media use and anxiety, disordered eating, and self-objectification in college students. Participants (n= 80, 93% female) completed the State Trait Anxiety Inventory (Spielberger, 1983), the Eating Attitudes Test-26 (Garner et al., 1992), the Objectified Body Consciousness Scale (McKinley & Hyde, 1996), and an Instagram Survey created by researchers. Anxiety and self-objectification were positively associated with several problematic social media behaviors, including frequently engaging in photo-based comparisons, prioritizing having more likes and comments on images than peers, and experiencing discomfort posting unedited photos, among others. However, for disordered eating only taking photos for the sole purpose of posting them on social media was significantly correlated. These results highlight what specific aspects of social media use are associated with increased mental health problems and thus should potentially be avoided. Future experimental research should focus on these specific social media behaviors and how they affect mental health, as well as explore the longitudinal effects of these behaviors on long-term mental health outcomes.



Elucidating the Honeybee Disease Triangle: Associations Between Landscape, Infections, and Immunity

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Abstract (Posters)

Honey bees (*Apis mellifera*) are major pollinators for a wide variety of crops, making them essential to agricultural systems. Honeybees have also become an important component of wild pollinator communities that sustain critical ecosystem services and ecosystem stability. However, since 1940, honeybee colonies have decreased by half in the United States; a phenomenon known as Colony Collapse Disorder (CCD). CCD poses a significant threat to honeybee populations not only in the United States, but around the world. The “disease triangle” is an excellent conceptual tool used in epidemiology to predict when disease phenotypes occur and how severe they will be. The disease triangle represents how three specific components (environment, host, and pathogen) interact to produce disease phenotypes. In this study, 43 beehives throughout Central Florida were assayed for viral infections. To this end, 6 bee samples were collected per hive, RNA was extracted and reverse transcribed, and 258 cDNA samples created. These samples contained information on which viruses persist in the bees and information on bee gene activity. Each sample was then assayed for four common honey bee viruses: deformed wing virus (DMV), black queen cell virus (BQCV), Israeli acute paralysis virus (IAPV), and Lake Sinai virus (LSV). We found the size of neighboring floral resources was positively associated with viral infection intensity and negatively associated with urbanization. We also found that all bees were infected with BQCV and DWV, 45% with IAPV and 49% with LSV.



The washout phase of construction painting: a harmless move? The effects of latex paint on terrestrial residents

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Abstract (Posters)

The amount of paint released into the environment from the washout phase of commercial painting has caused concern since the 1930's. Paint additives and ingredients have been shown to detrimentally affect terrestrial organisms, and this experiment observes that trend. The hypothesis of this study is latex paint present at low, medium, and high levels will decrease activity and decrease survival of terrestrial residents garden snails, *Cornu aspersum*, and earthworms, *Lumbricina terrestris*, compared with the terrestrial residents unexposed to latex paint. Ten *C. aspersum* and 10 *L. terrestris* were placed into containers with (control) 0 mL, (low) 50 mL, (medium) 200 mL, or (high) 500 mL of latex paint added to the soil substrate. The *C. aspersum* and *L. terrestris* were observed daily for activity level and survival. There were significantly lower activity and survival rates in the terrestrial residents at higher paint exposure, further supporting the need for improved containment methods for the washout phase of construction painting.



System Involvement Among Fatal Overdose Victims

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Abstract (Posters)

This research study seeks to determine if people who fatally overdosed due to opioid use in 2021 in Orange County, Florida had contact with agencies and institutions that could have potentially connected them to treatment prior to their deaths. Individuals struggling with an opioid addiction may have contact with various entities including detox facilities, emergency rooms and clinics, and jails. Fatal overdose cases from 2021, provided by the Medical Examiner, were analyzed, to determine what contact, if any, individuals had with various agencies. These agencies have been contacted to determine if these individuals had been clients, patients, and so forth at their agency in the past 5 years. This study collected data by identifying the most common places where these individuals were prior to their death. Specific interventions can be developed to attempt to connect people to treatment in the future and ultimately reduce future deaths.



Freshwater Environmental DNA Amplification and Visualization for Bacterial Metagenomic Analyses Using Next-Generation Sequencing

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Abstract (Posters)

In the environment, a wide range of organisms, including plants, animals, and microorganisms, leave behind genetic material termed environmental DNA (eDNA). Environmental DNA is found in the environment, such as in air, fresh and marine water, sediment, snow, soil, and more. Previously, in this study, freshwater samples from polluted and unpolluted sites in South Florida were collected and processed for DNA extraction and quantification. Recently, the V4 hypervariable region of the prokaryotic 16S ribosomal RNA (rRNA) gene was amplified by polymerase chain reaction (PCR) using a universal primer set (515f and 806r). PCR was used in conjunction with gel electrophoresis to separate and distinguish DNA fragments based on their size. Separated DNA fragments in the gel were visualized using a dye that fluoresces under ultraviolet (UV) light, providing information about the size and quantity of the DNA fragments. As a result, ~30 candidate PCR products will be used as input for next-generation sequencing (NGS). Future directions include sequencing the DNA of bacterial communities in each sample and retrieval of sequences. NGS coupled with bioinformatics will allow for analyses and interpretation of metagenomic data. This study aims to compare the bacterial communities from polluted and unpolluted freshwater sites in South Florida and determine the diversity and abundance of bacteria in each sample. Bacterial eDNA as a tool for environmental monitoring coupled with molecular techniques and bioinformatics analyses can provide valuable insights into the impacts of pollution in these aquatic environments and the potential implications for their health and functioning.



"I Don't Know if They Really Want You to be a Hero. I Think They Just Want You to Look Like One": Moralism in *The Boys*

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Abstract (Posters)

The Boys exists as an immensely popular show known for undermining their audience's expectations through startling means. Within *The Boys*, moralism functions to subvert traditional expectations of what a superhero show should entail and how superheroes behave. *The Boys* challenges norms around the characterization of heroes by utilizing two different subcategories of the theory of moralism: vain moralism and cruel moralism, as defined by Paul Russel. Numerous journal articles have been written about the theory of moralism as well as the evolution of the superhero and the characteristics that come with one throughout the history of comic books, movies, and TV shows. Applying all the theories and tropes presented in those articles, which have derived their findings from patterns in popular superhero-based media to show commonalities among mainstream superhero content, *Homelander* subverts expectations of how a superhero should behave by exhibiting vain moralism, Billy Butcher undermines the audience's ideas of who should qualify as an anti-hero by acting through both cruel and vain moralism. Furthermore, heroes like Soldier Boy and A Train both act on cruel moralism, defying ideas about who should qualify as a hero. *The Boys* defiance of traditional norms sculpts those who present as heroes to be villainous in their true nature and makes the show's anti-heroes more devious than their counterparts in other media. *The Boys* may have created a perception of heroes that remains entirely different than any the audience may have seen before, reshaping their perception of heroes in unprecedented ways.



Main Factors Influencing Consumers to Purchase Customized Products

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Abstract (Posters)

This research will classify customized products according to their production methods and product categories. On a production method bases, these categories may include: online customization, offline customization, commissioned customization, or personal production. While based on product category, the researcher segment The products into four parts: clothing, daily necessities, decorations and luxury goods.

The researcher then analyze these customized products and their consumers based on the existing classifications.

This research report is going to focus on the factors that affect consumers' purchase of customized products. The researcher will study how different kinds of customized goods attract consumers from the perspectives of geography, psychology, consumer behavior, and demography, to determine which channels and forms are best for the companies related to the customization industry.



Dos Bocas Oil Well Explosion in Indigenous Veracruz, 1908

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Abstract (Posters)

This project aims to recount the phenomenon of Dos Bocas, an oil well fire that viciously burned for 58 days in Veracruz in 1908, by detailing the event's broader role in Mexico's earnest pursuits of achieving oil-based modernization. In sharp contrast, the memory of Dos Bocas and its nationwide socio-economic implications are unpacked into two perceptions as a result of archival sources. In one view, the dominating position on the national arena is voiced by Mexico's policymakers, scholars, capitalists, and journalists.

Due to the precedence and popularity of this view, I offer an often suppressed view of the disaster. The less vocalized but equally valid local view expressed by San Diego de la Mar residents and the municipality of Tamalin's surrounding Indigenous communities, precisely the Totonac and Huastec. I argue that the oil companies and the federal government's response to the crisis contributed to the disaster by opening Mexico to foreign investment when the issue should have been addressed as a humanitarian emergency. Dos Bocas is interpreted not solely as a story about economic motives or political gains, but as a human story, a human crisis.

Keywords: Oil, Fire, Veracruz, Indigenous, Human



Why do Faculty Persist?: Designing a Survey to Assess Service-Learning and Community Engagement Motivations and Orientations

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Abstract (Posters)

Service learning and community engagement (S-LCE) is a form of pedagogy that pairs classroom instruction with students engaging in service in the community. Previous research has demonstrated primary motivations (student learning and community impact) and orientations (disciplinary knowledge and training and social change) towards S-LCE from faculty who have worked in the field. The current project will develop a survey that can be administered to faculty participating in S-LCE in order to discover the motivations of their work, using the past findings as guidelines. Researchers coded and rephrased statements from interviews of 29 faculty who engage students in S-LCE work at two institutions of higher education. Two independent coders identified statements to be included in the survey. The survey will comprise statements from interviews of faculty members that detail their anecdotal experiences with S-LCE and are coded to identify motivations and orientations as well as typical challenges and support experienced at institutions of higher education. Once the survey is constructed, it will be administered to faculty at different institutions to validate the survey instrument.



GC-MS Analysis of Bioactive Compounds in *Ziziphus celata*

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Abstract (Posters)

Ziziphus celata, or Florida jujube, is a spiny flowering shrub native to Florida and found only on the Lake Wales Ridge in Highlands and Polk Counties. There are just a few wild populations left and it is officially listed as “endangered.” In contrast, *Ziziphus jujuba* is a very popular crop plant in its native China. It has been analyzed extensively and has been shown to contain several interesting compounds with medicinal value such as anti-oxidants and anti-cancer agents. Many other species of *Ziziphus* have been similarly analyzed. Bok Tower Gardens (Lake Wales, Florida) has generously provided samples for our project to identify bioactive compounds in *Ziziphus celata*. In previous work using gas chromatography-mass spectrometry (GC-MS), we established methods and successfully identified several compounds present in *Ziziphus celata* fruit. Current studies focus on refining sample preparation and data acquisition methods in order to identify more compounds and quantify their relative abundance. In addition to fruit, we are now targeting the analysis of stem and leaf. Our latest results are presented here.



Evidence that Attitudinal Self-Justification (not Self-Refutation) Enhances Intellectual Humility

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Abstract (Posters)

Previous research has shown that the dispositional trait of intellectual humility (IH) predicts increased tolerance to opposing perspectives and beliefs. In the current study we reasoned that the relationship might also work in the reverse direction, i.e., that the act of critiquing one's own position on a contentious issue might serve to enhance IH. To test this hypothesis, we prompted participants to declare their position on a potentially divisive social issue (specifically, whether to allocate scarce medical resources to non-vaccinated COVID-19 patients), and then randomly assigned them to either contradict their position, justify their position, or engage in an unrelated writing exercise. Contrary to our hypothesis, we found that participants who justified their belief reported higher levels of IH than participants who contradicted it. In light of this unexpected and somewhat counterintuitive result, we argue that the intellectually humble mindset is fortified under conditions of minimal self-threat as opposed to threatening forms of self-examination.



"Discovery of druggable pockets in NSP13 and NSP15 SARS-COV-2 proteins"

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Abstract (Posters)

The highly infectious SARS-CoV-2 is rapidly evolving and generating new variants. This creates a challenge for the development of antiviral drugs and vaccines. Targeting viral proteins that hold biological significance as seen through their high evolutionary conservation, crucial function such as being integral to the viral life cycle, and that display relatively few post-translational modifications hold promise as effective antiviral drug targets. This research project explores the potential druggability of conserved fitness critical proteins, NSP13 and NSP15, that could contribute to bringing down the virus. Both protect the virus from the host's immune response by interfering with different molecular defense mechanisms and have critical roles in viral replication. This project scrutinizes the potential of these proteins as antiviral drug targets through multiple bioinformatic methods, including evolutionary comparisons with counterparts in other taxa are performed using multiple sequence alignments and phylogenetic constructions to determine the degrees of conservation across species and gain insight into biological significance. Druggable pockets are subsequently predicted with PockDrug and visually represented along with the parent protein using PyMOL in conjunction with ConSurf, performed to elucidate the conservation of a target of interest. Based on comparisons through multiple sequence alignment, hypothesis testing of amino acid conservation, and pocket druggability prediction, we found a pocket on NSP13 that is likely an ideal target for a long-term antiviral drug target. If a drug can be identified to specifically bind to this target it may be effective against current and future coronaviruses.



Preliminary Studies on the Effectiveness of Industrial Hemp as a Phytoremediator of Polluted Water Bodies

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Abstract (Posters)

Fresh water lakes and waterways in Florida have been declining as the result of nutrient pollution. Excess nutrients from fertilizer, animal feed, phosphate mine events and human waste continue to exceed Florida Department of Environmental Protection's Total Maximum Daily Load threshold. Industrial hemp (*Cannabis sativa*) has been shown to remove heavy metals and radioactive chemicals from polluted soil. This project is intended to explore and test the effectiveness of industrial hemp as a viable means of removing nitrogen and phosphorus from polluted water. *Cannabis sativa* is a land plant and does not typically do well in deep water that is not mechanically oxygenated. The goal of this project is to grow plants that will survive when placed in impaired water long enough to remove some of the excess nutrients. The hypothesis is that the excess nitrogen and phosphorus in the impaired host water will provide the nutrients needed for the plants to survive. Our goal is to determine average uptake of nutrients by a specific cultivar of *Cannabis sativa* over its lifespan. We have developed a growing method that conditions the plants to seek water directly; the plants have demonstrated the ability to survive in water for 3 months. Using growth medium with known concentrations, we obtained preliminary data on the nutrient levels in the plant tissues and nutrient uptake per plant in one- and four-day periods. Here, we present our data on successive one day trials using pond water as the nutrient source.



Serotonergic hyperinnervation modifies cocaine responses in mice expressing the psychiatric disorder-associated DAT Val559 variant

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Abstract (Posters)

Individuals with psychiatric conditions including attention-deficit/hyperactivity disorder (ADHD) and bipolar disorder (BPD), which are characterized by disruptions in dopamine neurotransmission, are more likely to abuse illicit drugs. In order to identify genetic changes in dopamine signaling that drive ADHD risk and generate improved animal models of ADHD, the Blakely lab screened for rare coding variation in the dopamine transporter (DAT, SLC6A3) in ADHD subjects. They identified the Ala559Val substitution, a mutation previously identified in an individual with BPD that triggers anomalous dopamine efflux and alters dopamine clearance, levels, and behavior in mice. These mice show a lack of locomotor stimulation from cocaine, but still display cocaine conditioned place preference (CPP) and sex-dependent CPP extinction, indicating that the rewarding effects of the drug remain intact. Introduction of the cocaine-insensitive serotonin (5-HT) transporter (SERT) Met172 mutation led to a complete rescue of cocaine-induced hyperactivity in DAT Val559 mice leading us to postulate that the dopaminergic dysfunction may trigger a compensatory neuroplasticity in the serotonin system. Indeed, 3D analysis of 5-HT axons revealed increased serotonergic innervation in the dorsal striatum of DAT Val559 male mice and medial prefrontal cortex of female DAT Val559 mice. In the dorsal raphe nucleus, mRNA expression of 5-HT neurons markers including SERT, Tph2, and ePet1 was also greater in DAT Val559 mice with the fold change higher in DAT Val559 females. These data suggest that a critical interplay between the 5-HT and DA systems may contribute to altered risk for substance abuse in individuals with neuropsychiatric disorders.



COVID-19 Fake News on Facebook: College Students and Their Distrust in the Platform

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Abstract (Posters)

The increase in popularity of Facebook and effects of COVID-19 caused a major influx in the production of fake news that was, in most cases, not removed by Facebook (Meta). The purpose of this study was to learn if Daytona State College students could identify the legitimacy of articles on Facebook regarding COVID-19. To test, the researchers created a survey, with 102 respondents, containing modified Likert scales, with three credible news posts and four non-credible news posts. The study's findings yielded significant results indicating that Daytona State College students were able to recognize non-credible news sources more accurately than credible news sources. The findings recorded by the research team may suggest that a greater distrust in Facebook was causing respondents to misinterpret credible sources; however, future research on other social media platforms is necessary to investigate this idea.



"Reel" vs. Reality of Child Custody: Media Portrayals from Gloria Vanderbilt to Kim Kardashian and Kanye

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Abstract (Posters)

This study examined how child custody cases are portrayed in mass media compared to how these cases are resolved in real life. Through case studies methodology, it analyzed media representation of factors such as role of gender (mother, father, other guardian), custodial arrangements (equal, split, joint), and major decisions concerning the child (schooling, medical care, religion, etc.). While media reports frequently framed custody cases as contentious and more likely to favor the mother, study results showed numerous elements influence the outcomes. One high profile custody case involved singer Britney Spears who, despite her fame and fortune, lost full custody of their two sons to ex-husband Kevin Federline in 2008 because of what the court characterized as “best interests of the child” given personal issues she faced. In 2022, Kim Kardashian and Ye (aka Kanye West), as a part of their divorce settlement agreed to joint custody of their four children with the rapper-designer agreeing to pay \$200,000 a month in child support. In addition to contemporary custody cases, the study looked at historic ones such as heiress Gloria Vanderbilt and how more than 100 reporters jammed the courtroom in 1934 for what was described as “the trial of the century”. Preliminary findings show that despite media representations, 91% of custody cases are settled by parents themselves without court intervention. Another finding is that more fathers have become custodial parents than the media would lead you to believe, with the percentage increasing from 16% in 1994 to 20.1% in 2018.



Analyzing Stone Fish Net Sinkers in the North Coast of Peru: inquiring its functional and symbolic aspects.

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Abstract (Posters)

Maritime communities flourished in the northern coast of Peru for thousands of years due to the abundance of marine life, which inspired these communities to create specialized tools to aid in the fishing process. One of these tools was cotton fishing nets (not always preserved in the archaeological record) but its stone sinkers are very common in midden deposits. This poster analyzes the variability of the fish net sinkers from two sites in Huanchaco, Peru, Pampa La Cruz, and Jose Olaya, Iglesia Colonial. Additionally, this paper will compare the differences in stone net sinkers between cultural occupations spanning over centuries starting with the earliest of the Salinar occupation (400-200 B.C.), the Virú (B.C. 100 – 450/500 A.D.), and the Moche (450/500 – 800/850 A.D.). By analyzing the similarities and differences of the fish net sinkers, one can infer the types of fishing nets used by maritime communities and their social implications. Fish net sinkers found in ceremonial context had evidence of being intentionally broken in half, which shows that they were part of elaborate rituals. Studying these lithics gives insight into how integral fishing was in people's daily lives and the ceremonial practices that occurred in these communities.



Oral microbiome as a risk factor for cardiovascular disease

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Abstract (Posters)

Cardiovascular diseases (CVD), the number one cause of death globally, are a group of disorders of heart and blood vessels including hypertension, atherosclerosis, myocardial infarction, ischemic heart disease, and congestive cardiac failure. Risk factors for CVD include genetics, diet, physical activity, stress, weight, gender, and race. Our previous work highlighted the significance of high dietary sugar in endothelial dysfunction, an important event that initiates vascular diseases. Another significant risk factor emerging for CVD is oral microbiome, which plays a crucial role in human health and disease. Healthy oral microbiome harbors commensal bacteria that provide a secondary source of nitric oxide, a molecule involved in maintaining vascular tone. Oral microbiome also harbors pathogenic bacteria like *Trachomonas denticola* and *Porphyromonas gingivalis* that not only cause the gum disease but can also enter the blood as evidenced by their presence in atherosclerotic plaques. Oral microbiome has been studied for many years, but recent advances in -omics technology provides an excellent way to gain deeper insights into the functional microbiome. Oral cavity consists of various niches out of which the tongue coating represents a stable microbiome. In this project, we will collect tongue coating specimens from 15 healthy individuals, extract DNA and perform whole genome sequencing (WGS). The results will provide a baseline signature for the healthy tongue coating microbiome to gain insight into the species that play a role in health and disease. This analysis provides an opportunity to discern the microbial etiology of CVD as well as an approach for early intervention.



The role of Oral Microbiota in Gingivitis

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Abstract (Posters)

There are more than 500 species of microorganisms that can be found within the oral cavity. These Biota exist in the microbiome; a community of organisms that help to balance and maintain the health of the immune system. Oral microbiota has been found to be linked with various diseases and symptoms that all start in the mouth. Having an unbalanced microbiome can be one of the leading causes of many infections. Gingivitis is a common gum disease that results from the inflammation of the gingiva caused by molecules derived from microbial communities. Bacteria involved in gingivitis include specific species of Streptococcus, Fusobacterium, Actinomyces, Veillonella and Treponema. Bacterial plaques form on teeth from the interactions of oral bacteria with food and can turn into tartar and cause inflammation and gingivitis. This project aims to study the oral microbiome, especially that of the tongue coating as it represents a stable community. Tongue coating specimens will be collected from 15 healthy individuals, DNA will be extracted and processed for whole genome sequencing for microbiome analysis. The analysis will include not only the bacteriome, but the mycobiome and virome as well and will shed light on healthy interactions of these communities. Studying the oral microbiome gives an opportunity for early intervention into the gum diseases. It is important to prevent and reverse gingivitis as it can go on to cause oral as well as systemic diseases.



Hands-Free Wheelchair Control for ALS Patients Utilizing Electromyography and Gamified Training

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Abstract (Posters)

ALS is a disease caused by the degeneration of motor neurons in the nervous system, progressively leading to decreased mobility and quality of life (Oskarsson 2018, Geng et al. 2016). Powered wheelchairs are a solution that tend to provide means of retaining mobility, a greater quality of life, and increased independence (Meyrick 2016). However, functional impairment of upper extremities prevents use of a standard joystick interface (Oskarsson 2016). This research explores an alternative method of control: using surface EMG to detect varying strengths of flexion produced by the temporalis muscle for use in controlling a wheelchair. In order to improve the user's experience learning the complex interface, gamified training will be used in future studies.

In a preliminary study four patients between the ages of 51 to 69 who had been diagnosed with ALS and had impairment of hand functioning prevented the use of a joystick interface. Left, right, forward, and stop correlated to a light, medium, hard, and hard flexion of the temporalis respectively. Patients reported highly positive scoring among evaluations of improvements in the independence.

Collected data shows that the EMG system performs favorably but exposure to a virtual training system prior to introduction in a real world experience would benefit the user more (Manero 2022). Limbitless Journey, was designed to provide patients autonomous control of a simulation game using eye-tracking for menu control and calibration and EMG for steering (Smith 2022). This will be evaluated to determine how video game training can be optimized.



A Boolean Network Model of Gene Regulation in Airway Epithelial Cells in SARS-Coronavirus Treatment

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Abstract (Posters)

SARS-CoV-2 is a viral respiratory illness that causes COVID-19, which was first detected in December 2019. Based on the current ongoing public health crisis involving this disease, the Laboratory of Systems Medicine has developed an integrative model. With current knowledge of the various biological mechanisms that COVID-19 employs, we developed a Boolean network model, which discretely represents biological actions that take place continuously in the human body.

This model represents biological interactions taking place on pneumocytes infected with the coronavirus. The interactions were developed from a thorough literature review, with Boolean nodes corresponding to various parts of the innate immune system from abiotic components to gene transcription factors. We ran the Boolean network asynchronously, and the final result was the ensemble of 250 networks ran independently. Based on these states, a literature review was performed to validate the model with the actual effects of the coronavirus on gene expression. With expression data at 24 hours following infection, it was found that the Boolean network model supported five of the seven noted genes.

Overall, this Boolean network model performs considerably well, incorporating elements of various cellular processes, including the AKT-mTOR pathway, the ACE 2-Angiotensin pathway, and other pathways involved in cellular apoptosis and necroptosis. In future work, we aim to condense this model to its key components in mitigating the effects of the coronavirus and conduct further experimental confirmation with more time-series information on gene expression data.



Cookie Cutter Girls: A Content Analytic Investigation of the 'Clean Girl Aesthetic' on TikTok Kenson Moore, Lily Jones, Madeline Wick, Sean Dougherty, Jennifer Harriger, and Pamela Keel

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Abstract (Posters)

It is well known that social media includes highly idealized content that contributes to the spread of the thin ideal. Many researchers have utilized content analytic procedures to examine specific social media content areas, including thinspiration, fitspiration, and body positivity. However, no content analyses have focused on a popular micro trend known as the 'Clean Girl Aesthetic'. The present study involved a content analytic examination of the themes and characteristics of the 'Clean Girl Aesthetic' on TikTok. TikTok videos included in the present content analysis were identified by entering the keywords 'Clean Girl Aesthetic' into the search bar on TikTok. Preliminary results suggest that the majority of these TikTok videos include women who appear to be in their 20s who are thin, white, and blonde. It was rare for these women to embody characteristics that were not consistent with the thin-ideal, such as acne, wrinkles, or cellulite. Furthermore, the vast majority of women were seen wearing neutral colors, minimal makeup, and gold jewelry. Themes of motivation, commercialism, productivity, and minimalism were common. However, themes commonly associated with the thin-ideal, including thin praise and diet culture, were rare. These results suggest that the 'Clean Girl Aesthetic' trend promotes the thin-ideal and commercialism to achieve this ideal but may not include as deleterious of messages as other types of thin-idealized content, such as thinspiration. Future research should utilize experimental methods to examine the effects of viewing 'Clean Girl Aesthetic' content, especially in those who may not embody the thin-ideal themselves.



Diversity is differences and equity is equality: Publicly perceived definitions of diversity, equity, and identity from a DEI museum exhibit.

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Abstract (Posters)

Many organizations utilize a mission statement that defines and emphasizes the importance of diversity, equity, and inclusion (DEI), but these definitions vary wildly from being broader to highlighting specific minority groups and outcomes. These organizational definitions might reflect differences in the general public's understanding of DEI. They might also reflect differences in individual identity perception. The current study examines whether the general public's understanding of DEI and identification (DEId) is different depending on attendance of a diversity-related educational museum exhibit on implicit bias. Jacksonville Museum of Science and History (MOSH) members and Bias Inside Us exhibit attendees (N=31; 51.6% women; 41.9% white, 16.1% Black, 16.1% more than one race/ethnicity; 40 median age) completed a survey of three open-ended response questions about DEId (i.e., "What does diversity mean to you?", "What does equity mean to you?", and "What is your identity?"). Two trained coders categorized each response into four diversity categories, six equity categories, (both subsets ranging from surface-level understanding to all-inclusive, dictionary-definition understanding) and three identity categories (demographically, personally, or globally). Implicit bias exhibit attendees were more likely to define diversity as being exemplified by surface-level differences than non-attendees. Attendees were also more likely than non-attendees to define equity as equality and use personal identifiers rather than global or demographic identifiers. Evidence suggests a need for revisions to DEI programs' standardized definitions to better public engagement. Future studies should explore relationships between diversity programs, knowledge, and DEId definitions in other populations such as University students.



Annotation of genes in the longevity-regulation pathway in *Diaphorina citri*

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Abstract (Posters)

The genome of *Diaphorina citri*, the vector of citrus greening disease (Huanglongbing), has been the focus of a community annotation program to provide high quality gene models for development of molecular therapeutics. Here we present the annotation of the longevity regulating pathway (Kegg dme04213). The pathway is associated with lifespan and stress responses during dietary restriction. Binding of the insulin-like peptide (DILP) to the receptor (InR) initiates the pathway. Upon activation, TOR plays a key role in regulating nutrient signaling, reproduction and other important cellular processes. Additional genes in the pathway, including Akt and FoxO, have been shown to be associated with longevity. Annotation began with collecting orthologous sequences from NCBI which were then used to locate longevity pathway genes in the *D. citri* genome by using the Citrusgreening.org WebApollo genome browser and editor. Reciprocal BLASTp analysis was performed to confirm the identified genes. Manual annotation was based on short read RNA-seq and PacBio Iso-seq transcript evidence to correct gene structure, intron/exons borders and untranslated regions. Manually annotated genes will be available as a part of the version 3.0 Official Gene Set. Annotation of the longevity regulating pathway provides insights into the genes that regulate lifespan, stress response and nutrient signaling in *D. citri*. Identification of these genes in *D. citri* provides the molecular data required to develop tools for vector control.



Spectrophotometric Investigation of Plant Based Pancrelipase for Pancreatic Insufficiency

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Abstract (Posters)

Cystic fibrosis (CF) is a genetic disease in which patients produce thickened mucus, sweat, and digestive juices that block passageways throughout the body. One critical health concern in CF patients is insufficient digestive enzyme production by the pancreas leading to malnourishment and illnesses caused by malnourishment. CF patients are prescribed supplemental pancreatic enzymes derived from pig intestines. The purpose of this study was to test the hypothesis that plant-based enzymes (bromelain protease, oat lipase, oat amylase, and mango amylase) will have significantly higher or comparable amounts of digested proteins, fats, and carbohydrates compared to CF-prescribed supplemental pancreatic enzymes from pigs. To measure digestion, reagents were utilized: Bradford reagent for protein, iodine for starch, and rhodamine for fats. The amount of organic compounds after adding the control and plant-based enzymes were analyzed through spectrophotometry. The results of this study indicate that all four of the plant-based enzymes digested significantly higher or equal amounts of proteins, fats, and carbohydrates compared to the prescribed pancreatic enzymes from cashew, *Anacardium occidentale*, milk. As opposed to current supplemental porcine derived pancreatic enzymes, the plant-based enzymes have additional properties that could be of great interest to the cystic fibrosis community. Bromelain has an alkalizing effect further aiding digestion and absorption, mango amylase has shown antidiabetic properties comparable to medication metformin, and oat lipase is documented as an efficient source of fiber. Coupled with the properties of the individual enzyme sources, this research supports the need for future research into using plant-based enzymes for supplemental pancreatic enzymes.



Targeting the TRPM8 Receptor: The Gateway for Anti-Cancer Properties Associated with Carvacrol - A Plant-Derived Bioactive Molecule

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Abstract (Posters)

Plant-derived extracts and essential oils have been known for millennia to have therapeutic value when treating various human maladies. Previously we demonstrated that carvacrol, a bioactive molecule in oregano, decreases proliferation for the TRPM8+ skin cancer cell line, A375, and increases proliferation for the TRPM8+ non-cancerous epithelial cell line, BEAS-2B. To further examine the role TRPM8 has in mediating these cellular responses, exogenous small interfering RNA (siRNA) oligonucleotides were used to knockdown TRPM8 expression in A375 and BEAS-2B. Non-targeting siRNA (scramble) was used in parallel as a negative control during the transfections. Following transfection, Western blot methods confirmed the knockdown of TRPM8 expression. Next, the transfected cells were treated with carvacrol (0 μ M and 125 μ M) over 72 hours. As expected, the non-targeting siRNA transfected cells showed a reduction in cellular proliferation among the A375 cells and an increase in proliferation among the BEAS-2B cells. Similar results were obtained using biochemical proliferation assays. More notably, these cellular responses to carvacrol were absent following the knockdown of TRPM8. Finally, cell death was assessed using apoptosis activity assays. As expected, the non-targeting siRNA transfections followed by carvacrol treatments showed an increase of apoptotic activity for A375 and was absent for the non-cancerous cells, both in agreement with our proliferation data. However, in the absence of TRPM8 expression, carvacrol did not significantly increase A375 apoptotic activity. Taken together, we show the TRPM8 receptor mediates the cellular responses elicited by carvacrol and serves as the gateway for this novel treatment option intended for skin cancer patients.



Drawing Their Ideal Learning Space: Chemistry Faculty Knowledge About the Relationship Between Physical Space and Pedagogy

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Abstract (Posters)

Active learning classrooms (ALC) are technology-rich, student-centered classrooms designed to promote instructional approaches that focus on higher levels of student engagement in course material. Although studies have shown that ALCs contribute to improving student performance at the collegiate level, it has been observed that they are not used to their full potential. In this study, STEM faculty knowledge about the relationship between physical space and pedagogy was examined with the goal of understanding how faculty use space to convey messages in the classroom. To do this, faculty were interviewed about their ideal classroom and how they would use it and were asked to draw their ideal classroom. Transcripts were analyzed using the ETPACK Framework, which describes four knowledge domains and builds on the previously established TPACK framework with the main difference being an added environment domain to understand the messages students receive from various aspects of the room. Drawings were separately analyzed by identifying the hierarchy of the idealized classrooms. The hierarchy of the classrooms and knowledge of environment and pedagogy were compared to better understand how STEM faculty understand the relationship. Faculty knowledge about the relationship ranged from none at all (e.g. "it doesn't matter where things in the room are positioned") to a relatively extensive understanding where faculty utilized the space in order to tailor their approach to that of a student-centered learning environment. It was also found that some faculty understood this relationship and chose to utilize it to tailor their instruction to a professor-focused learning environment.



Age and Accountability: The Effects of Defendant Age on Verdicts and Credibility

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Abstract (Posters)

Extra-legal factors such as defendant age could bias juror decisions. While considerable research has examined differences in jurors' judgments of juvenile and young-adult defendants, far less research has examined whether jurors' judgments differ for young-adult and older-adult defendants. The Stereotype Content Model indicates that older adults are viewed as warm and incompetent (Fiske et al., 2002), eliciting pity and sympathy, potentially affecting jurors' decisions. 251 participants recruited through SONA (74.7% female; Mage= 19.98, SD=3.00) read a trial transcript involving a young (mid 20s) or older (early 70s) defendant and a young or older victim. Half of participants read transcripts which used age stereotypical language to describe the defendant (e.g., "feeble, 72-year-old"). All participants provided verdicts and defendant credibility ratings. Participants in the young defendant with stereotypical language condition were expected to be most likely to provide a guilty verdict and the lowest credibility ratings. Regardless of stereotype condition, participants were least likely to find the defendant guilty when both the defendant and victim were older (49% vs. 62% to 66%). Consistent with verdict findings, when the victim was older (vs. younger), the defendant was perceived as more credible (Ms=37.78 vs. 35.48, SDs=8.93 and 9.23; $p=.053$), regardless of defendant age. Contrary to predictions no other effects were significant. Overall, the current findings suggest that defendant and victim age influence juror decisions and perceptions, and contribute to the gap in the literature concerning age effects for older defendants. While our hypotheses were partially supported, further research is needed to expand conclusions.



Lessons learned from a test run of participant recruitment following the Florida Cancer Data System recruitment procedure

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Abstract (Posters)

We will conduct a cross-sectional study in 2023 to understand the disparities in quality of life among Hispanic breast cancer survivors in Central Florida by utilizing the Florida Cancer Data System (FCDS) Recruitment Procedures. While waiting for approval from the Florida Department of Health, we conducted a test run to identify any barriers that delay the process.

With ten volunteers (two being bilingual) FCDS recruitment procedures were simulated: first invitation letter –response –second invitation letter if the response is not received within 3 weeks –response - survey –incentives. Participants can indicate their preferred language (English or Spanish) and survey mode (paper or online). Dates of sending and receiving letters/responses/surveys were recorded in an Excel Spreadsheet, and the staff's response time and participant's return time were calculated. Barriers identified during the test run were recorded, and the solution was discussed.

Five participants (50%) responded to the invitation within three weeks. The average return time of the invitation letter was 23.6 days. Within three weeks, five completed the survey (three online and two paper) with an average of 22.4 days. Issues identified include 1) one mail was sent to Student Health Services, 2) two were missing and returned after two weeks of circulation, and 3) a delay in sending surveys.

Implementations were developed where we picked up the mail from the post office instead of waiting for it to be sent to our department. Also, a standard operating procedure was created to reduce the research staff's response time.



Modifying an Organic Chemistry Teaching Lab to be Accessible to Blind and Visually Impaired (BVI) Students

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Abstract (Posters)

There is a large number of children and college-age students with visual disabilities; however, few of these students are pursuing higher education in the field of Chemistry. One of the main reasons for this is the lack of ability to perform laboratory experiments, which are largely based around the sense of sight. Utilizing adaptive technology, modifications to an existing Organic Chemistry teaching lab, "Inquiry into the Acid Catalyst effect on the Esterification of iso-pentyl alcohol and acetic anhydride to form Banana Oil through Collaborative Data Collection", have been made and will be tested in the normal curriculum. The modifications will include a novel method of performing liquid-liquid extraction, the use of a pH probe instead of litmus paper, tabular analysis of a gas chromatogram (GC), and analysis of a sonified infrared spectrum (IR). The modifications will then be analyzed through a post-lab reflection and lab report. Though the experiment is expected to be able to allow future BVI students to conduct this experiment mostly autonomously, modifications should also be helpful for current non-BVI students. It is expected that the non-BVI students will find the modified lab easier to manipulate and gain a further understanding of data analysis previously taught to them.



Soft Robotic Prosthesis: Sensory Development

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Abstract (Posters)

The purpose of this research is to widen the understanding between soft robotics in prosthesis and the information feedback of regulated sensory systems. These systems demonstrate a current barrier in information interpretation that can be closed through a further understanding in how these processes configure communication. By shortening these communication networks between the input from the stimulation of surroundings and output to nerves, sensation may be increased for certain sensory thresholds. The primary scope of this project will look towards connection between programmed biosensors and tactile senses in soft robotic prosthesis. This will be demonstrated through increasing sensory information input to the nerve pathways through the computerization of these biosensors and pathways. Increasing the regulation of tactile sensitivity development in robotics will allow for greater interpretation of the physical world through prosthesis, as well as being the trigger for warning receptors in dangerous situations, such as temperature regulation and other situations that may cause potential damage to the prosthetic.



African History in the School Curriculum

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Abstract (Posters)

This research poster overviews the inclusion of African history within the studies of American history. Today, American history is a required subject, taught excluding the in-depth knowledge of human history prior to America's founding. Since life began in Africa, African history is our history. The subject raises a debate revolving around advantages each side gains when certain parts of African history is withheld. The thought consists solely of the person's beliefs. History educators, Lauren Brown and David Killingray, see the connection between the African past and the American present. Killingray incorporates strong themes to illustrate the African point of view of American history. Businesswoman, Janeane Davis, labels the teaching as a cultural enrichment for everyone that may prevent prejudice against differing races. The analysis will discuss objections, such as that of lawmakers in America. Government officials formed the idea that teaching true African history in American school systems creates discomfort by white people, further reflecting, white people should be comfortable under the expense of incorrect knowledge or ignorance of history that led to the present. This poster relays the one-sided advantage of this mindset and how it plants a societal idea in students. Moreover, the inclusion of African history as a required teaching along with American history is vital to the understanding of the past and the evolution of the future. In turn, not including this aspect of history furthers the idea that a society's cultural understanding is based on the feelings of white people regarding the topic.



Iceland's Soil Erosion Problem and its Impact on Global Practices.

Elliot Courtney

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Abstract (Posters)

Iceland is a beautiful country that has experienced erosion and soil conservation challenges. Deforestation, wind, and the grazing of animals have left the soil barren in many areas, resulting in difficulty in planting and growing vegetation. The volcanic tephra includes andosols, which are soils formed by volcanic ash that may contain the solution to the erosion problem. Paradoxically, andosols may also contribute to erosion. This research project focuses on andosols, which make up less than 1% of the world's soil.

Through my literature review, I address the question of whether or not andosols might be the solution to Iceland's erosion problem, and whether or not they could also be used in many different parts of the world. I offer a comparative analysis of studies conducted in Maui, Japan, Indonesia, and the Andes Mountains to illuminate both the challenges and the promise this soil might offer for solving the problem of erosion. I also address the limited studies involving the transportation of andosols.

Soil conservation is a problem for many parts of the world; if we understand the challenges and success of Iceland's erosion problem, we may be able to extrapolate solutions for other parts of the planet as well. While my conclusions are not definitive, understanding the complex and multivalent dimensions of the problem of erosion and the potential solutions to be found in the use of andosols deepens our understanding of a fundamental aspect of the earth's carbon cycle.



Changes in 3D genome architecture during immediate early gene induction of mouse B cells

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Abstract (Posters)

Understanding nuclear chromatin organization is critical for understanding its function in gene expression and cell fate specification. Biochemical techniques, including Hi-C and Promoter-Capture Hi-C, can analyze chromatin 3D conformation and genomic contacts. We will use Promoter Capture Hi-C data from naive mouse B cells to study the changes in 3D genome architecture during immediate early gene induction. B cells are white blood cells that play a vital role in the body's immune system. Upon B cell activation, the expression of several immediate early genes is induced, including Fos, Jun, and Myc protooncogenes, and organizational changes in the chromatin take place. These spatial modifications could result in new genomic interactions, including promoter-enhancer interactions. We will use computational tools such as CHiCAGO and Chicdiff to analyze significant promoter interactions in the data at different time points before and after B cell activation. We will use publicly available RNA-seq and ChIP-seq data to study how epigenetic marks relate to gene expression levels at different time points. These methods will allow us to investigate the changes in immediate early gene expression after B cell activation and determine if these changes are related to changes in enhancer-promoter interactions and 3D genome organization. A better understanding of the chromosomal organizational changes after B cell induction will give insight into notable events after activation, including changes in genomic contacts, gene regulation, and potential implications for disease. We believe we will see changes in the 3D genome architecture in naive mouse B cells after immediate early gene induction.



California & Florida – Different Lenses Leads to Peculiar Histories

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Abstract (Posters)

For non-history major students, high school is one of the last places where history is learned. This will cement their understanding of how their nation came to be and influence how they believe the nation should move forward. Politics has heavily influenced historical material, therefore I decided to compare two politically different states: California and Florida. I hypothesize that the areas most affected in textbooks are those that are politically contentious. Using annotations on pages with discrepancies, I found multiple differences between the textbooks, such as major text deletions, missing biographies, excluded American literature, and much more. This research is important in order to create awareness of the growing role that politics plays in the objective field of history. It is imperative for students to have access to the same information across the nation without being impeded by subjective forces.



The Effects of Roundup on the Life History, Stress Response, and Immune Function of the Arbovirus Vector, *Culex Pipiens Quinquefasciatus*

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Abstract (Posters)

A water-soluble herbicide, glyphosate (Roundup), is increasingly being used in agricultural croplands and has been found to contaminate runoffs where mosquito larvae are raised. The increasing contamination levels could prompt negative effects unknown to mosquito physiology. Studies conducted on *Anopheles gambiae* have found that contaminated runoffs inhibited melanin production, which is important for mosquito immunity and could indicate an increase in viral load. If viral immunity is suppressed within, it can result in high disease transmission rates to humans. This study will test the hypothesis that the mosquito, *Culex. quinquefasciatus*, larvae exposed to glyphosate will have a suppression in viral immune genes. 75 *C. quinquefasciatus* larvae were randomly added to five different concentrations of Roundup and a control group. As the mosquitoes completed metamorphosis, life history data were collected. 10 days after eclosion, five adult females were placed in TRIzol for reverse transcription. The cDNA underwent qPCR processing to assess immune genes. This study found that as the concentrations of glyphosate increased, larvae survivorship declined, and development time increased. The data indicated that adult females could survive the 7-day incubation period needed for virally infected mosquitoes to become infectious. It was statistically significant that only one immune gene, defensin, was suppressed in female adults. Roundup can affect the antiviral immune responses in life history, leading to increased disease transmission within *C. quinquefasciatus*. Further research is needed to find conclusive effects on viral immunity. This research can influence policies that limit the amount of Roundup applied in croplands.



Sleep as a Pathway between Adverse Childhood Experiences and Multimorbidity: The Impact of Lifestyle

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Abstract (Posters)

Background. Previous research has established that ACEs are associated with multimorbidity and sleep disturbances across the lifespan. Some evidence suggests that sleep impairment may be a pathway between ACEs and later multimorbidity, which could provide modifiable treatment targets. This study aims to establish the effects of ACEs on multimorbidity through sleep quality and investigate whether lifestyle factors may influence this relationship.

Methods. Participants were drawn from two distinct samples, including a cross-sectional sample of community older adults (N=300; aged 55+) and three waves of data from the Midlife in the United States study (N=795). All participants completed assessments examining ACEs, sleep quality, eating habits, physical activity, and health conditions. Hierarchical regression and the PROCESS Macro in SPSS were used to examine the direct and indirect effects of ACEs, sleep quality, and health conditions, as well as the conditional effects of physical activity and eating habits.

Results. Across both samples, higher ACEs were associated with poorer sleep quality, and worse sleep quality was associated with a greater number of health conditions ($p < .05$). The indirect effect of ACEs on health through sleep was also significant across both samples. The moderating effects of unhealthy eating and physical activity on these relationships differed between samples.

Conclusions. Our findings demonstrate that sleep quality is a mediator between ACEs and adult multimorbidity. Our findings support that health behaviors may impact the direct and indirect effects of ACEs and sleep impairment on health.



Developing Custom Advanced Orthotic to Improve Biomechanical Gait for Congenital Symbrachydactyly

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Abstract (Posters)

Nearly eight in ten Americans have experienced foot problems as a result of wearing ill-fitting shoes [Branwaite 2019]. Ill-fitting footwear can lead to acute pain and progress to the development of major functional limitations and peripheral pain. [Branwaite, 2019]. A variety of conditions can cause foot abnormalities [Rampal et al 2020], with approximately 1 in 1000 people born with clubfoot congenital differences [Ansar, et al 2018]. These differences may require individuals to look for other footwear options due to ill-fit. Personalized orthotics can help prevent movement related injuries by aligning the lower limb kinematics and optimize joint stability. [Jafarnezhadgero et al 2018, Mayor et al 2016, Goodell et al 2016]

This study introduces a custom insole orthotic, for an individual with fibular hemilia, a partial loss of fibula bone and symbrachydactyly, the lack of formation of bones [Goodell et al 2016]. The goal of this project is to support the unique foot geometry inside a commercial shoe, improving the fit, comfort, and locomotion.

The design and manufacturing of the orthotic involved computer aided design using Autodesk Fusion 360, 3-D printing molding, casting mixture of DragonSkin™ and Ecoflex™ antifungal silicone, and air bubble degassing. The iterative process yielded six trials. Utilizing a casting mixture of longer silicone pot life yielded better results. The researchers qualitatively assessed gait characteristics including form deviation. The implementation of the orthotic looks to improve biomechanical potential in gait and mobility, with future work looking to quantitatively measure gait change utilizing biomechanical equipment [Nagano et al 2018].



Affordable Care Act Insurance Marketplaces in Rural Areas

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Abstract (Posters)

In 2012, the Affordable Care Act (ACA) was enacted. State-level marketplaces were created where individuals could obtain government subsidized health insurance. As the 10 year Anniversary approaches the launching of these ACA exchanges, this project aims to evaluate the successes and failures of the marketplaces. This investigation involves a compilation of data from the ACA Marketplaces beginning in 2014 until most recent data from the 2022 open enrollment period. This study will explore how the ACA marketplaces have impacted rural areas. We expect the ACA exchanges to have been least successful in rural areas. Focusing on silver plans offered in rural counties, the change in cost and competition will be analyzed to determine how effective the marketplaces are in such areas. Methods to evaluate this include a comparison of available plans in different rating areas within the state, and a comparison of how the plans shifted overtime. Furthermore, other health and census data support the exploration of the success of insurance marketplaces in low income areas. This project adds significant value as it is difficult for many people to obtain healthcare in rural areas. By observing how availability and cost has shifted in various rural rating areas, the success of the exchanges can be evaluated. The results will be used to evaluate the current state of the affordable healthcare policies in America, and will determine where additional progress can be made in order to support the U.S. population.



On the Synthesis and Reactivity of Amino Alcohols as Chiral Templates for Building Blocks in Peptidomimetic Synthesis

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Abstract (Posters)

β -Amino-alcohols derived from natural amino acids have been used extensively as a powerful source of chirality. In fact, they are present naturally occurring and pharmacologically active molecules, and the relative stereochemistry of the hydroxy and amino groups is highly important for the biological activity of these molecules. Thus, they have been used extensively in asymmetric synthesis, peptide, and pharmaceutical chemistry. In our laboratories, β -Amino alcohols and their derivatives have played seminal roles in peptidomimetic synthesis.

With this goal in mind, the formation of chiral amino alcohols was accomplished by the reduction of α -amino acids using sodium borohydride and iodine in anhydrous tetrahydrofuran (THF). Typically, the lithium aluminum hydride procedure is one of the most widely used techniques but suffers from several disadvantages. Therefore, using the NaBH₄-I₂ system was the procedure employed and no racemization of the chiral center was detected. In turn, protection of the primary amine using benzyl bromide in acetonitrile produced the N,N-Dibenzylamino alcohols, respectively. Subsequently, the N,N-Dibenzylamino alcohols were smoothly converted to the desired bromide in high yield by reacting with thionyl bromide and DMF. The product was spectroscopically pure, and no further purification was necessary. It was found, participation by the β -amino group in brominations not only enhanced reaction rates but also promoted stereo- and regioselectivities.



Don't tell me what to do: Reactance to meat reduction messages

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Abstract (Posters)

Strong messaging can have an undesired effect on individuals leading to feelings of threat and anger causing them to behave counter to the message's intention, a process known as reactance. While some studies have found that men produced higher reactance scores than women, some have reported no significant differences, especially in response to pro-environmental messages. The present study further investigated the relationship between gender and reactance. 241 participants (49% female) were randomly assigned to see either an assertive message reading "Stopping Climate Change: Everyone must eat less meat!" or a nonassertive message reading "Stopping Climate Change: Everyone could eat less meat." Participants were then asked about their intentions to comply with the meat-reduction messaging and their feelings of reactance (mean of anger scale and counterarguing scale) and perceived threat to freedom (PTTF). We ran ANOVAs with message type, gender, and their interaction predicting PTTF, Reactance, and Compliance Intentions Score. The interaction between message and gender was significant for all outcomes. Men responded with more reactance ($p = .002$) and more PTTF ($p < .001$) and complied less ($p = .001$) to messages that were assertive vs. nonassertive. Women showed no difference in outcomes based on message type. Our study revealed that assertive messages related to the environment led to more reactance from men but limited-to-no reactance from women. Environmental messaging should avoid assertive word choices to prevent the unintended consequences of reactance, especially among men.



Florida Undergraduate Research Leadership Summit (FURLS) 2024

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Abstract (Posters)

The annual Florida Undergraduate Research Leadership Summit (FURLS) began in 2019 and has been hosted at the University of Florida since then by the Center for Undergraduate Research Board of Students (CURBS). Modeled after the Florida Statewide Symposium, this conference brings student leaders together to discuss how to foster a culture of undergraduate research on campus and inspire students to pursue research. Here, we report on the main takeaways of FURLS 2023 and discuss visions for the future. We will also be recruiting members for the FURLS 2024 planning committee and gaining feedback on improvements students would like to see.



***Ticha*: using a Valley Zapotec Corpus to create accessible, user-friendly resources for language teaching and learning**

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Abstract (Posters)

Zapotec is a group of indigenous languages from Mexico, which has more than 50 varieties. It is spoken in the southwestern-central highlands of Mexico (e.g., Oaxaca region). The Zapotec script is one of the earliest writing systems in Central America, dating back to 500 B.C.E. Early Zapotec writing used a logographic system, in which each written character represented a word or morpheme. It was not until the end of the 16th century that people began writing Zapotec languages using the Latin alphabet. These texts are rich in knowledge and culture; therefore, the preservation of colonial Valley Zapotec manuscripts is an important aspect of the maintenance and revitalization of this language variety. The present project (*ticha*) uses a Valley Zapotec corpus of numerous colonial texts—the first being from 1565. Reading and interpreting these manuscripts can be quite challenging. The name *ticha* comes from the Colonial Valley Zapotec word for ‘word’, which can also mean ‘language’ and ‘text’. *Ticha* is an online, digital explorer that provides users access to reading, learning, and exploring these documents using a combination of original materials, transcriptions, and translations into English and modern Spanish. In addition, it also offers linguistic analysis (e.g., morphological interlinearization). *Ticha* was founded with the main goal of making these historical documents available to the community. This project seeks to make these manuscripts more accessible to scholars and the general public who are interested in learning about the linguistic, historical, and anthropological information of the texts.



Affects on Childhood Obesity

Laura Cozine

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Abstract (Posters)

This research project focuses on the effects of childhood obesity on children as a whole. Children who are overweight or obese experience biases from educators, and peers within school and society settings (Gollick & Chinn, 2021). This ridicule will affect them negatively in their continuous development of self. This research is supported by numerous graphs and data indicating the effects obesity has on development into early adulthood and beyond. Additionally, it elaborates on the educational fitness component and stereotypes associated within gym class, primarily the “fat kid” stereotype. Being overweight at a young age inevitably has substantial consequences (NEDA, 2022). The analysis of existing literature of the fitness industry and how food, sugar in particular, acts as a drug (Young, 2015). Further compounding the issue, socio-economic factors come into play on this subject. Many people do not have access to healthy sourced food, which then affects the child’s nutritional needs (Gupte, Giramkar, & Bhalerao, 2022). Michelle Obama had started the “let’s move” campaign which helped encourage children to be outside and move their bodies, which has since died out. Societal norms reinforce a hyper-body-focus. but the media’s opinions on fat have always been a heavy-lifting joke to most. Research-based recommendations include easy to implement home workouts, family support tactics, and education from a young age (Stern, 2022).



Evaluating the Role of the Melatonin in Thyroid Cancer Cell (MDA-T41): apoptosis and metabolism modulation

Angela Huang, Daniel Sanches
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Abstract (Posters)

Melatonin, a hormone produced by the pineal gland, is typically known for its modulation of several physiological functions, alongside its ability to synchronize the sleep-wake rhythms. In recent years, its interactions with cancerous cells and its role in prevention and treatment have been increasingly studied. It has been demonstrated that melatonin can improve the efficacy of chemotherapy drugs and directly inhibits neoplastic cell action. In addition, while melatonin typically displays anti-apoptotic effects in normal cells, it holds pro-apoptotic effects in cancer cells. However, the mechanisms by which melatonin affects cell death and metabolism remain unclear and seemingly differ from cell to cell. Our work aims to understand better melatonin's role in thyroid cancer cell apoptosis and metabolism. We cultured the MDA-T41 thyroid cancer cell line with varying melatonin quantities and measured cell death levels using the Realtime-Glo Annexin V Apoptosis and Necrosis assay. Our results showed that melatonin provided anti-apoptotic effects to MDA-T41 cells treated with staurosporine, an inductor of apoptotic cell death. Both apoptosis and necrosis were reduced by 50% in melatonin-treated cells twenty-four hours after staurosporine-induced apoptosis. Our next steps will be to evaluate the mechanisms and other signaling pathways involved in this apoptosis inhibition through Bcl-2 and p53 protein expression.



The Economics of Invasive Plant Management in Florida

Adam LaPorte, Florence Neymotin
Nova Southeastern University, Davie, USA

Abstract (Posters)

With roughly 45 million dollars being allocated towards invasive plant management in the state of Florida in 2019, proper economic modeling and the development of cost-effective management strategies are paramount to not just make wise economic decisions in the fight against invasive plant species—aquatic and terrestrial—but to save Florida’s natural resources and biodiversity. We will examine the degree of economic harm or benefit that the presence and subsequent management or mismanagement of invasive plants cause in Florida. We will focus on direct economic harm due to the presence of invasives as well as the cost of management strategies such as biological control, chemical control, and manual removal of invasive plants



The Lived Experience of Cognitive Dissonance

Courtney Geraets

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Abstract (Posters)

The presented study is conducted by a B.A. of Psychology pursuing undergraduate student for an advanced qualitative psychological research course. The aim of the study is to gain understanding into personal perceptions of the phenomenological experience: cognitive dissonance. It is a study of behavior and beliefs in which participants provide an account by recalling a specific time when they have had cognitive dissonance and describing the feelings of the experience. Analysis is done by Giorgi's Phenomenological Method and results show some significant themes of 1) guilt and shame, 2) ideals against feelings in the moment, 3) the theoretical against the actual, and 4) gravity of morality and the theoretical good, bad, or gray area. These themes are discussed in relation to Festinger (1957), and Harmon-Jones and Mills (1999/2019) for classic Cognitive Dissonance Theory, and Karlsson and Sjöberg (2009) for shame and guilt.



Terror in Hawkins: The Concept of Resilience in Stranger Things

Kyler Begley

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Abstract (Posters)

The main characters of Stranger Things build resilience through different means against trauma-related mental health issues. The various monsters and deaths within Stranger Things disturb the characters' tranquility, and viewers observe these individualized methods of building resilience against trauma-induced mental health issues. For example, Max displays survivor's guilt and uses music and therapy, Mike expresses self-doubt and employs a support system, and Dustin creates a sense of familiarity by utilizing a support animal to build resilience against mental trauma. Several published health studies explain how survivor's guilt, self-doubt, and PTSD can mentally affect a person by causing emotional stress and how music, therapy, a support system, and animals can create resilience by providing reassurance and protection to the individual. Marc Zimmerman explains how the resilience theory clarifies why some youth grow up to be healthy even after risk exposure causing mental distress. This corresponds with the characters of Stranger Things exhibiting the means to build resilience and grow in a positive direction, allowing the viewers to reflect and relate to the methods of coping shown. This concept of building resilience shows the audience that it is natural and common for people to face challenges. The show helps reduce the feelings of isolation and shame that accompany mental health.



RAPDs DNA Fingerprinting in Plants using Polyacrylamide Gel Electrophoresis

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Abstract (Posters)

DNA fingerprinting techniques are used to identify an organism by generating unique electrophoretic patterns with their DNA. They are especially important for the assessment of genetic diversity within and between populations of plant species. The aim of this study was to find the best method to generate DNA fingerprints that could be used in further studies of specific plant species. We compared a technique known as RAPD (random amplified polymorphic DNA) with a restriction enzyme DNA fingerprinting technique. DNA fragments generated with these methods were run on polyacrylamide electrophoresis gels. DNA was extracted from various plants and used for PCR using various RAPDS primers, as well as in restriction enzyme digests. Thirteen OPA primers were tested on spinach and in campanula (*Campanula robinsiae*), an extremely rare Florida species. It was determined that five of the primers worked well with spinach and three of the primers worked well with campanula. Polyacrylamide gel electrophoresis generated distinct DNA patterns in both species. The results of this research are significant because they could be helpful in conservation work. Campanula is classified as an endangered species in the state of Florida at great threat of extinction. Preservation of this species will require determining the genetic diversity of the few existing populations, which can be done through DNA fingerprinting analysis.



Economic Stress of Cancer Treatment

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Abstract (Posters)

A cancer diagnosis creates economic stress, and this stress is moderated by the degree of disease progression at the time of discovery. Later discovery implies more expensive treatments and larger economic stress. Our work examines the literature on the economic burden imposed by cancer, and we summarize the extant literature in this area. As an example of our findings, we confirm that the average cost of breast cancer treatment relative to the stage of progression was estimated to be \$29,724 USD (stage I), \$39,322 USD (stage II), \$57,827 USD (stage III), and \$62,108 USD (stage IV). We further employed the literature to determine that the costs of therapeutic drugs are the major cost driver, especially in cases of more advanced disease (Alghamdi et al., 2021). Finally, we found that routine screenings significantly decreased the cost of care for cancer treatment. Finally, the conclusion of our analysis examines changes in expenses due to the COVID-19 pandemic delaying care and leading to later stage, and more expensive, diagnoses.



Barriers to Colorectal Cancer Screenings in People Experiencing Homelessness in United States: A Summary of the Literature

Harini Sankar, Cassie Odahowski
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Abstract (Posters)

Purpose: There is little research on the health of those experiencing homelessness in United States. Additionally, few studies have assessed reasons for disparities in undomiciled individuals in completing colorectal cancer (CRC) screenings. The purpose of this review is to assess current knowledge of CRC screening in individuals without housing and to examine potential obstacles that prevent unhoused people from completing CRC screening.

Methods: Multiple databases (PubMed, Google Scholar, EPSCO host) were searched in September 2022. Different combinations of keywords included “homelessness”, “homeless”, “barriers”, “colorectal cancer screenings,” and “access to care.” We included articles that mentioned CRC screening or cancer screenings in general. Based on similar themes, studies were grouped together and discussed in the review.

Results: The review included 23 articles from 2014-2022, and one article from 2002. Studies found higher rates of CRC, diagnosis at later stage, and low rates of CRC screenings in those who are experiencing homelessness compared to the general population. Barriers were noted, such as lack of literacy, insurance, transportation, provider counseling, provider accessibility, and good physical and mental health. Some studies assessed access to care, while some assessed barriers specific to CRC screenings. Many studies were not based in Southeastern states.

Conclusions: Several barriers to accessing CRC screening exist in those who experience homelessness. This may be contributing to the lower rates of CRC screenings, as well diagnosis and management of CRC at a later stage. More research needs to be conducted as there is not enough widespread data on this specific demographic.



Toxic Effects of Vaping in *Caenorhabditis elegans*

Gabrielle Olibrice

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Abstract (Posters)

Nicotine is a chemical that produces a rapid increase in serotonin and dopamine levels creating difficulty for any user to quit usage. Studies show that excessive smoking negatively impacts the lungs causing an imbalance between carbon dioxide and oxygen levels. Oxygen levels play an important role in brain function and its reduction within the brain can induce damage to the cerebral cortex, which is the sector of the brain that encloses the neurological connections that are responsible for thought processing, learning, and memory functions. Because vaping is very popular among teenagers, in this research we performed a quantitative approach to analyze if nicotine- containing e`-liquids can affect movement in *C. elegans* (worms) within time. This *C. elegans* has been used as a living model to test the effects of different toxic chemicals. In this study, we exposed the worms to a 1/100 e-liquid dilution for periods of 5 min and 20 min exposure and compared the effects on motor activity (number of curling) with a control (untreated sample). Our preliminary data showed that worm curling was dramatically affected after the exposure to the 1/100 e-liquid dilution for 20 min when compared to control. According to literature review, nicotine affects cognition, learning, and memory. This investigation demonstrates that *C. elegans* prototype can be used not only to study the toxic effects of vaping in neurological function, but also to study the possible effects on learning and memory.



Wirelessly Powered Bio-degradable Micromotors for Microplastic Remediation

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Abstract (Posters)

Plastic's convenient and tunable material properties have made it one of the most used materials in everyday life; however, its universal use has caused growing environmental concern. When plastics degrade, they slowly fragment into microplastics with a nominal size between 1-5 micrometers. This microscale plastic waste is considered an 'invisible threat' due to the health risk they pose to both the environment and living organisms. Here, we hypothesize that wireless biodegradable hematite micromotors can effectively degrade microplastics in water. First, we fabricate two distinct particle shapes, cube, and ellipsoid, to determine the most efficient shape for microplastic remediation. The hematite particles were both characterized using SEM to resolve their morphology and polydispersity. Next, the kinematics of the hematite particles was determined using particle mean squared displacement and diffusion coefficient in water and varying concentrations of H₂O₂. We observe that the diffusion coefficient of the cuboidal-shaped micromotors increased with increasing concentrations of H₂O₂. However, the diffusion coefficient of the ellipsoidal-shaped micromotors did not follow a distinct trend which we attribute to the ellipsoid's polydispersity. In conclusion, we observe a geometry dependence on particle diffusion in varying concentrations of H₂O₂. Future research will focus on the ability of the hematite micromotors to decompose plastic and achieve directed motion through the bimetallic coating.



Developing Peptidomimetic Scaffolds as Potential Therapeutics in Clinical Chemotherapy

Robert Logue

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Abstract (Posters)

Numerous physiological and pathological stimuli induced programmed cell death, and the Bcl-2 family of oncoproteins plays a central role in this regulation. Proteins such as Bcl-2 are known to inhibit apoptosis, and uncontrolled cell survival due to Bcl-2 overexpression has been proven to make a significant contribution to tumor formation. With this in mind, we have directed our attention toward the synthesis of a variety of non-peptide inhibitors of oncoproteins Bcl-2. One such inhibitor of this interaction is through the Bak or Bax protein. Bak protein plays a central role in modulating the promotion of cell induced death. Recently, we have disclosed efficient protocols leading to the synthesis of carbamate, carbazate, dithiocarbamate, polyamine and phosphono- peptidomimetics, respectively. This study is now being extended to the synthesis of other de novo analogs with similar structural features to natural proteins, that may interrupt protein-protein interactions. Utilizing our aforementioned protocols, various scaffoldings are being employed for the development of novel artificial biomolecules, which may result in interesting biological behaviors regarding the disruption of protein-protein interactions and furthermore, may serve as potential therapeutics in clinical chemotherapy. One such non-peptide scaffold we have taken interest in is the synthesis of a dithiocarbamate backbone. Dithiocarbamates in previous studies have shown to inhibit the calcium-binding protein S100A4 relative to the metastasis of hepatocellular carcinoma. To that end, we turn to the anticipated synthesis of a dithiocarbamate analogue in respect to inhibiting the anti-apoptotic Bcl-2 oncoprotein commonly overexpressed in many malignant cancers.



Defining the *Portunus pelagicus* species complex using morphometric and phylogenetic analysis

Jerome Wolfgang Isaac Uy

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Abstract (Posters)

Portunus pelagicus, a commercially important swimming crab species widely distributed throughout the Indo-Pacific region, is currently managed as a single species in the Philippine archipelago. Recent taxonomic work, however, indicates that *P. pelagicus* comprises a five-member species complex, one of which is an undescribed *Portunus* species from Japan. Two members of the complex are hypothesized to occur in the waters of the Philippine archipelago, *P. pelagicus* sensu stricto and the undescribed *Portunus* species, but more sampling effort is needed to identify independently evolving lineages. This study aims to assess the presence of these two *Portunus* species in the Philippine archipelago. We collected specimens from fish markets found in different locations around Negros and Panay Island, Philippines and conducted morphometric, geomorphometric, and genetic barcoding analyses to identify and quantify cryptic diversity in the *Portunus* spp. Only male specimens were used to avoid sexual dimorphism during the geomorphometric analysis. Muscle samples were collected from the pereopods for use in DNA barcoding and phylogenetic analysis. Through our analysis of the congruence between the morphometric and phylogenetic barcoding data of the COI gene region, we uncovered a novel cryptic species that requires further characterization. The results of this study can be used to develop accurate identification keys for use in *Portunus* fishery management, governance, and scientific research.



Gender Expectations in the Odyssey

Amanda Anderson

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Abstract (Posters)

The Odyssey is an ancient epic poem attributed to Homer, deeply rooted in secondary schooling. The purpose of the study is to examine how this Western literary canon influences gender role expectations during adolescence. First, a textual analysis was conducted of the Odyssey to document the gender roles displayed by the different characters. The findings indicated that specific gender roles expected men to be masculine and domineering while women were passive and compliant. Furthermore, males are allies of other males, but females are not allies of other females but instead, individual males. Along with that, men are considered faithful when they conjugate with their wife's female slaves. In most scenes, the characters were all male, and female characters when presented were not treated as equals or displayed as humans. Scholarly sources were found to support the claim on gender assumptions and how the lack of critical literature pedagogy can be detrimental to students in their formative years. However, by making in-depth discussions of literary works mandatory and using critical literature pedagogy, students can discuss and analyze the sociocultural factors contributing to gender role expectations within the timeless Odyssey so as not to be negatively affected by prescribed, rigid portrayals.



Algorithmic, Institutionalized, Harassment: An Analysis of Predictive Policing

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Abstract (Posters)

In recent years, police departments across the nation have begun employing algorithmic technology to aid in the detection and prediction of crime whether it be based on geographic location, specific individual criminal records, or other factors. The usage of big data synthesis to make predictions about future crime (or criminals) has recently been called into question by many academics, journalists, and civilians. Opponents claim the practice is reminiscent of stop-and-frisk policing practices and is a violation of Fourth and Fourteenth Amendment rights while proponents say that it can reduce crime and that the technology is fair game so long as it legitimately demonstrates reasonable suspicion. This research project synthesizes the findings from several major research studies on the efficacy of predictive and data-driven policing practices and the way they manifest in practice as well as drawing upon empirical evidence from investigations on the intelligence-led policing program in Pasco County, Florida. Through this amalgamation of evidence, it is concluded that the usage of data-driven predictive policing practices is inherently a violation of human and civil rights because of the way predictive policing works to overly surveil innocent and largely underprivileged/marginalized citizens based upon (often) arbitrary factors, reinforce existing policing biases, and shift accountability for injustices from police and the institution of policing itself to impersonal technology through rhetoric that claims false impartiality. Beyond this, this research project concludes that predictive policing technology leads to no statistically significant reduction in crime and that the technology disproportionately targets marginalized people.



Discovery of Novel Proteins Binding to HIV Reverse Transcriptase

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Abstract (Posters)

HIV (human immunodeficiency virus) is a retrovirus that affects 38.4 million people across the globe. It targets and disrupts the immune system that helps the body fight infections and diseases. HIV uses reverse transcriptase (RT) to convert its RNA into viral DNA, a process called reverse transcription. Blocking reverse transcriptase and reverse transcription prevents HIV from replicating. For this reason, an algorithm software was used to prognosticate human proteins that can bind with different types of inhibitors of HIV reverse transcriptase. HIV Rev 1 (RT) was imputed into Python and MGL software tools to visualize, analyze molecular structures and predict protein intercalation properties. The results illustrated proteins such as ACTB, KIF14, Prostatic Acid Phosphatase/ACPP, Aminopeptidase B/RNPEP, VPS23 (TSG101), RPL37A, RPL27A, HSP90AB1, HSPA8, HSPB1, SH3GL1, CD53, SLC38A2, CBL, SLA2, DIP2 showed signs of binding to HIV Rev 1 at the allosteric site. Other proteins such as ACTN1, ACTN4, KIF23, RACGAP1, and VPS28 did not show signs of binding at the active nor allosteric site. Binding at the allosteric site or active may enhance RT activity, or it may inhibit it. Therefore, further testing in the lab will aid in the reasoning and efficacy behind the binding properties of these novel protein inhibitors, which can potentially lead towards the discovery of innovative therapeutic drugs and initiatives against HIV transmission and infection.



Setting the Female Body Ablaze as Political Resistance in Mariana Enríquez's Short Stories

Nicole Viloria

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Abstract (Posters)

This paper and documentary explore Argentinian women's vulnerable position in a post-war society and the implications of their trauma, as it is portrayed in the works of Argentine author Mariana Enríquez. In addition, they examine Enríquez's use of the horror genre, specifically, the Feminist Gothic, as well as the macabre, to denounce and criticize the treatment of women within a traditionally sexist Latin American society. By applying feminist criticism and a contextual research methodology, the literary aspect of the research focuses on selected stories, such as the title story "Things We Lost in the Fire" and "The Lookout" in two translated collections: *Things We Lost in the Fire* and *The Dangers of Smoking in Bed*. Issues such as the objectification of women, sexual abuse, and other crimes against women experienced during a post-dictatorship setting in Argentina are analyzed from the feminist, horror-genre, and magical realism perspectives.



Tinkering with Protein 'Backbones' Holds Promise for Cancer Drug Discovery

Ashley Graham, Aaron Todman, Reed Roberts, Ralph Salvatore
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Abstract (Posters)

Numerous physiological and pathological stimuli induced programmed cell death (apoptosis), and the Bcl-2 family of oncoproteins plays a central role in this regulation. Proteins such as Bcl-2 are known to inhibit apoptosis, and uncontrolled cell survival due to Bcl-2 overexpression has been proven to make a significant contribution to tumor formation. With this in mind, we have directed our attention toward the synthesis of a variety of non-peptide inhibitors of oncoproteins Bcl-2. Recently, we have disclosed efficient protocols leading to the synthesis of carbamate, polyamine, azadepsipeptide, and dithiocarbamate peptidomimetics, respectively. This study is now being extended to the synthesis of other de novo analogs with similar structural features to natural proteins, that may interrupt protein-protein interactions and furthermore, may serve as potential therapeutics in clinical chemotherapy.

Utilizing our aforementioned protocols, our research is now being employed for the synthesis of other interesting novel artificial biomolecules containing different scaffolding, such as phosphonopeptides and selenopeptides which also hold interesting biological activities.



Building A God: A Qualitative Study Regarding the Spiritual Development of First-Year College Students

Olivia Hager

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Abstract (Posters)

In recent years, sociologists have taken a greater interest in how college students experience religion and spirituality. This study will build onto the little existing literature surrounding the qualitative research of the spiritual development of college students. The United States remains the most religious country in the world compared to other highly developed nations. However, the large number of US citizens claiming to be religious coupled with the recent trend in religious churning, secularization, and “New Age Spirituality” has prompted some experts into believing that younger generations are cutting ties with traditional religious practices. A “New Age Spirituality” is encouraging more people to fulfill their spiritual needs outside of established religions to form their own values, morals, and life purposes.

After transcribing 20 qualitative interviews from first-year college students, I was able to formulate the “Build-a-Bear Construct.” The most popular trend among the students interviewed reflected a generous melding of values from a wide range of religious practices in order to “build” a spirituality, or God, that is specific to their needs, wants, and identity. Based on my findings, I conclude that there are many external factors that can have an impact on how college students view their spirituality such as traumatic life events, secondary education, and moving away from family. While adolescent college students still tend to identify with preconceived norms or traditional religious beliefs, they simultaneously become less and less religious by incorporating their own values, thus building their own personalized spirituality or perceptions of God.



Enabling robust multi-experiment comparisons in MALDI imaging mass spectrometry using novel intensity normalization strategies and extended similarity-based outlier detection

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Abstract (Posters)

Sepsis causes 270,000 deaths and over \$38 billion in hospital management costs each year in the United States, yet the understanding of its molecular mechanism remains unclear. Imaging mass spectrometry (IMS) is a powerful analytical tool to study the spatial metabolomics of sepsis, providing label-free detection of metabolites in tissue samples with high sensitivity. Herein, we have investigated metabolic rewiring and disease progression during sepsis and dichloroacetate treatment of septic tissues at different timepoints via matrix-assisted laser desorption/ionization (MALDI) IMS. Three-way analysis of variance (ANOVA) is then performed on regions of interest (ROIs) corresponding to the ventricles and myocardium to elucidate the association between metabolic rewiring and sepsis-induced cardiomyopathy.

One challenge associated with MALDI experiments is high signal variance due to sample-to-sample inhomogeneity, which can complicate statistical comparisons among animal models across replicate experiments. Bootstrapping analyses revealed inflated intra-group variances among technical replicates analyzed on different days, which we hypothesize to have originated from artifacts in sample preparation. Herein, we describe a normalization method that enables spectral normalization to a subset of the entire mass range. Our method successfully reduces variance inflation in our IMS experiments and renders a more accurate visualization of molecular distributions by removing noise peaks in the normalization factor. We also describe the application of extended similarity-based anomaly detection for unsupervised removal of a selected percentage of outliers. This further increases the robustness of statistical comparisons in IMS using a computationally less intensive algorithm (order $O(N)$) vital in the processing of multiple large datasets.



Las Floriqueñas: Puertorriqueñas' Experiences in Central Florida presented through a Historical Framework

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Abstract (Posters)

Despite the extensive studies and publications made available over more than a hundred years of political marriage, the Puerto Rican diasporas throughout the United States still lack accurate and sufficient representation even with generations of contributions to the broader narrative of the United States. This undergraduate thesis project aims to expand the current pool of knowledge about the Puerto Rican community of Central Florida while exploring culturally engaging methods of oral history collection. Interviews will take place over a common Puerto Rican food tradition, *Cafecito con Pan* – a little coffee and bread – preserving narratives in a culturally familiar setting. This replication of space and ambiance aims to encourage comfort allowing participants to take control of their narrative in a culturally familiar setting. Tracing this history through the intersectional perspective of Puerto Rican women, the collection process looks to open the floor for discourse between Puertorriqueñas about their individual and collective experiences, correct stereotypes, and challenge cultural expectations. The written portion will then contextualize their stories around relevant historical current events, framing them as integral to the broader local, regional (US South), and national narrative while emphasizing aspects such as multidimensionality, individuality, and heterogeneity within a collective identity.



Pre-Pregnancy LAIV Boosts Future Offspring Antibody Response Against an Unrelated IAV Strain

Andrea Arvelo

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Abstract (Posters)

Influenza A virus (IAV) remains a cause for global concern year after year. It is both the most common type of influenza virus (vs. influenza B, C, and D) and the most common perpetrator of seasonal flu pandemics. Infants under six months are especially vulnerable to IAV infections as their immune systems are not yet developed enough to handle existing flu inoculation methods. This has led to higher associated hospitalization rates than most age groups. Although maternal immunization aims to fill this gap in neonatal protection, inactivated seasonal flu vaccines remain the sole option during pregnancy despite their inability to protect against unrelated or pandemic strains. Furthermore, while live attenuated influenza vaccines (LAIV) can induce this heterosubtypic immunity, they are contraindicated during pregnancy. As such, their ability to effectively improve neonatal immunity is unclear. Here, we investigated whether administering LAIV shortly before pregnancy could notably boost future offspring's antibody response against an unrelated IAV strain. IgG antibody titers of 21-day-old mouse pups born to dams that were either unprimed or primed (vaccinated) with LAIV (CA-Alaska, H3N2) and later infected with an IAV H1N1 strain (PR8) during pregnancy were analyzed using ELISAs (Enzyme-Linked Immunosorbent Assay). Results demonstrated a significant increase of H1N1-specific IgG titers in the offspring of LAIV-primed dams versus those of unprimed dams. This suggests that exposure to LAIV can boost antibody responses in future offspring and can develop into a preferable option for those planning pregnancy to bridge the gap in IAV neonatal protection.



The Heartbeat of Alcohol

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Abstract (Posters)

Ethanol carries a profound history and has been integrated into many cultures worldwide. In the United States, the availability of alcoholic beverages is customary for those over the age of 21. However, alcohol, although enjoyed, have specific effects on the health of living organisms. Thus, to get a closer look into the impact of alcohol on living organisms, the present project was aimed at assessing the effects ethanol has on the heart rate of *Daphnia magna*. This planktonic crustacean was chosen as a biological model because it is easy to obtain and grow in the laboratory, its transparent body makes it easy to observe the heart to detect variations in the heart rate, and, in addition, ethically, we cannot test in humans. In the experiment, *Daphnia magna* were exposed to two doses of ethanol (5% and 15%), control groups were maintained in aged water. After five minutes of exposure, the animals were observed under 400x magnification, and the number of heartbeats were counted and recorded for fifteen seconds. The data showed the heartbeats of the *Daphnia magna* slowed down after being exposed to the 5% and 15% levels of alcohol. They needed to be confined using pieces of cotton since they were hyperactive. However, after five minutes of alcohol exposure, they stopped moving. One of the *Daphnia magna* exposed to 15% alcohol showed to be completely unresponsive and had no heartbeat. These results indicate that alcohol intoxication slows heart rates and can cause death in some cases.



The Effects of Parental Language Input and Parental Knowledge of Child Development on Child Language Development

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Abstract (Posters)

Past experiments have demonstrated that the amount and kind of parental language input affects language development, and poverty-related delays in language development have been attributed to poor parental language input. Concern has been raised, however, that parental language input may simply reflect broader parental competencies, largely related to how knowledgeable parents are about child development and how to support it optimally. This ongoing study addresses this possible confound by examining how parental language input is mediated by parental knowledge of child development. Twenty parent-child dyads across various SES will be tested over the course of this study using 5 measures. The parent and child will be recorded playing with Tinkertoys together and parental language behaviors will be scored to measure (1) parental language input. The child will complete two tasks measuring (2) vocabulary knowledge and (3) auditory comprehension of language. The parent will complete two surveys measuring (4) general knowledge of child development and (5) knowledge of best practices to use in parenting scenarios. Statistical analyses will involve: (1) computing zero-order correlation coefficients between each of parental language input and parental knowledge of child development on one hand and child language outcomes on the other; (2) computing partial correlation coefficients to assess the extent to which parental language input explains unique variability after controlling for parental knowledge of child development; and (3) comparing the ability of two different measures of parental knowledge of child development to explain variability in parental language input and child language outcomes.



Asymmetric Design Parameterization of Small Vessels for Drag Reduction in the Semi-Planing Regime

Jonathan D. Gitzendanner

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Abstract (Posters)

Drag reduction is a central focus in naval architecture design to increase speed and efficiency. For Froude numbers between 0.3 and 1, wave drag is the predominant component for vessels operating at the free surface. While increasing a vessel fineness ratio (length to width) is often the preferred method for decreasing wave drag, there are many reasons for which this may not be feasible or desired. For example, competitive regulations, logistical constraints, and stability requirements may demand a small fineness ratio. In this work, we explore wave drag reduction through asymmetry. It has been shown that introducing a longitudinal asymmetry can reduce wave drag for vehicles operating on the free surface. We apply this knowledge to kayak designs relevant to the sport of Kayak Polo, which is a competitive sport requiring rapid sprints at high Froude numbers. The geometries are described using a set of parametric equations to control the hull asymmetry. We numerically simulate the flow using multiphase computational fluid dynamics (CFD) and the Volume of Fluid method. The kayak has two degrees of freedom allowing for heave translation and pitch rotation. These analyses will present the effect of forward and rearward asymmetries on drag and lift forces exerted on the kayak.



The Relationship between Adults who Meet Muscle Strengthening Recommendations and Deaths from Parkinson's Disease in Florida Adults

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Abstract (Posters)

Objective: The objective of this study was to examine the relationship between adults who meet muscle strengthening recommendations and deaths from Parkinson's Disease in Florida adults.

Methods: Ecologic analyses were conducted using publicly available data from FLHealthCHARTS. Correlation coefficients and p-values were calculated for the percent of adults who meet muscle strengthening recommendations and Parkinson's Disease death rates in Florida at the county-level and at the state-level by year. The results of these analyses were compared to the data presented in the literature review to draw overall conclusions on our understanding of the topic.

Results: The data analysis showed a very weak correlation that was not statistically significant for the county analysis ($r=0.004$, $p=0.972$) and a very strong correlation that was not significant for the state-level analysis by year ($r=0.953$, $p=0.087$). The results of our literature review showed strong, significant results between the exposure and outcome in three high-quality study designs.

Conclusions: Parkinson's Disease is an impactful diagnosis that affects both the physical and mental health of the individual. Although the current study's results between muscle strengthening training in early life and lower risk of death from Parkinson's were not statistically significant, the literature review results indicate there still could be an association at least in patients who have already developed the disease. There is still much to understand about what causes Parkinson's Disease and other health-related risks, overall should require additional research that could help prevent the disease in the future.



Molecular Cloning and RNA Structural Studies of Wild-Type and Mutant RNA Spliced Leader Sequences of the Red Tide Dinoflagellate *Karenia brevis*

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Abstract (Posters)

Florida Red Tide is a harmful algal bloom caused by the marine dinoflagellate *Karenia brevis*. The mRNA precursors of enzymes involved in brevetoxin synthesis undergo an mRNA maturation mechanism called spliced leader (SL) trans-splicing, which splices a 5' exon (the SL) from a small noncoding RNA (snRNA) to the 5' end of pre-mRNA sequences of different genes. The details of this mechanism, particularly how SL RNA structure and dynamics impact transcription and splicing, are limited and could provide important insight to understanding the critical steps of *K. brevis* life-cycle and toxin production at the molecular level. To study the structure and dynamics of *K. brevis* SL RNA, molecular cloning of the wild-type and a mutant version of the 22 nucleotide SL exon and the precursor 61 nucleotide exon-intron construct was conducted. These RNAs were successfully cloned, amplified, in vitro transcribed, and purified for structural studies to assess how environmental factors impact spliced leader trans-splicing events. Electrophoretic mobility shift assays have been successfully performed to test for the influence of various environmental factors (i.e. pH, salinity, light, and temperature) on SL RNA structures.



Hand Dominance and Aging: A Potential Window on Brain Organization

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Abstract (Posters)

Several decades of research suggest that even healthy aging leads to changes in hemispheric dominance. One way to assess this possibility is through hand preference or hand dominance. In this research, we conducted a literature review that focused on articles evaluating manual motor tasks, self-reported handedness preferences, and patterns of brain activity associated with motor movement in younger (ages 18 to 30) and older adults (over the age of 60). Our analysis indicated a general decrease in hand dominance with age, moving more toward ambidexterity. However, older adults self-reported a stronger right-hand preference than younger adults, suggesting that older adults may be unaware of their decreasing hand dominance. We also noted that manual asymmetries (superior with one hand over the other) in older adults depended on the task. For example, for drawing and handwritten tasks, there was an increase in manual asymmetry for older adults. However, for grip strength, sequential finger movement, and reaction time tasks performance was more symmetric. When evaluating research on brain activity, older adults tended to rely on one hemisphere for simple motor movements, whereas they relied on both hemispheres for more complex movements. This parallels patterns of increased bilateral brain activity in older adults during cognitive tasks, indicating that complex movements also rely on additional cognitive oversight. We discuss how these findings relate to prominent theories of brain aging, such as the Hemispheric Asymmetry Reduction in Older Adults (HAROLD) and Compensation-Related Utilization of Neural Circuits Hypothesis (CRUNCH) theories.



Synthesis of Various Structural Analogs of Efavirenz

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Abstract (Posters)

Cyclopropylacetylene (CA) is a key intermediate in the synthesis of the Human Immunodeficiency Virus (HIV) reverse transcriptase inhibitor, Efavirenz (EFV), an antiviral drug used to treat HIV. CA is an expensive raw material, difficult to obtain, and employed in the preparation of medications to combat Acquired Immunodeficiency Syndrome (AIDS). It was found that the yield could be enhanced by the utilization of PCl_5 ; however, this resulted in unwanted ring openings. To address this issue, a one-pot synthesis using Ph_3PCl_2 as a mild chlorinating agent. In addition, a new analog has been proposed substituting the cyclopropyl group for alternative hydrocarbons. Instead of using a cyclopropyl ring, a larger ring with more than three carbons can result in less ring strain and; therefore, less ring opening. Previous experiments have tested other ring structures; however, larger cyclic hydrocarbons have yet to be studied within these conditions. Efforts toward the synthesis of higher-order analogs including cyclobutyl acetylene will be discussed once the highest-yielding base for the synthesis is determined. Various reaction procedures are detailed.



The Microbial Diversity of *Chondrilla nucula* in Tampa Bay

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Abstract (Posters)

Chondrilla nucula, is a species of sponge that is native to Tampa Bay. *C. nucula* is more broadly found throughout the Caribbean and Mediterranean. The few studies done on the fungi from *C. nucula* have only been from Mediterranean sponges. Currently, there is no study characterizing the complete diversity of fungi from *C. nucula*. Here, we set out to describe the complete fungal, bacterial, and archaeal diversity of several populations of *C. nucula* within Tampa Bay. Specifically, the goal of this study is to collect multiple *C. nucula* from 3 different sites within Tampa Bay and identify the microbial communities residing on each individual sponge. This is done via DNA sequencing as well as cultivating fungal isolates. Collectively, analysis of the microbial communities is being evaluated to make conclusions about the microbial diversity at sample sites. 6 fungal isolates have been found within sponge's samples collected from site 1, and 23 fungal isolates have been found in sponge samples collected from site 2. Sanger sequencing is being done on all cultivates isolates while, 'Next Generation' sequencing are being done on all sponge samples to characterize all microbes. Marine fungi are known to produce many natural products which are beneficial to humans, including antibiotics. Knowledge of the richness and diversity of marine fungi from *C. nucula* within Tampa Bay may lead to new fungal isolates that can be tested for natural products. This study is the first study to describe the complete microbial diversity of the chicken-liver sponge.



Disruption or replacement? Examining the role of the invasive Brazilian peppertree (*Schinus terebinthifolius*) within coastal nutrient cycling facilitated by the mangrove crab (*Aratus pisonii*)

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Abstract (Posters)

The mangrove crab, *Aratus pisonii*, is a key organism in mangrove ecosystems feeding on live and senescent mangrove leaves. The corresponding detrital and fecal material produced is a foundational component of an ecologically important nutrient cycle. Brazilian peppertree, *Schinus terebinthifolius*, is an invasive species that displaces mangroves, which could possibly disrupt the ecosystem of these important coastline habitats. This study focused on the interactions between *A. pisonii* and the leaves of *S. terebinthifolius* and *Rhizophora mangle* (red mangroves). These interactions were analyzed with videos of crab herbivory and with an analysis of leaf consumption. Mangrove crabs did not avoid the Brazilian peppertrees and were seen to stay on the leaves and scrape at them briefly when those were the only leaves provided. When both leaf types were present, crabs preferred the leaves of *R. mangle* although there were instances of crabs scraping at peppertree leaves (such occurrences were not significant). These findings, despite being preliminary, demonstrate that the impact of peppertrees within coastal nutrient cycles isn't quite clear yet. Although a preference for *R. mangle* by mangrove crabs was demonstrated, crabs did seem to attempt to feed upon the leaves of *S. terebinthifolius*. Further work is necessary to elucidate this invasive's role in coastal nutrient cycling facilitated by the *A. pisonii*. If a strong preference for the leaves of *R. mangle* is established, this may affect the distribution of mangrove crabs as the peppertree further invades mangrove habitats.



Annotation and Phylogenetic Analysis of GST Genes in *Diaphorina citri*

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Abstract (Posters)

Citrus greening disease, or Huanglongbing (HLB), is a crop blight that has been a great detriment to citrus industries worldwide. HLB is caused by the bacterial pathogen *Candidatus Liberibacter asiaticus* (CLas), which is transmitted to citrus trees by the insect vector *Diaphorina citri* (*D. citri*), the Asian citrus psyllid. To combat this threat, a better understanding of *D. citri* and CLas interactions is necessary. An important class of enzymes within *D. citri* are the Glutathione S-transferases (GSTs), which are involved in the detoxification of a variety of chemical substrates, including commonly used insecticides. Functional analysis in other insects reveals that a loss-of-function of these genes results in increased susceptibility to certain insecticides. Within the *D. citri* genome, 80 gene models were putatively identified as GST genes based on results of InterProScan domain classification and gene ontology term analysis. Twenty of these gene models identified as Glutathione S-transferase were annotated using DNA and RNA sequencing data along with computer predicted models in WebApollo. The *D. citri* GST gene models contained conserved domains belonging to the different cytosolic GST subfamilies. Pairwise sequence analysis of the manually curated GST amino acid sequences identified artifact duplications, which were removed. Remaining models had percent identity above 40% and query coverage over 85% compared to other insects. Having high-quality manually annotated GST gene models is a crucial first step in developing accurate and precise molecular therapeutics for insecticide application against *D. citri*.



An analysis of Basigin expression in mouse intestines using fecal samples

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Abstract (Posters)

Basigin is a transmembrane glycoprotein expressed on epithelial cells and blood vessel endothelial cells throughout the body. These types of cells often form barriers, like the blood brain barrier (BBB). A recent study by this laboratory suggests that Basigin gene expression on BBB endothelial cells is affected by an inflammatory stimulus. Epithelial cells of the intestines also form a barrier. It is possible that Basigin expression may be altered by inflammatory stimuli in this location as well. The long-term goal of the project is to evaluate humans, which means that a measure of Basigin using intestinal samples is not appropriate. Therefore, the purpose of the present study was to determine if fecal samples provide a non-invasive sampling method to indirectly measure Basigin expression in the intestines. It was hypothesized that Basigin in mouse feces would correlate to Basigin expression in intestines. Colorectal samples from male and female mice at various post-natal ages were obtained and the contents were removed and served as the fecal samples for analyses. It was determined that Basigin in mouse feces correlates with that in mouse intestines at specific ages. Specifically, samples from mice at 21- and 28-days old (comparable to human adolescents) and 180-days old (comparable to human adults) had significant correlation values, whereas the samples from 14-day old (comparable to human children) and 56-day old (comparable to human young adult) animals did not. The data suggest that fecal samples are a useful non-invasive method for measuring Basigin expression in the intestines.



Testing the Relativistic-Microwave Theory of Ball Lightning with Plasma Simulation

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Abstract (Posters)

Ball lightning is an unexplained phenomenon reported by thousands of eyewitnesses as a fireball moving unpredictably and independently of the wind, observed sometimes during lightning storms. Here a potential theory for the creation of the phenomenon is explored. At the tip of a lightning stroke reaching the ground, a relativistic electron bunch of $\sim 10^{14}$ electrons can be produced, which in turn excites intense microwave radiation as the product of coherent transition radiation. This intense radiation (~ 310 MV/m) ionizes the surrounding air, and the radiation pressure evacuates the resulting plasma, forming a spherical plasma bubble that traps the electromagnetic energy as a standing microwave with a wavelength of 30 cm and amplitude of 170 MV/m. This mechanism is explored using particle-in-cell plasma simulations to replicate previous results of a plasma-trapped microwave bubble lifespan of ~ 15 ns. Next, the goal is to extend this model by incorporating additional physical effects, such as gravity, the upward force due to air convection, and plasma shell surface tension. The ultimate goal is to develop a comprehensive model that explains ball lightning formation, its stability during its lifespan, and the two most common forms of termination. This theory suggests how ball lightning can be created in a laboratory or triggered during thunderstorms. The results of this research will advance lightning protection and aviation safety.



Foundational dune grass growth is enhanced by Atlantic ghost crabs (*Ocypode quadrata*)

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Abstract (Posters)

Coastal dune ecosystems and the myriad of ecosystem services they provide are increasingly threatened by anthropogenic stressors. The loss of dunes has underscored the importance of rapid and effective dune restoration to enhance coastal resilience. Harnessing positive species interactions that enhance vegetative growth and dune accretion is one way to enhance dune restoration success at little to no added cost. Previous research has indicated the importance of inter- and intraspecific facilitation between dune plants; however, comparatively little research has focused on facilitation by animals in coastal dunes. Here, we examined whether a common dune bioturbator, the Atlantic ghost crab (*Ocypode quadrata*), could facilitate the growth of coastal dune vegetation. A field manipulation of ghost crab abundance on a restored dune showed that aboveground production of outplanted sea oats (*Uniola paniculata*) increased with increasing crab burrow area. These results underscore the importance of considering positive species interactions in dune restoration praxis.



The Significance of *Danio rerio* behavioral assays for neurodevelopmental research

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Abstract (Posters)

Danio rerio, commonly known as zebrafish, are a model organism for research on neurodevelopment and behavior due to their homology with other vertebrates such as humans, the ability to observe their neurological changes throughout key developmental stages, and the opportunity for genetic modification in order to identify altered phenotypic responses in mutant fish. This study aims to distinguish certain intellectual and motor disabilities of different zebrafish genetic models through a multitude of behavioral assays. A swim test and endurance test will be used for motor testing, while latent learning, associative learning, and conditioned place preference test will all be used to measure intellectual ability. Wildtype fish will be used in each maze first and their behavioral and intellectual output will be measured across all mazes. Experimental fish with genetic modifications for genes with congenital disorders of glycosylation (CDGs) will then be tested in each maze. In humans, CDGs are known to disrupt the functions of multiple organs and tissues, causing severe symptoms such as epilepsy, intellectual disability, myopathy, neuropathy, stroke-like symptoms, and severe congenital malformation. We expect to find a correlation between genetic mutation, decreased motor function, and intellectual disability. We also expect to see an increase in latency and errors across all mazes for the experimental fish.



The Affect of Daily Routines on Mental Well-Being

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Abstract (Posters)

The coherence of environmental structure has been proven to strongly affect elements of mental health and well-being, specifically one's experience of meaning in life (MIL). The current study aims to enhance the empirical connection between the coherence of external stimuli (i.e. daily routines) and various elements of well-being. We aim to examine how perceptions of meaning in life and psychological richness are altered when daily activities no longer follow a structured routine. Participants to plan out several events throughout the course of a day that go against the structure of their typical daily routine, and then answer a series of questions that reflect their feelings of meaning in life and psychological richness. We hypothesize that after altering their daily routine, participants will experience an increase in psychological richness but a decrease in meaning in life due to the increased variety but decreased structure that the lack of a routine provides.



The Role of Body Image on Physical Exercise and Romantic Relationship Satisfaction: A Moderated Mediation Model of Exercise Motives

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Abstract (Posters)

Research has linked exercise to several physical and mental health benefits. However, little is known about the potential influence of exercise on romantic relationships. Therefore, the present study has three objectives: (a) explore the benefits of exercise on levels of romantic relationship satisfaction, (b) examine the mediating role of body image in the exercise-relationship linkage, and (c) identify whether exercise motives moderate the mediating effect of body image. A sample of approximately 500 participants involved in a heterosexual romantic relationship is expected to complete an online survey measuring self-reported average weekly exercise, reasons for exercise, perceived body image, and perceived relationship quality. To test our hypotheses, mediation and moderated mediation analyses will be conducted using PROCESS Macro for SPSS Model 4 and Model 7, respectively. We expect to find that exercise frequency is positively related to romantic relationship satisfaction. Moreover, this relationship is mediated by body image. Moderated mediation would demonstrate that the association between exercise and body image is weaker for people who report exercising for appearance-related reasons rather than health/fitness and enjoyment/mood reasons. Based on the anticipated results, physical activity would represent one positive tool that influences relationship quality. Individuals should be encouraged to prioritize intrinsic motivation for exercise to optimize the benefits related to an active lifestyle.



Split Peroxidase-Like Deoxyribozyme Probes for Monkeypox virus Detection.

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Abstract (Posters)

The outcome of COVID-19 reaffirmed the importance of diagnostics and surveillance in public health system. Therefore, simple point-of-care tests (POCTs) will be essential in preventing another pandemic with the advent of the monkeypox virus (MPXV) – a member of orthopoxviruses.

In this work, the development of a colorimetric assay for the detection of synthetic MPXV genome fragments is reported. This assay is based on the split peroxidase-like deoxyribozyme probe (sPDz). Each strand of the sPDz probe contains an “arm” that is complementary to the target DNA adjacent to a sequence containing clusters of guanines (G). The target-binding “arms” of the two strands hybridize to abutting positions of the target, thereby bringing the G-rich fragments to be near each other. Such proximity triggers association of these fragments into a G-Quadruplex (G4) structure, which, when bound to hemin, exhibits a peroxidase-like activity to catalyze H₂O₂ – mediated oxidation of a colorless organic substrate into a colored product. In this designed assay, we use 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonate (ABTS₂-) as the colorless substrate, which is oxidized into a green product ABTS•-. The colored oxidation product is formed in the presence of MPXV genetic signatures and is detectable either by measuring absorbance at 420 nm or by visual color observation by the naked eye. Upon optimization of sPDz probes, the assay may show promise for differentiation of MPXV from other orthopoxviruses, which is a crucial feature of a reliable POCT.



Fetishization of Asian American Women: A Discourse Analysis on the Media Portrayal of the Victims of the 2021 Atlanta Spa Shootings

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Abstract (Posters)

Objective: In 2021, eight people were killed in spas in Atlanta, Georgia. Six of the eight victims were women of Asian descent. The Atlanta Spa Shootings provide a case to apply an intersectional lens to determine how identifiers, such as gender and race, shape Asian American women's experiences. The study analyzes Asian American women's experiences of violence in the media's framing of their narrative as victims through qualitative discourse analysis.

Methods: 23 American newspaper stories covering the Atlanta Spa Shootings over a one-year period were collected from the Nexis Uni database. The content of these stories was coded to determine whether coverage of the victims was from a racial standpoint, a gendered standpoint, or both. The coded data was then used to determine major themes. Major themes were explored to examine how racism and misogyny intersected in the coverage of the Atlanta Spa Shootings.

Results: All of the victims' demographics were key to their portrayal, but important differences emerged between the single-identity narratives and intersectional ones. The victims were most often regarded from a single-identity narrative, focusing either on their racial identity as Asian Americans or their gendered identity as women. The single-identity narratives were more likely to be explicitly discussed, while the intersectional narratives were more likely to be implicitly stated through subtext. By analyzing news discourse in the Atlanta Spa Shootings, the study highlights the way both racism and misogyny, exemplified by the fetishization of Asian American women, may have compounded into the attack and its portrayal.



The Effects of Agrochemical Pendimethalin on the Immune Functions and Vector Competence of *Culex quinquefasciatus*

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Abstract (Posters)

Pendimethalin is a widely utilized agricultural herbicide, with millions of pounds applied each year to crops including corn, rice, soybeans, and wheat. It can contaminate waterways by runoff from rainfall after being sprayed on fields (Costello, n.d.). Female agricultural mosquitoes like *Culex quinquefasciatus* lay their eggs in these waterways, and they can transfer deadly diseases, like West Nile Virus, to humans (Hill, 2009). Mosquito exposure to agrochemicals can induce stress which often lowers immune capacity in insects, and depressed immunity may increase viral load and disease transference to humans (Muturi, 2011). Little is known about pendimethalin exposure to *C. quinquefasciatus* and how exposure impacts their immune genes. To address this knowledge gap, we exposed *C. quinquefasciatus* larvae to various pendimethalin concentrations and assessed their survival and adult immune gene regulation. We assessed mosquito stress levels via larval development time, survival, and sex ratio. Adult immune gene regulation was measured via RNA extraction, reverse transcription, and qPCR. Our experiment showed that as concentration increased, larval development time increased and survival decreased. Additionally, pendimethalin exposure altered regulation for 5 out of 6 immune genes of interest: Defensin, DICER, Hopscotch, MYD88, and R2D2 (Vago was unaffected). We conclude that increased pendimethalin concentrations induced larval stress by decreasing survival and increasing development time. Larval pendimethalin exposure had long-term effects on adult immune gene regulation for all four immune pathways (Toll, IMD, Jak stat, and RNAi), and higher concentrations induced a *greater* immune response.



Differences in Anatomical Distribution of Low Versus High Strength Nodes in Normal Aging Versus Young Individuals

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Abstract (Posters)

There is growing literature establishing functional differences in normal cognitive aging versus abnormal cognitive decline, such as Alzheimer's disease. However, less is known on healthy aging differences in functional connectivity between young and old subjects. Investigating functional network organization between the two age groups is needed to understand cognitive decline. In this study, we assessed functional connectome measures of five significant network quantifiers, including node strength, in young (20-40 y/o) and old (>60 y/o) individuals using high-density node sampling strategy for resting state fMRI signal. We focus on node strength as it is well established that functional connectivity between regions of cognitive and sensorimotor networks are weaker in older individuals with cognitive dysfunction relative to matched controls. Data was obtained from the University of Florida NEPAL study (including controls for both age ranges, n=87). Resting state fMRI scans were collected on either a Siemens or General Electric 3-Tesla scanner with the following parameters: echo planar images with 197 image repetitions, TR=2-3s, TE=30ms. We applied graph theory-based calculations to weighted undirected matrices constructed from 44,550 pairwise correlations between fMRI signals (utilizing Yeo parcellation). Using this sampling of 300 nodes, we observe significant differences between the age groups in the somatomotor network. The present unexpected results suggest distinct salient functional network features in aged and young individuals. The transition of the brain in aging can be quantified via these significant parameters with promise of predicting brain age and providing a better model of comparison for neurodegenerative disorders.



Structural Investigations of Fluorescent Light-up DNA Aptamers

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Abstract (Posters)

Fluorescent light-up aptamers (FLAPs) are single stranded DNA/RNA molecules that bind and thereby enhance fluorescence of fluorogenic, environment sensitive, dyes. They have found application in sensing and intracellular monitoring of biomolecules. DNA FLAPs are promising for reporting biorecognition events in non-cellular applications. The mechanism behind the ability of FLAPs to turn-on fluorescence of their ligands rely on inhibition of non-radiative relaxation due to sequestering of the dye in a complex within the aptamer stabilized by such interactions as hydrogen-bonding and pi-stacking, among others. Many FLAPs have guanine (G) quadruplexes as a structural element forming the dye-binding sites. In this work, we study the structure of recently reported DNA FLAPs – dapoxyl binding aptamers DAP1 and DAP10-42, the latter is shown to also bind arylmethane dyes along with a variety of dapoxyl sulfonyl dyes. Via spectroscopic and biochemical techniques, we have confirmed the presence of G-quadruplex domains in both aptamers and suggested guanines involved in the formation of G-tetrads, as well as minimized the structure of DAP1 from 76 down to 47 nucleotides. Our data shed light on possible structures of the studied aptamers and their dye-binding sites, which could be of use when designing sensors with DAPs as signal reporters.



Connecting Leaf-Level Physiology to Whole-Plant Function: Using Chlorophyll Content to Assess Photosynthetic Efficiency in Blueberry

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Abstract (Posters)

Leaf color dynamically changes as plants grow and gain function. By elucidating the relationship between leaf pigment development and leaf-level physiology, examining changes in chlorophyll content can be a tool for blueberry growers to make assessments about whole-plant health and status. We collected hundreds of measurements for leaf area as well as laboratory pigment extraction and quantification in 'Emerald' and 'Farthing' southern highbush blueberry (*Vaccinium corymbosum*). Additionally, we collected chlorophyll fluorescence measurements, as fluorescence is an indicator of the amount light energy plants devote to photosynthesis. Measurements were collected across six dates between June 2021 and April 2022 to allow for sampling at different leaf developmental stages (young leaves, mature leaves, and leaves about to senesce). We analyzed this data to understand the correlation between leaf pigment development and photosynthetic function at different developmental stages. We identified trends in leaf size, chlorophyll concentration, and the interaction of these two factors over time. Furthermore, we identified whether trends in leaf content can be used to make inferences about allometric responses of plant function. One-way analyses of variance (ANOVA) tests were used to determine statistically significant differences in our data. We anticipate that our findings will contribute towards developing a mechanistic understanding of leaf pigment development to inform farming decisions for blueberry growers in the southeast.



Analytical techniques to characterize the SARS-CoV-2-endoribonuclease Nsp15

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Abstract (Posters)

Nsp15 is a uridine specific endoribonuclease that plays a critical role in the replication cycle of SARS-CoV-2. Nsp15 enables viral strains to evade host immune system detection by preventing the accumulation of viral dsRNA. Previous research suggests that Nsp15 is Mn^{2+} dependent but the role of divalent ions in enzymatic activity remains unclear. Furthermore, Nsp15's regulation and biological substrate target have yet to be identified. In order to better understand the function of Nsp15 within the viral life cycle, we explored the role of Mn^{2+} on enzymatic activity, catalytic efficiency, and substrate preference using techniques such as enzymatic cleavage assays. We analyzed single turnover kinetics to explore the impact of Mn^{2+} on catalysis. Our results indicated that while Mn^{2+} does impact the catalytic step, Nsp15 still functions in the absence Mn^{2+} . Tryptophan fluorescence and CD spectroscopy were utilized to test for conformational changes in Nsp15 structure due to Mn^{2+} , but none were observed. Additionally, we utilized a plate reader assay for high-throughput analysis of multiple turnover kinetics which allow us to measure catalytic efficiency (K_{cat}/K_M), assess substrate preference, and determine if there is observed cooperativity between monomeric subunits of the Nsp15 hexamer. Overall, this work expands our understanding of the biological role and function of Nsp15, contributing to a more complete understanding of the SARS-CoV-2 life-cycle and potential future therapeutic remedies.



What's in Our Water? Assessing the Risk of Pathogenic Bacteria in Tampa Bay Waterways

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Abstract (Posters)

While bacteria are part of all ecosystems on earth, the presence of pathogenic bacteria such as *Staphylococcus*, and *Vibrio* species pose a risk to human health. Recreational waterways are monitored for fecal indicator organisms 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. 16s rRNA sequencing was used to identify these organisms to determine the presence of additional pathogens. Although most of identified bacteria were non-pathogenic, we did identify two genera that could be a risk to human health. First, the opportunistic pathogen, *Vibrio parahaemolyticus* was identified in several samples collected on different dates and in different locations in the Tampa Bay area. Second, we identified several methicillin resistant non-aureus staphylococci, again independently isolated on multiple sampling days from multiple locations. While both organisms are unlikely to cause disease in humans, the presence of *V. parahaemolyticus* poses a risk for immunocompromised individuals, and the presence of methicillin resistance in these non-aureus *Staphylococci* may serve as a source of methicillin resistance in the environment.



Using Wrack to Determine Seagrass Viability

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Abstract (Posters)

Restoration of the seagrass *Halodule wrightii* from natural fragments is becoming increasingly crucial as seagrass coverage in the Indian River Lagoon (IRL) declined by 52% between 2009 and 2017. To understand the potential for natural seagrass recruitment, we tracked the availability of viable *H. wrightii* fragments found in wrack and recorded the abundances and dimensions along Mosquito Lagoon shorelines. Wrack is composed of plant material, including dispersing seagrass fragments, plus other detritus that is stranded on shorelines during high tides. Replicate samples ($n = 5$) were collected from 5 locations every two weeks and processed in the laboratory. To date, *H. wrightii* dominated our samples (99.5%) collected between August 28th, 2022, and November 6th, 2022. There was an average of 46 viable fragments per sampling day and 43.7% of the total seagrass rhizomes collected had meristems. Sampling will continue until August 2023 to monitor the viability of seagrass fragments over seasons.



Infection with a microsporidian parasite alters invasive crayfish impacts on ecosystem metabolism.

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Abstract (Posters)

Parasites can have density- and trait-mediated effects on their hosts which can then have indirect effects on ecosystem function and structure. We explore how a pathogen may alter the ecosystem impacts of the invasive rusty crayfish (*F. rusticus*) through density- and trait-mediated indirect effects. Ecosystem impacts of *F. rusticus* are well documented and have been found to be density- and trait-mediated with dense populations causing greater impacts and more active crayfish causing greater impacts. A microsporidian outbreak in *F. rusticus* was found to cause a decrease in crayfish activity and corresponded with a significant decline in the population of *F. rusticus* in Trout Lake, WI. We conducted a 3-week mesocosm experiment to test density- vs trait-mediated indirect effects of the microsporidium on ecosystem metabolism by varying crayfish density and parasite presence. We hypothesize microsporidian infection will reduce *F. rusticus* ecosystem impacts through a decrease in crayfish activity leading to increased ecosystem metabolism. Gross primary productivity was measured using standard light- and dark-incubation methods. A water sample and cobble from each mesocosm was used to measure water column and benthic metabolism, respectively. We found ecosystem metabolism increased with crayfish density and in mesocosms without microsporidian infected individuals. Therefore, invasive crayfish impacts on ecosystem function can be reduced by the presence of a pathogen through both trait- and density-mediated indirect effects.



The Relationship Between Florida Adults who currently use E-cigarettes and Hospitalizations from or with Diabetes as any Listed Diagnosis

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Abstract (Posters)

The purpose of this research was to examine the relationship between adults who currently use e-cigarettes and diabetes hospitalization rates in the state of Florida. Methods: After conducting a brief literature review, we obtained data from FLHealthCHARTS to show a visual representation of the correlation between these two factors at the county-level and by year. Correlation coefficients and p-values were calculated, and these values were compared to those stated in our literature review to reach a conclusion. Results: Our results from the county-level analysis showed a correlation coefficient of 0.160, and a p-value of 0.197. This shows a weak correlation and a p-value that is not statistically significant. The second figure was created from our time analysis of the data and showed a correlation coefficient of -0.195 , and a p-value of 0.748. Therefore, this shows a weak negative correlation and a p-value that is not statistically significant. Conclusion: A thorough examination of the findings from both the literature and data analysis reveal inconclusive results on the relationship between smoking and diabetes. Judging from the data presented in our results, the relationship between hospitalization rates from diabetes and adults who currently use e-cigarettes is not statistically significant. More research is needed on the effects of e-cigarettes specifically in relation to the increased rate of diabetes since e-cigarettes are still a relatively new exposure.



Screening the therapeutic potential of bacteriocins expressed in plants

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Abstract (Posters)

Citrus greening disease is caused by the bacterium *Candidatus Liberibacter asiaticus* (CLAs). The bacterium is transmitted by the Asian citrus psyllid (*Diaphorina citri*) through feeding on citrus. The fruits of infected citrus plants become bitter, green, and the plants eventually die. Currently, few treatment options exist, and no long-term cure is available. Bacteriocins are proteins produced by bacteria which inhibit or kill other bacteria and have shown promise as treatments against bacterial pathogens of plants and animals. The objective of this study was to evaluate bacteriocins expressed in *Nicotiana benthamiana* for their ability to inhibit bacterial growth, with potential applications to controlling citrus greening disease. Thirty-two plasmids were developed to co-express bacteriocins linked to GFP through a P2A peptide, and were codon optimized for expression in Solanaceae. Plasmids were transformed into *Agrobacterium tumefaciens* and 18 of the clones were used for transient expression in *N. benthamiana*. Expression within leaves was confirmed in 16 of the samples by presence of GFP fluorescence and subsequent western blots. Protein extracts and sterilized leaf discs from leaves showing GFP expression were assayed on lawns of bacteria to evaluate therapeutic potential. Since CLAs is unculturable, six representative bacterial species, including three closely related to CLAs, were used for assays. No inhibition or killing of bacteria was observed. Several of the original *A. tumefaciens* transformants showed substantially reduced growth and were unable to be used for leaf infiltrations. These transformants may be expressing bacteriocins that are inhibitory to *A. tumefaciens* growth and have been redesigned to carry an intron to eliminate leaky expression in bacteria. Construct generation is underway, and future research will focus on determining the antimicrobial activity of these bacteriocins against a panel of culturable bacteria, and subsequently, against CLAs in citrus.



Hate Crime and Typology- a Comprehensive Database for Federal Hate Crime Offenders

Meghana Varanasi

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Abstract (Posters)

Hate crimes are prevalent in the US. They can be violent or non-violent, and they can be directed towards any demographic/ group of people. The research we conduct serves to create a comprehensive database of federal hate crime offenders. The purpose of this is to modernize the data- the last such database is extremely outdated and is no longer representative of current trends. I will discuss how the work will allow researchers from many different fields to draw conclusions such as cause/ effect trends with hate crime and mental illness. I will talk further on how the database will aid the criminal Justice system in targeted detection and prevention for hate crime. One of the main things I will discuss will be the research methodology. We are given a master list of federal hate crime offenders ranging all the way from the early 2000's to present years. As researchers, we have to choose offenders to code into the database. We have to use the internet and any/ all available sources to find out an array of information about the offender, their crime, the legal proceedings, and the victims. I will also talk about how our findings show that offenders often have previous histories of childhood victimizations or mental health illnesses. Because this is an ongoing project, any concrete conclusions have yet to be found. However, I have noticed a few specific trends while working on these cases.



Exploring the Fungal Members of Mosquito Microbiomes in East-Central Florida

Ronald Masse

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Abstract (Posters)

Mosquitoes have been called the deadliest animal on Earth due to their role as prolific disease vectors, resulting in nearly 750,000 deaths annually. Because of this, there is an urgent need to formulate novel, effective control strategies. One such method being investigated involves analyzing and potentially modulating the mosquito microbiome. The microbiome of an organism refers to a community of bacteria, fungi, and viruses that inhabit both the exterior and interior of their host. In mosquitoes, the microbiome has a distinct affect on host physiology and vector competence. The purpose of this study was to further characterize the fungal members of the adult mosquito microbiome. Adult female mosquitoes were obtained using CO₂-baited traps and inoculated onto potato dextrose agar plates to isolate the fungal symbionts associated with the mosquito cuticle. A total of 20 morphologically distinct yeast-like symbionts were characterized from various mosquito species collected in east-central Florida. These fungi were isolated in monoculture then had their DNA extracted and amplified using primers specific for the internal transcribed spacer (ITS) region of the fungal genome. Amplified DNA from each isolate was sequenced and the resulting data was used for phylogenetic analysis using MegAlign Pro software. Our results provide new insights on an understudied aspect of the mosquito microbiome and the fungi we have isolated could prove to be valuable tools for investigating interactions between mosquitoes, pathogens, and microorganisms, as well as be a source of potential novel biopesticides.



The Limited Availability of Specialty Medical Care in Puerto Rico

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Abstract (Posters)

Currently, Puerto Rico stands as a commonwealth of the United States of America, giving it some independence in its internal operations, but functioning ultimately under the federal government of the USA. This has placed Puerto Rico in an economic debt crisis as a result of policy changes made over the past several decades. As a result, the healthcare infrastructure of Puerto Rico is suffering, affecting rural and non-metro areas disproportionately as medical services are concentrated in urban centers. Through privatization upheaval, debt accumulation, and a prevalent pattern of physician migration, Puerto Ricans are unable to receive adequate healthcare on the island. Literature on the subject focuses on the migration of physicians from Puerto Rico to the mainland United States. However, it fails to address the lack of physicians of concrete specialties. This low specialist availability has been seen to affect those with chronic diseases, such as diabetes and heart disease, most, causing an imbalance as these conditions are those that currently require the most attention. This review aims to address the gap in published literature and pinpoint the specialties in need of physicians through a partnership with the Health Industry Information Platform of Puerto Rico, the largest database of physicians on the island and their practice locations. The resulting data points to which regions of the island lack specialty care most and emphasizes the need for healthcare reform as the system in place is unable to retain its physicians and ensure the medical safety of its people.



Optimization of Polydimethylsiloxane Membranes for Microscopic Tissue Tensile Mechanical Testing

Andrea Rivera

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Abstract (Posters)

The aortic valve opens and closes about 3 billion times in a lifetime. To respond to the high mechanically active environment, aortic valve tissue function is determined by a finely tuned structure that dictates appropriate mechanical properties. Investigating the mechanical properties of aortic valves is essential to understanding physiology and changes that lead to disease. Mouse models are an increasingly popular method of investigating human aortic valve pathogenesis. Our lab has previously shown that mouse aortic valve leaflet (MAVL) tensile properties can be measured by attaching the tissues to an elastomer, applying equiaxial loads and calculating tissue deformations. However, the stiff elastomer used previously can mask subtle differences in tissue properties. Therefore, a biomaterial that is more compatible with the elastic modulus of mouse aortic valve leaflets is necessary to improve the sensitivity of the analysis. By manipulating the mass ratios in a mix of commercially available elastomers, Sylgard 184 and 527, we manufactured polydimethylsiloxane (PDMS) membranes of varying thicknesses with a tunable elastic modulus. After applying equiaxial loads to the membranes and calculating their strain, their apparent stiffness ranged from 109 kPa to 290 kPa, an elastic modulus that is softer than the standard Flexcell membranes (570 kPa). We hypothesize that these membranes will improve the analysis of the orthotropic tensile properties of MAVL.



New potential drug target for Coronavirus

Delanie Herrera

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Abstract (Posters)

COVID-19 caused by SARS-CoV-2 has impacted the globe by causing illness to spread with new variants. Within proteins of the different coronaviruses, various druggable targets have been discovered however, virus proteins are often rapidly evolving which presents a challenge towards identifying an effective antiviral drug target that are not likely to result in drug resistant mutations. Here we analyzed two SARS-CoV-2 proteins, NSP14, a protein involved in replication, and Nucleocapsid, which surrounds the viral genome, to identify the fitness critical proteins to potentially be used as drug targets to treat COVID. To overcome the challenge of drug resistant mutations we consider the evolutionary conservation of Nucleocapsid and NSP14. Conservation of each protein can be determined from its Multiple Sequence Alignment (MSA). Statistical testing revealed NSP14 to be more conserved than Nucleocapsid. To determine the best pockets for the protein structure PockDrug was used. By visualizing the protein in 3D, we found no pockets in NSP14, therefore, we searched for pockets on Nucleocapsid and found 1 pocket that was surface accessible, highly conserved, and had no post translational modifications. Interestingly nucleocapsid is one of the antigenic proteins in SARS-CoV-2, but it is not used for current COVID mRNA vaccines. This research can be used to guide future vaccines and drug development for SARS-CoV-2. Finding highly conserved regions within SARS-CoV-2 and other coronaviruses to target can increase the longevity of treatments.



Investigating the Effects of Paraquat on Kidney Disease Biomarkers in HEK293 Cells

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Abstract (Posters)

Farmworkers in Apopka, FL, have been subjected to overhead pesticide exposure since the 1940s. Pesticides such as Paraquat (PQ), Metribuzin, Aldicarb, and more were sprayed onto the field while farmworkers worked. In “Fed Up: The High Cost of Cheap Food,” farmworkers recalled the physical toll these conditions took on their bodies, blaming pesticides for their demise into diseases such as systemic lupus erythematosus (SLE), chronic kidney disease (CKD), and other chronic ailments. While it was shown that pesticides, specifically PQ, are correlated to Parkinson’s disease, no explicit connection has been made to SLE, CKD, and other diseases experienced by farmworkers. This study tested if pesticides could contribute to kidney disease.

We quantified the fluorescence of reactive oxygen species (ROS) upon varying PQ exposure in human embryonic kidney 293 (HEK293) cells by using a microplate reader. A dosage range of 75, 150, and 200 μM was chosen to study, as it has been explored in mammalian cells subjected to PQ. We also tested for KD biomarkers KIM-1 and NGAL upon PQ exposure with RT-qPCR. Glutathione-S-transferase (GST) control served as an indicator of ROS. We predict that ROS will increase with increasing PQ concentration, as will the fold change in the expression of the mRNA biomarker levels. This project aims to raise further awareness of farmworkers’ health issues. The results may also test the potential diagnostic use of the biomarkers KIM-1 and NGAL for kidney metabolic panels when assessing patient health.



Two photon Polymerized Enhanced Surface Sensors for Inflammation Monitoring

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Abstract (Posters)

Space flight can have adverse health effects due to space flight stressors such as increased radiation, microgravity and persistent fluid shifts, prolonged isolation and confinement, and circadian shifts. Such conditions impact the immune system drastically, and it has been shown that one of the immune markers, interleukin- 6 (IL-6), among others, has been elevated in the blood. This project aims to investigate the IL-6 levels in the saline solution using an electrochemical impedance sensor. The innovation is surface enhancement employed by gold-coated pyramids fabricated using the two-photon polymerization lithography (2PP) method. The biomolecules are attached to the pyramids' enhanced surface area and excited with a 520 nm laser. The energy localization on the pyramids is observed through enhanced impedance measurement. The concentration of the IL-6 is changed from 1 pg to 1 microgram/ml. The blank for this experiment was the saline solution with and without laser excitation. The laser system has allowed precise control of the localization of energy when incident on the pyramids attached to the biomolecule, causing an increase in the enhanced impedance measurement.



Caravaggio: The Counter-Reformative Self-Portrait

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Abstract (Posters)

The world of Baroque Italy is full of a flair for the dramatic, and so too were the artists behind the paintings produced there. Within the art community, there was a growing awareness of self identity and expression, albeit through an allegorical lens. It was common for an artist's self-portrait to be disguised within a piece rather than the focus of it. Such practice was no doubt influenced by the subjects that were deemed valuable by art patrons at the time. This was especially true for Michelangelo Merisi da Caravaggio, who was mostly active in Italy during the height of the Counter-Reformation. To revitalize the image of Catholicism, the Roman Church funneled many resources into art, becoming the biggest patron for artists like Caravaggio. Numerous works by Caravaggio are religious in nature, including *Judith Beheading Holofernes*, painted in 1598-1599. The painting depicts a moment from the *Book of Judith* at its gory climax, where Judith decapitates a drunk Holofernes in his own tent. Caravaggio's painting exudes raw emotion, down to the finest detail. Each figure is embroiled in distress, whether physical or psychological. This explosion of feeling, while illustrating a story, simultaneously appears personal. As someone who had suffered much in his own life, I believe many of Caravaggio's paintings hold a deeper meaning of self expression. Using Judith as a guide, this project explores how Caravaggio used religious subjects in his art as a conduit to express his feelings of isolation during the Counter-Reformation.



What's in Our Water? Identifying uncharacterized bacteria from recreational sites in Tampa Bay

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Abstract (Posters)

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.



The role of genetic distance in the kin recognition responses of the model angiosperm *Arabidopsis thaliana*

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Abstract (Posters)

Many plants have evolved the ability to distinguish between members of the same or different accession and alter their behaviors accordingly. Common responses include changes in shoot and/or root growth, nutrient acquisition, as well as exudate production, all of which can influence plant success. We hypothesize that accession recognition is modulated by the extent of genetic relatedness between the two accessions in question whenever plants of the same species are forced to interact. Prior studies have established that nutrient restriction can amplify accession recognition impacts providing an additional tool for distinguishing between the generic and genetic relatedness models. Here we evaluate accession recognition phenotypes between several well-established accessions of *Arabidopsis thaliana*: Col-0, La-1, Aa-0, Xxx-0, and Ws-0. Young plants (<21 days) will be evaluated for changes in root length and area with the ImageJ and SmartRoot software packages to provide information about their Root Structure Architecture (RSA).



Teacher Stress, Teacher Subjective Well-Being, and Teacher Unintentional Bias before and during the COVID-19 Pandemic.

Zoe Primack

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Abstract (Posters)

Expanding upon Dr. Joni Splett's work, I examine the relationship between perceived stress, subjective well-being (SWB), and awareness of unintentional racial biases (URBs) in middle-school teachers before and during the COVID-19 pandemic. The study will utilize data from a federally funded randomized controlled trial led by Dr. Splett, including self-reported baseline demographic questionnaires and various scales before randomization and intervention implementation. I aim to answer questions regarding teacher ratings of perceived stress, SWB, and awareness of one's URBs before and throughout the COVID-19 pandemic: (1) Is teacher stress, SWB, and awareness of URBs different before (Cohort 1) and during (Cohort 2) the COVID-19 pandemic? (2) How are the relationships between teacher stress, SWB, and awareness of URBs similar and different for participants before and throughout the COVID-19 pandemic? This study will contribute to the field of school psychology by expanding upon the teacher stress model to include aspects of SWB.



The Erasure of Ancient Greek Women

Amber Waters

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Abstract (Posters)

Ancient Greek Art is arguably the epitome of classical art; however, I posit that it has a more sinister role, the erasure of women from the historical record. I believe the prevalence of women in Ancient Greek art being depicted primarily as goddesses and in mythological contexts is evidence of this judgment. The western pediment of the Temple of Aphaia is a primary example of how art was designed to erase living women in Ancient Greek society; portraying men as active participants in life, living, developing and women as merely static icons that are born ready to serve men. Breaking down the day-to-day role of women to that of incubators, servants (both sexually and domestically), monetary sources, and status symbols. The realities of where women came from and why they were present was shown in a passive, demure, and often virginal light. While men were exhibited as naked, buff, active, virile, heroic figures. Men are doing and women are merely existing.



How Marine Sponge Toxin Affects Actin Filament Disassembly Kinetics

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Abstract (Posters)

The assembly dynamics of actin, an essential protein, provide cells with mechanical support and play an important role in numerous cellular processes including cell movement and force generation. Various cytoskeletal drugs have been shown to alter actin filament assembly and disassembly by binding to actin. Swinholide A is an actin binding drug derived from the marine sponge, *Theonella Swinhoei*. This drug has been shown to increase actin disassembly by binding to actin dimers and destabilizing and severing actin filaments. Swinholide A has also been shown to have antifungal properties and is highly cytotoxic to various cancer cells. The main objective of this project is to determine Swinholide A's effect on actin disassembly kinetics in real time. We hypothesize that Swinholide A will affect actin filament disassembly in a concentration dependent manner. To test this hypothesis, we utilize pyrene fluorescence assay and total internal reflection fluorescence (TIRF) microscopy imaging to evaluate actin filament disassembly kinetics in real time. Our results show Swinholide A's ability to depolymerize actin filaments and reductions in average filament lengths over time at varying concentrations of Swinholide A. This study can help us better understand mechanisms of Swinholide A-mediated actin filament disassembly.



Why *Natyasangeet* is the music of Maharashtra.

Rahi Kashikar

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Abstract (Posters)

With different music styles so accessible around the globe, it is as if the styles are in a competitive environment. To be able to sustain itself, a style must make efforts to attract more audience while it preserves the current and maintains its authenticity. Whether the Darwinian notion of ‘survival of the fittest’ is applicable to music styles in the sense of their popularity and sustenance becomes a valid question. A new candidate in this competition, *Natyasangeet* emerged in Maharashtra even before independence. By virtue of its characteristics and flexible form, *Natyasangeet* captivates music enthusiasts and triggers emotional response in the audience as it secures its position as an authentic indigenous style among others in contemporary Maharashtra. Music that initially supplemented monotonous Sanskrit verses in *Sangeet Natak* found wider use in replacing lengthy scripts as it was an effective way to communicate setting, emotion, and character traits. As more plays addressing peoples’ lives were performed besides cultural repertoire, *Natyasangeet* diversified its genre. The multicultural setting of the *Bombay Presidency* along with the profitable economics of theatre allowed free borrowing of styles amongst different local theatres. Appreciation developed and *Natyasangeet* could soon be filtered out of the play and be performed as ‘light classical’. Study of sound, idea, behavior, and setting considering more than five music pieces suggests evidence for the arguments presented. The subject of this research is to elaborate how *Natyasangeet* established its presence in Maharashtra and further open discussions for a similar analysis of other music styles.



Plasmonic Metamaterials for Non-Linear Optical Applications

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Abstract (Posters)

Advancements in the field of optical meta-materials within the past few decades has led to the development of enhanced nonlinear optical functionalities with an increasing level of control over electromagnetic fields in nanostructured systems. The core of meta-material design is in the manipulation of the fields dispersion through careful geometrical nanostructuring. These meta-materials are thought to have potential applications in major fields including energy management, medical diagnostics, and military and national defense industry. In this project, we are observing plasmonic forming meta-materials using finite element method (FEM) simulations and identifying the modal contributions to the optical response of these materials.



Head Start Educators' Cardiovascular Health Awareness and Perceived Health Risks

Amanda Yelverton, Katherine Herndon, Bria Ferera, Dawn Witherspoon
University of North Florida, Jacksonville, USA

Abstract (Posters)

Background: Understanding perceptions and intentions to change may subsequently decrease cardiometabolic health risk factors. Previous studies indicate that an increased onset of premature cardiovascular disease (CVD) was due to the individual's misleading perception of cardiovascular risk (Woringer et al., 2017). Preexisting health conditions within Head Start educators and school staff's physical health, mental stressors, and financial disparities may impede their abilities to educate and care for children accordingly (Derscheid et al., 2014). Previous research indicates that healthy employees are more productive and are more likely to model healthy behaviors for children (Lipscomb et al., 2022).

Aims: A Health Needs Assessment was completed by participants to explore key risk factors associated with CVD and to support the creation of a community-based health program.

Methods: The participants included 75 Head Start educators and staff, the majority were African American females. The data was self-reported through an online Health Risk Assessment, including The Attitudes and Beliefs about Cardiovascular (ABCD) Risk Questionnaire. The ABCD Questionnaire included four subscales: Knowledge, Perceived Risk of Heart Attack/Stroke, Perceived Benefits, Intentions to Change, and Healthy Eating Intentions.

Results: 21 % of participants were overweight and 66 % were obese. 41 % were Pre-Diabetic and 54 % had high blood pressure. Perceived risk of heart attack or stroke was significantly greater in the obese group compared to the normal and overweight groups ($p < .05$). However, Health Knowledge was not related to BMI.

Conclusion: The findings highlight the need for interventions concerning CVD risk factors within Head Start educators and staff.



Head Start Educators' Sense of Self-Efficacy While Navigating the Pandemic

Katherine Herndon, Amanda Yelverton, Bria Ferera, Dawn Witherspoon
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Abstract (Posters)

BACKGROUND: The Covid-19 pandemic has negatively impacted Head Start educators' best practices. The pandemic exacerbated stress in low socioeconomic populations through systemic disparities (Lipscomb, et al, 2022), and compounded the lack of healthcare minority groups faced during the pandemic. This resource gap may lead to a decline in Head Start employees' feelings of self-efficacy. Feelings of low self-efficacy lead educators to believe that they contribute to poor outcomes in students (Derscheid et al., 2014). **AIMS:** The current study investigates changes in best practices during the Covid-19 pandemic that impacted Head Start staff's self-efficacy. **METHODS:** 75 primarily African-American female participants Head Start educators and staff. Data was self-reported through The Health Risk Assessment survey and the Confidence about Activity and Nutrition Teach (CAN Teach) questionnaire. The CAN Teach questionnaire measured the participants' self-efficacy to implement best practices for healthy nutrition, and physical activity curriculum with Head Start pre-schoolers. Results indicated that 21 % of participants were overweight and 66 % were obese and 54% had high blood pressure. Self-efficacy for best practices was significantly lower in participants with high blood pressure compared to participants with healthy blood pressure ($p < .05$). Age was also a significant factor in the Head Start educators' sense of self-efficacy ($p < .05$). However, there was no relation between an employee's weight and their ability to implement best practices. **CONCLUSIONS:** This study highlights the need to intervene for older Head Start educators and/or those with personal health risks such as high blood pressure in times of heightened stress.



A Study of Avian Hosts of West Nile Virus in Lee County, Florida

Omar Obeissy, Alberto Condori
Florida Gulf Coast University, Fort Myers, USA

Abstract (Posters)

Mosquitoes are responsible for nearly one million deaths each year due to their ability to transmit various diseases. In Lee County, Florida, West Nile Virus is a prevalent mosquito-borne disease. Mosquitoes may contract the virus when they bite an infected bird and after about a week, could pass it along to humans. Our research aims to determine the most relevant bird species that contribute to the spread of West Nile Virus in Lee County, Florida. To that end, we used data from The Cornell Lab of Ornithology (eBird) on various bird species in Lee County and determined suitable mathematical functions that captured yearly trends. Ideas from least squares regression analysis and optimization were applied to determine the functions that fit the data best.



Dynamic Visualization of Mosquito Landing Rates in Lee County, Florida

Andrew Krupp, Alberto Condori
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Abstract (Posters)

In an increasingly data-driven industry, a common problem facing many teams (research, business, or otherwise) is taking large amounts of data and making it digestible for those outside of the team working with the raw data. In Fall of 2022, my research team worked with Lee County Mosquito Control District (LCMCD) to analyze large amounts of data that LCMCD had collected over the years to develop a model that could predict where West Nile Virus (WNV) transmission would occur in Lee County, Florida. The data needed to be cleaned and visualized in a way that would be understandable not only to the team, but also to LCMCD and the public at large. This was accomplished using programming and algorithms written in the Maple 2022 language to construct a map of Lee County, FL, with the data overlaid, allowing one to easily understand the data as it pertains to the location being studied. Only once the visualization and data cleaning were completed, the team could begin building the model requested by LCMCD. Completion of the model will allow LCMCD to predict the location of WNV activity and subsequently provide treatments to avoid an outbreak providing a benefit to the county and Southwest Florida at large.



Barriers to Higher Education for Florida Citizens with a Criminal Record

Kelly O'Hanlon

Florida SouthWestern State College, Fort Myers, USA

Abstract (Posters)

My poster presentation would exhibit research findings about the barriers to higher education in the State of Florida specifically related to formerly incarcerated and convicted individuals (returning citizens) who have fully completed their sentences. According to the *True Cost of Incarceration on Families* report by the Ella Baker Center for Human Rights, 67% of the surveyed returning citizens had a desire to return to school after their release but only 27% were able to continue their education or training of any kind. Access to higher education for Floridians with a criminal record is an example of deeply rooted injustices that maintain systems of oppression and generational harm.

I am using a mixed methodology research approach that includes oral history interviews to provide authentic perspective, a review of post-secondary educational institution admission policies throughout the State of Florida and a curation of existing applicable research and recommendations. In preparation for the oral history portion of this research project I completed the *Protecting Human Research Participants* certificate training and received IRB approval. To find qualified research participants to interview, I worked with the Florida Rights Restoration Coalition (FRRRC) administrative team to connect with returning citizens and learn from those who have been directly impacted by the challenges of establishing life after prison.

A three-part visual display would include graphics, charts and description to showcase the following: 1- topic introduction/background, 2-identify barriers/issue, 3-prioritizing education/removing barriers and recommendations.



Interactions of Microorganisms and Their Enormous Effects on Oral Health Linking to Gastric Cancer

Toby Ellison, Mintoo Patel
South Florida State College, Avon Park, USA

Abstract (Posters)

The world of microorganisms and their complex interactions with human habitation is a cause of wonder and alarm. For centuries, scientists have been intrigued by the discovery of bacteria and specifically, their effects on the human population. Such microbial mechanisms have revealed an enormous impact on humans' oral health, as well as an association with stomach cancers. It is known that the interactions between microorganisms and humans have reached a symbiosis that helps in the defense against pathogens, however, dysbiotic microbiome is implicated in diseases including gastric cancer. The correlation between oral health and gastric cancer arises from the presence of oral bacteria in gastric cancer. While *Helicobacter pylori* is more commonly known in association with gastric cancer, other gastric microbiomes are becoming more recognized and show linkage to oral microbes. This includes high rates of *Fusobacterium*, *Veillonella*, *Leptotrichia*, *Haemophilus*, and *Campylobacter* in gastric cancer tissue specimens. Worldwide, gastric cancer ranks as the fifth most common cancer and can metastasize to secondary sites affecting the quality of life for patients. We plan to collect tongue-coating specimens from 15 healthy individuals, extract DNA and perform whole genome sequencing to establish microbial profiles in the specimens. Knowledge of oral microbiome profile, especially in connection to gastric cancer, will aid in the treatment of gastric cancer. Identifying pathogenic oral microorganisms linked to the development of cancer will help as a preventative measure for gastric cancer.



Reshaping the Hurricane Cone of Uncertainty: A Study on Public Perception

Aaron Serre, Chandler Pruett

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Abstract (Posters)

The Cone of Uncertainty, a popular National Hurricane Center (NHC) graphic, communicates the possible deviations from the forecasted track of a tropical system's center. The deviations are determined by using historical forecast errors from the previous five hurricane seasons, resulting in a cone that does not change in width with each NHC advisory. Because this behavior does not reflect the variability of forecasting tropical cyclone tracks, the NHC is considering a redesign that integrates model data with each advisory, creating a cone that can expand and contract in width. To investigate how clear this behavior is to the public, a focus group study involving 124 participants was conducted during the summer of 2022. These participants were split up into four groups of 31 people with one group using the current cone and three other groups using differing cone widths to analyze a storm simulation. In this five-day simulation, participants described their levels of concern at three locations as a fictional storm approached the U.S. East Coast. After reviewing the results, the control group outperformed the other groups since it maintained higher levels of concern at locations 1 and 2 while minimizing concern at location 3. So, this study concludes that the historically derived cone that is currently used is the most efficient graphic since it avoids the problem that, as a cone narrows, public concern reduces at locations near or in the forecast track.



Split aptameric probes in a multiplex approach for detecting point-mutations in pathogenic bacteria

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University of Central Florida, Orlando, USA

Abstract (Posters)

Bacterial infections remain a serious threat to human health, where tuberculosis is within the top ten causes of death worldwide. Antibiotic resistance acquired via mechanisms including point-mutations in bacterial genes has been a growing concern for over 40 years. As molecular diagnostics provides a fast way to identify pathogens, high selectivity is required to enable discrimination of point-mutations for genotype-based drug susceptibility testing. Here, we report a split aptameric (SA) probe for the detection of a point-mutation in codon 315 of the *katG* gene from *Mycobacterium tuberculosis*, which causes bacterial resistance to isoniazid. The probe is based on a fluorescent light-up aptamer (FLAP) DAP-10, which was originally selected to turn-on fluorescence of dapoxyl dyes but was demonstrated to enable fluorescence enhancement of other fluorogenic dyes. Such promiscuity can offer an advantage of multiwavelength output while designing point-mutation-selective SA probes. In this project, we sought to employ the SA probes for differentiation between genetic signatures corresponding to isoniazid-susceptible (INHS) and isoniazid-resistant (INHR) bacterial phenotype in a multiplex fashion. This would enable ratiometric analysis of heterogeneous populations composed of both susceptible and resistant strains, thus helping in initial diagnosing and monitoring the therapy outcomes. We performed rational mutagenesis of the DAP-10 dye-binding core to reveal FLAP mutants that respond differently to two fluorogens with distinct spectral properties. Four mutants were selected and paired with each other in the orthogonal fashion to serve as reporters for the SA probes. The probes were tested using synthetic oligonucleotide mimics of INHS and INHR genotypes.



Impact of seasonal temperature changes on coral health at Peanut Island, Riviera Beach, Florida

Kaleigh Fix, Christina Batoh
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Abstract (Posters)

Peanut Island, situated in Lake Worth Lagoon off of Riviera Beach, FL is an anomalously biodiverse location for corals. Despite stresses of heat, pollution, tourism, and disease, approximately 21 different species of octocorals and hexacorals persist at the island. The present study specifically examines the impact of seasonal temperature changes on recovery from a severe summer bleaching event. The 27 coral colonies being monitored at Peanut Island all demonstrated varying degrees of bleaching during the summer of 2022. As water temperatures cooled from 30°C in September 2022 to 28°C by October 2022, bleached corals demonstrated remarkable recovery. The most resilient colonies (*Pseudodiploria clivosa*, *Pseudodiploria strigose*, *Porites astreoides*, and *Porites porites*) that had been completely or nearly completely bleached in the summer, saw a return of symbiotic zooxanthellae, thus restoring color, to almost 100% of the area of each colony. Due to the incredible capacity of Peanut Island corals to recover from heat-induced bleaching, they will continue to be closely monitored throughout the year, for many years, to build a robust database on the physical and chemical parameters leading to bleaching and recovery. By uncovering the mechanisms of their unique resilience, Peanut Island corals will help inform future conservation efforts for corals world-wide that are threatened by the numerous stresses associated with climate change.



ECONOMIC IMPACTS OF REPRODUCTIVE RIGHTS POLICY AND ACCESS ON PREGNANT WOMEN AND NEW MOTHERS

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Abstract (Posters)

This study explores the economic impacts of sexual healthcare access on pregnant women and new mothers by analyzing WIC (Women, Infants, and Children) eligibility rates by state. WIC is a federally funded program providing financial and nutritional support for pregnant women, new mothers, infants, and children. Eligibility rates are calculated on the state level with variance between states. This study looks at the correlation between the eligibility rates and proximity to government funded sexual healthcare clinics (Title X funded clinics), reproductive policy, contraceptive usage rates, and unintended pregnancy rates in the years 2018 and 2019. Results found a correlation between improved sexual healthcare access and less restrictive reproductive policy and lower rates of WIC eligibility by state. States with higher unintended pregnancy rates were also found to have higher WIC eligibility. Both of these findings suggest a connection between reproductive policy and healthcare access and economic outcomes for women.



A computational approach to structural and evolutionary analysis of pathogenic sites within proteins associated with Parkinson's disease

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Abstract (Posters)

Over 10 million people worldwide live with Parkinson's disease (PD) which can cause tremors, stiffness, sensory issues, and autonomic dysfunction. Most PD patients are diagnosed through neurological examinations, and the therapies for PD are focused on reducing symptoms. Currently, there is no cure. PD is characterized by the degeneration of dopaminergic cells as well as disruptions in the cell's mitochondrial, ubiquitination, and cargo transport processes. PD's complex and intertwined pathways complicate identification of the complete genetic repertoire involved, but prominent proteins include α -synuclein, Parkin, and PINK1. Therapies focused on reducing symptoms of PD by reversing the dopaminergic loss or inhibiting misfolding of α -synuclein are under development, and the field is looking for more efficient ways to detect PD earlier and improve prognosis. Here, we take a structural and evolutionary approach to investigate the α -synuclein protein family. This protein family is characterized by conformationally flexible proteins that are prone to misfolding as part of the PD pathology. Analyzing these proteins from a computational perspective including sequence conservation, intrinsic disorder, and structural models can expose important patterns on proteins involved in PD and other misfolding neurodegenerative diseases. Phylogenetics and sequence analysis revealed that the three known paralogs (α -, β -, and γ -synuclein) had three functional domains with varying conservation of sequence and structure across domains and paralogs. Future work includes discerning informative patterns of sequence and structure evolution of genetic variants to improve identification of pathogenic changes in proteins causing PD or other misfolding diseases at an early stage.



Sexual Orientation in Education

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Abstract (Posters)

Unfortunately, there are huge problems surrounding LGBTQ+ rights for students, such as religious fear, bullying, and children not feeling safe in their school's bathrooms. Not only on an in-school scale but on a political scale also affects children's lives behind the scenes. Laws like the don't say gay bill makes it harder for students to learn acceptance and to be taught that everyone is valued. On top of the don't say gay bill, there is already very little help offered for students in this community. This topic is crucial for many reasons. Those reasons, including the amount of LGBTQ+ individuals there are, the fact that they are more at risk, the lack of LGBTQ+ education, and bullying, are just a few reasons. When schools do not value and support LGBTQ+ students, that causes hostile environments. When schools allow or excuse hostile environments, that can affect them mentally and their student performance.



Final state interactions in tagged DIS experiment

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Abstract (Posters)

Deep inelastic scattering (DIS) is a process where an electron probes a hadron, colliding them, to study the inner structure of the hadron. Our project is connected to the BAND (Backward Angle Neutron Detector) experiment at Jefferson Lab, which studies DIS processes of an electron colliding with a deuteron target. After the collision, there are two particles detected, the scattered electron and the spectator neutron that was bound to a proton in the deuteron. The objective of the BAND experiment is to measure the structure functions of the bound proton as a function of its initial momentum, which can be inferred from measurements of the spectator neutron. These structure functions encode information about the quarks in the nucleon. By comparing the extracted structure functions of the bound proton from BAND, with those measured on a free proton, information is gained on how exactly nuclear interactions modify quark distributions.

This project addresses one specific phenomenon which modifies the measured momentum of the spectator proton and introduces extra uncertainties on the extracted data, namely final state interactions (FSI). These are interactions in which, after the proton is broken by the electron, the remnants interact with the spectator neutron, modifying its momentum. In a model used and tested previously in similar reactions, we calculate the probability of having FSI in the kinematic region that BAND measured, to quantify the influence of FSI on the data of the BAND experiment. This project is supported by a Jefferson Science Associates MFURA fellowship.



Cadmium Chloride Bioremediation Potential and Lipid Production of the Desmid *Cosmarium*.

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Abstract (Posters)

Metal toxicity and its hazardous effects on the environment and human health led researchers and biologists around the world to mitigate and identify root causes. Moreover, the increasing need for sustainable fuel sources to ameliorate increasing carbon emissions and their deleterious effects is currently heightened. *Cosmarium* is one of the various algal species that have been explored not only for bioremediation from aquatic environments but also as source of lipids as alternative form of sustainable fuel. The purpose of this research was to observe and analyze possible uptake of cadmium chloride by *Cosmarium* over a 5-week period of culture under laboratory conditions concomitant with lipid production and measurement of pH changes. Ultraviolet-visible spectroscopic absorbance measurements for the entire culture period revealed lower values in cultures with cells than those without suggesting possible uptake of CdCl_2 by *Cosmarium*. Lipid extraction by dichloromethane and methanol showed higher lipid production in cells treated with CdCl_2 than the control with lutein being the dominant compound as shown by infrared spectroscopic analysis. pH fluctuations were observed with a seemingly adaptive response from *Cosmarium*. These results supported the hypothesis that *Cosmarium* not only aid in bioremediation but also as source of sustainable energy. More studies on algal exploration should therefore be conducted not only to benefit human health, but also to save the environment.



Instructional Experiences in Undergraduate Chemistry

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Abstract (Posters)

The use of Undergraduate Learning Assistants (ULAs) in STEM courses, especially large, introductory courses, has been shown to increase student performance and improve their learning experience. Acting as a ULA may also support the professional academic development of the ULA themselves and contribute to their personal growth. However, there is a gap in the literature describing the experience of ULAs and their development personally and professionally. The goal of this study is to describe the experience of Chemistry Undergraduate Learning Assistants as they take the training course and begin working with undergraduate students.

Using periodic semi-structured interviews, observations of the ULA, and artifacts they create in their training course, we will describe the evolution of the ULA as a student, teacher, and scientist. After two rounds of interviewing, themes of personal growth were apparent. The ULA seemed enthusiastic at the idea of developing pedagogical skills, as well as honing interpersonal skills such as communication. The ULA also described excitement towards building a community within the classroom to create an environment best suited for learning and growth.

The results of this study could support the use of ULAs not only as a pedagogical strategy for increasing student success in large, introductory courses but also as a strategy that supports the identity development of STEM students as they continue in their academic career.



Effects of Alcohol Consumption with Chemotherapy on Cancer Cachexia

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Abstract (Posters)

Cancer Cachexia is a deteriorating syndrome designated by a gradual loss of body weight that commonly affects adipose tissue and skeletal muscle. Lifestyle factors like chronic alcohol consumption can contribute to the onset of cancer cachexia in pre-clinical models. Chemotherapy is used to slow cancer growth, but it is unknown whether chemotherapy exacerbates cancer cachexia following alcohol consumption. To address this question, female Balb/c mice were randomized into groups: control, control-chemotherapy, alcohol, EtOH-chemotherapy. Mice were fed either a control or alcohol containing diet for six weeks prior to tumor implantation. When tumor cells were placed in all groups, alcohol consuming mice were switched back to the non-alcoholic diet. Chemotherapy was administered twice weekly until euthanasia when skeletal muscles were dissected and weighed. Western blotting was used to estimate protein synthesis via puromycin incorporation, and protein degradation via ubiquitin labelling in the gastrocnemius. Data was analyzed using a two-way ANOVA with chemotherapy and alcohol as the factors. Our results showed that chemotherapy treatment did not affect the weight of the soleus, plantaris, gastrocnemius, tibialis anterior or quadriceps muscle in control or alcohol mice. However, a main effect of alcohol was observed in the soleus, plantaris, and gastrocnemius in that the prior consumption of alcohol further reduced the weight of these muscles in mice with cancer cachexia. Interestingly no differences were detected for puromycin or ubiquitin protein expression. Overall, these data indicate that there is significantly greater loss of muscle mass following prior alcohol consumption, but no ameliorative benefit of chemotherapy.



A deep learning model for class imbalance and overfitting based on animal images

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Abstract (Posters)

Since the late 1980s, convolutional neural networks have been used to perform visual tasks. However, despite a few scattered applications, they remained dormant until the mid-2000s when developments in computing power and the advent of large amounts of labeled data, accompanied by improved algorithms, contributed to their advancement, helping bring them to the forefront of a neural network renaissance that has seen rapid progress since 2012. As part of this review, we examine CNNs' development, from their predecessors up to state-of-the-art deep learning systems, with a focus on image classification. Our next step is to analyze common problems: class imbalance and overfitting with images of birds, cats, and dogs.



Eastern Oyster (*Crassostrea virginica*) Demographics within Alligator Harbor

Brentley Durham

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Abstract (Posters)

Oyster populations in Apalachicola Bay, Florida have seen significant decline in recent years, prompting the Florida Fish and Wildlife Conservation Commission to place a moratorium on harvesting oysters within the Bay until 2025. During this time, there is ongoing research undertaken by the Apalachicola Bay System Initiative will be utilized to further determine sustainable management suggestions and ongoing restoration efforts. In comparison to sub-tidal oysters, there is little research regarding the demographics of intertidal oysters in Apalachicola Bay. My research aims to further monitor oyster populations in Alligator Harbor, an ideal region for assessing intertidal demographics due to its proximity to the Florida State University Coastal and Marine Lab. Monitoring oyster condition, spat recruitment, spat settlement, predation, and localized water quality parameters aim to assess oyster populations demographics within the intertidal areas of Alligator Harbor. Additional studies focusing on intertidal regions in Florida have found increased levels of salinity contribute to larger populations of adult oyster predators, such as crown conchs (*Melongena corona*) and lightning whelks (*Busycon perversum*), as well as a decline in intertidal oyster populations, further validating my research aims. The data collected and analyzed from this project will ultimately be used to further understand both Alligator Harbor and Apalachicola Bay as well as help develop and implement strategies to improve the overall health, restoration, and conservation efforts of the region.



Continuous Improvement of an Experiential Learning CNC Manufacturing Lab Course

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Abstract (Posters)

Engineering students are challenged with combining the knowledge and theory learned in the classroom with the practical applications needed in a work environment. To prepare for the workforce, many students seek experiential learning for a hands-on learning experience. This work addresses the creation and continual improvement of a hands-on computer numerical control (CNC) manufacturing course developed in collaboration with Autodesk Inc. to aid engineering students in their experiential learning journey. The student cohort comprises students from Industrial and Systems, Mechanical, and Aerospace Engineering. The course is structured to include 1-hour of instructor-led lecture, 2-hours of hands-on lab time, and 2-3 hours of at-home design and computer-aided manufacturing (CAM) per week. Students first machine parts to manufacture a functioning air engine on a 4-axis Haas VF3 CNC milling machine over several weeks followed by a live assessment where they must prove proficiency on the machine. The final weeks will consist of creating a maze and 1-2 projects of their choice. Some course improvements assessed in this work include immediate exposure to CNC machining and increased assignments to measure students' performance. We analyze these improvements using a series of student surveys throughout the semester and compare results to previous semesters. As a result, we expect a more rapid increase in perceived CNC knowledge and higher perceived usefulness of assignments.



The Allure of the Wild West: Setting Films in the Past to Address Issues in the Present.

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Abstract (Posters)

The American West evokes images of a wild, rugged, and romantic world in which history and folklore long ago became one. Beyond its natural beauty and legendary past, since the mid-20th century, filmmakers have chosen the Wild West as the setting for films focused not on a historical past but on social, cultural, and political issues of their respective presents. What about the American West specifically, and frontier culture generally, makes it so effective for such purposes? This topic combines several fields of study related to film, culture, and history. This research project—a poster—uses the cultural history of both the 19th-century American West and 20th/21st-century America as background for the analysis of several films that while set in the 19th-century Wild West focus on important social, cultural, and political issues of the decades in which these films were made: *Westward the Women* (William Wellman, 1952), with its focus on women’s roles; *Django* (Sergio Corbucci, 1966), with its criticism of political and economic systems; *Zachariah* (George Englund, 1971), with its focus on gay rights; and *The Harder They Fall* (Jeymes Samuel, 2021), with its treatment of racial and social inequality. The Wild West’s sense of freedom, opportunity, and adventure, its lack of established history, rules, and expectations, and the belief that anything is possible there, have made it the perfect setting in which filmmakers have challenged the existing cultural and societal norms of their own time.



Exploring the essential role of human DNAJB1 via its interaction with Hsp70 molecular chaperone

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Abstract (Posters)

Proteins are complex biomolecules that act as cellular machines whose functionality arises from their structure. The loss of native structure not only perturbs protein function but can also lead to aggregate formation as observed in diseases like Alzheimer's, Parkinson's, or even Cancer. Consequently, a system of cellular proteins referred to as molecular chaperones oversees preventing protein aggregation and facilitating aggregate disposal and protein degradation. One of the central molecular chaperones in the cell is Hsp70, whose function is mediated by a group of obligatory protein partners known as J-domain proteins (JDPs). Two main classes, A and B, have been identified with class B JDPs found to be essential for cellular viability. Recent studies of human JDPs identified an intramolecular interaction between a J-domain and a segment present in the adjacent Gly-rich region that occurs only in class B JDPs. Our previous studies using yeast homologue of JDPs and Hsp70 suggests that the same Gly-rich region segment may serve as a new unknown binding site with HSP70 correlating with the unique functionality of class B JDPs. The aim of this project is to investigate if similar interactions occur in human Hsp70/JDP systems in addition to structurally identified intramolecular interaction. For this purpose, we use a bacterial host system to express and then purify DNAJB1 and HSP70 to then study their mutual interactions using NMR. With this experimental setup, we hope to better understand the correlation between the structure and function of JDPs and their essential biological roles.



The Role of Technology Use in Vigilance Performance and Processing Speed: Effects of Spatial Uncertainty and Event Rate

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Abstract (Posters)

Past literature has addressed the role of multitasking in specific cognitive consequences, primarily focusing on multitasking with non-media tasks. While briefly addressing technology, its use in the modern era concerning media multitasking and associated cognitive declines has not been addressed. Within the proposed study, media multi-tasking represents engaging in one medium of media along with other media or non-media activities simultaneously (Madore et al., 2020). The present proposal aims to outline research that will provide a novel contribution to addressing this gap while also incorporating insights from neuroimaging. It is expected that the most prominent vigilance decrement will be found in those classified as 'high media multitaskers.' Furthermore, an electroencephalography component expects to find a lower P300 amplitude present for 'high media multitaskers.' These findings will conclude with considerations for both the design and use of digital mobile devices.



Expanded Phenotyping in NGLY1 Deficient *Danio rerio*

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Abstract (Posters)

Congenital disorders of glycosylation (CDGs) and congenital disorders of deglycosylation (CDDGs) are rare genetic disorders known to disrupt multiple organ and tissue functions in humans. Severe symptoms include neurodevelopmental pathologies such as epilepsy, intellectual disability, myopathy, neuropathy, stroke-like symptoms, and severe congenital malformation. We maintain a zebrafish (*Danio rerio*) model of a CDDG driven by a loss-of-function mutation in the gene NGLY1 crossed to a NeuroD-GFP transgenic fish line. Unlike other models of NGLY1 deficiency, these homozygous fish are viable and fecund. We started phenotyping potential neuropathology in this model by measuring the GFP+ cerebellar area fish, however, we observed no significant difference. This study expands the phenotyping to evaluate the cortical area, ventricular space, and optic tectum deficits. Bright-field images were also evaluated to observe the differences in body length and eye size in these NGLY-1 deficient zebrafish. It is hypothesized that the zebrafish deficient in the NGLY-1 gene would show decreases in brain size and eye size.



A Novel Mouse Model of Prenatal Opioid Exposure

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Abstract (Posters)

Opioid use in the United States has become an epidemic with about 10.3 Americans misusing these substances in the past year. Of those, about 4.9 million are people of child-bearing potential. Even more concerning, the use of extremely potent synthetic opioids such as fentanyl has skyrocketed in the past couple years. While fentanyl has been used clinically for decades, very little is known about its long-term effects following prenatal exposure. The goals of this study were to authenticate a model of fetal exposure to fentanyl that mimics human exposure patterns and to determine how maternal fentanyl treatment alters physiological and functional outcomes in male and female offspring. Female mice were orally administered either saline or fentanyl throughout gestation, and the resulting offspring were tested in a variety of behaviors in adulthood. Fentanyl litters were significantly smaller in size compared to saline-exposed ones, while fentanyl-exposed males weighed significantly more than controls throughout the lifespan. While fentanyl treatment did not affect locomotor activity or cognition, it did cause deficits in measures of social dominance in both males and females similar to what is seen in autism spectrum disorders. These findings aid our understanding of the behavioral outcomes of prenatal exposure to fentanyl throughout development.



Post-Translational Glycosylation of Polypeptide Tags for Receptor Targeting

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Abstract (Posters)

Liver cell based therapies using biomaterials can take advantage of the tolerogenic properties of the liver. Influencing the tolerance of liver immune cells to specific antigens provides an opportunity to utilize biomaterial-based drug delivery systems with minimal inflammatory signs and rejection. We have generated a glycosylatable tag fused with a reporter protein that is able to effectively bind to the C-type lectin receptors of HepG2 cells, a model hepatocyte cell line, at a higher rate than non glycosylated protein. The fusion protein utilized is a product generated by transfected E.Coli populations, which is then purified and glycosylated with UDP-N-acetyl-galactosamine in the presence of ppGalNAct2 to target liver cells. The modification of the protein is performed by MALDI-TOF mass spectrometry analysis and association to HepG2 cells is observed by flow cytometry and GFP mean fluorescent intensity. This biomaterial has the potential to be employed as a vehicle for immune modulating enzymes and antigens to the liver. With the observed high rates of uptake by HepG2 cells, the potential uses of this protein for in vivo is to be characterized in further studies.



The Effects of a Texture-Modified Diet and Fortified Foods on the Weight of Adults Diagnosed with ALS and Dysphagia

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Abstract (Posters)

Amyotrophic Lateral Sclerosis, often referred to as ALS or Lou Gehrig's Disease, is a progressive neurological disease that affects control of voluntary muscle movements such as walking, talking, or swallowing. A condition associated with ALS is dysphagia, in which patients have difficulty swallowing. A customized diet and enteral nutrition are two primary dietary approaches prescribed to ensure that patients receive the nutritional requirements to sustain health. This study aims to examine the impact of texture-modified diets and using fortified foods on body weight as well as how much information is retained by patients and their caretakers in nutrition education sessions. Adults with ALS and dysphagia at Nova Southeastern University's ALS Clinic will be selected for participation in this study. For one hour, adults and their families or caretaker will be educated on texture-modified diets, fortified foods, and prioritizing calorie intake. The control group of patients will receive the same information, but in a pamphlet instead. Congruent with this trial, a quantitative survey will be taken from participants about the effect of the dietary changes and how much of the nutrition education session was remembered and implemented. Weight change will be measured along with changes in disease severity. Results from this study may show that textured-modified diets and fortified foods slow down weight loss in patients with ALS and dysphagia, more so in patients that participated in the nutrition education session. This development could lead to more significant efforts in nutrition education and interventions to benefit their quality of life.



What Do You Meme?: Integrating the Inflammatory Response Using Memes

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Abstract (Posters)

Background: Memes are socially shared constructs that include digital images with juxtaposed text with meaning, emotion, or humor. Few studies to date show efficacious uses of memes in health education contexts.

Aim: To assess higher-order learning of inflammatory response through student-generated memes.

Methods: As part of an introductory course to human disease, students created a set of 3 memes from an inflammation lesson, which served as the analytic framework. After IRB approval (STUDY00004946), graded assignments submitted during 2022 were downloaded, coded, and analyzed by 3 independent reviewers. Descriptive statistics were conducted in MS Excel (Microsoft Corporation; Redmond, WA) and content analyses were conducted in NVivo 12Pro (QSR International; Burlington, MA).

Results: Among the 436 students in the roster, we identified 396 submissions. The overall mean (SD) score was 17.57 (5.88) of 20 points; the most commonly noted grading pitfalls were no submission (n=40), lack of summary statements (n=36), and unrelated contents (n=9). Correlation between assignment and final grades was significant, albeit weak ($R=0.406$; $R^2=0.165$; $P<0.001$). Three main thematic components were identified: cellular elements (mainly neutrophils, mast cells, and red blood cells), specific sequential processes (mainly transudate-exudate, histamine release, and cellular migration/diapedesis), and pathophysiological basis of inflammatory signs (pain, swelling, heat, redness, and loss of function).

Conclusion: This assignment uses a current and relatable communication form for health sciences students to synthesize and contextualize inflammatory elements and processes. Thematic analyses show higher-order learning elements, including creation, analysis, application, and synthesis.



Examining the influence of climate change on wet and dry tropical forests of Hawai'i through concentrations of carbon-12 and carbon-13 stable isotopes

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Abstract (Posters)

Climate change affects all aspects of the global environment including the amount of water available to plants in tropical forests, particularly those located in the dry and wet tropical forests of Hawai'i. Captured and examined over time, the stable carbon isotopes in plant litter, carbon-12 and carbon-13, can act as tracers for the unique water-use efficiency of plants in given climate conditions. Water-use efficiency of plants relates to entire ecosystem processes such as net carbon accumulation through photosynthesis. These observations may provide a clearer look into the response of tropical forests to climate change. From 7-10 years of leaf litter collections from the wet forest at Laupahoehoe, we sorted the species *Acacia Koa* ("Koa") and *Metrosideros polymorpha* ("Ohi'a lehua"), while from the dry forest at Palamanui, we sorted the species *Dodonaea viscosa* ("A'ali'i"), *Psydrax odorata* ("Alahe'e"), and *Diospyros sandwicensis* ("Lama"). After sorting by species, we ground the samples into a homogenous fine-grained powder and dried them to ensure all extra water weight was dissipated. A mass spectrometer was used to measure the carbon stable isotope concentrations. The records of these isotopic ratios allow us to track the plant's water-use efficiency over time and how water-use efficiency fluctuates with various climate conditions that the plants were experiencing seasonally, including temperature and precipitation. In time, we expect species adapted to dry conditions, from the dry forest, to have higher water use efficiencies regardless of climate fluctuations over the allotted time period.



Role of Endoplasmic Reticulum Stress Response in Parainfluenza Virus Acute to Persistent Infections

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Abstract (Posters)

Persistent viral infections are a major health concern, with persistently infected cells being a source of continued shedding of virus and generation of viral mutants. Here, we hypothesized that cells persistently infected with the enveloped virus parainfluenza virus 5 (PIV5) would show altered expression of endoplasmic reticulum (ER) stress proteins and increased resistance to death caused by drug-induced ER stress. To test this, lysates of mock-infected, PIV5 acute-infected, and PIV5 persistently infected (PI) human lung A549 cells were collected and levels of ER stress proteins were compared. Western blotting revealed that basal levels of the ER stress-sensing protein IRE1-alpha were upregulated in PI compared to naïve and acutely infected cells, but PI cells showed decreased activation of IRE1-alpha compared to acutely infected cells. Glucose-regulated protein 78 (GRP78) was present in higher levels in acute-infected and PI cells compared to naïve cells, indicating increased ER stress in both acutely infected and PI cells. These cells were treated with ER stress-inducing drugs tunicamycin, thapsigargin, and epigallocatechin gallate and monitored in real-time viability assays for drug-induced cell death. PI cells showed lower levels of stress-induced cell death compared to naïve cells, whereas acute-infected cells experienced the greatest extent of cell death when challenged with ER stress-inducing drugs. These results have implications for the treatment of persistent viral infections, as well as the potential for these viruses to be used for oncolytic virotherapy in the future.



The Effect of IDDSI Implementation on Patient Food Intake and Food/Liquid Thickness Education

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Abstract (Posters)

Dysphagia is a complex condition characterized by difficulty swallowing. A typical treatment is consuming a texture-modified diet (TMD). To increase the effectiveness of TMDs, the International Dysphagia Diet Standardization Initiative (IDDSI) framework can be utilized where IDDSI is a collaboration network that comprises evidence-based standardization for categorizing texture-modified foods and thickened liquids to maximize nutritional needs. A challenge apparent is the backup of expansion and implementation of IDDSI within the Academy of Nutrition and Dietetics. The main objectives of this research are to explore the effect of IDDSI standardization/implementation in a dysphagic patient population at HCA Florida University Hospital to see if improvements in food/nutrient intake and health outcomes occur and to measure how education on textures and thickened liquids affect the care that healthcare workers/staff provide. Methods include collecting data through interviews/polls/chart analysis on patient food intake and previous food textures and dispatching surveys to HCA healthcare workers/staff to gauge the level of education on IDDSI and assess confidence levels both before and after IDDSI implementation to analyze differences. Possible results encompass higher food intake in patients and more effective care from the healthcare workers/staff with respect to a better knowledge of IDDSI food textures standards and more suitable food preparation in the hospital kitchen. Complications may arise due to a low number of patient subjects, difficulty understanding, delays, and/or refusal of patients to comply with changes; ultimately, future research regarding utilizing the IDDSI framework in various hospital settings is necessary.



Advancing Scan-specific Parameter-free Artifact Reduction in K-space (SPARK) with Gradient-based Optimization

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Abstract (Posters)

Partially Parallel Acquisition (PPA) uses spatial information contained in the component coils of an array to replace spatial encoding, typically performed using gradients, thereby reducing imaging time. Parallel imaging reconstruction for accelerated acquisitions of magnetic resonance imaging (MRI) is generally posed as an optimization problem. SPARK is a convolutional neural network (CNN) that works with physical-based reconstruction methods to reduce artifacts in accelerated MRI. The CNN predicts a K-space correction term for each reconstructed coil. We apply different gradient-based optimization schemes in the neural network single channel training to minimize the mean square error (MSE) as a loss function value: e.g., steepest descent, conjugate gradient, and adaptive moment (ADAM) optimization algorithms supplied with various methods for the optimal step size search (e.g., diminishing, bisection, and golden section methods). We aim at the optimal combination of strategies to minimize lapsed computational time to train all 31 channels of neural network connections between inputs and outputs.



An analysis of Basigin expression in mouse intestines exposed to an inflammatory stimulus

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Abstract (Posters)

Basigin is a transmembrane glycoprotein expressed on epithelial cells and blood vessel endothelial cells throughout the body. These types of cells often form barriers, like the blood brain barrier (BBB). A recent study by this laboratory indicates that Basigin gene expression on BBB endothelial cells increases in adult mouse brains in response to a prolonged inflammatory stimulus. Epithelial cells of the intestines also form a barrier. It is possible that Basigin expression may be altered by inflammatory stimuli in this location as well. The purpose of the present study was to determine if the expression of Basigin in mouse intestines is influenced by an inflammatory stimulus. It was hypothesized that Basigin expression in adult mouse intestines would increase in response to treatment with lipopolysaccharide (LPS), a component of the outer membrane of Gram negative bacteria. Intestines from 6-month-old mice were isolated and the contents were removed. The samples were incubated in culture medium containing LPS (10 mg/mL) or saline for 24 hours at 37°C with 5% CO₂. RNA was isolated and subjected to quantitative reverse transcription polymerase chain reaction (q-RT-PCR) using primers specific for Basigin. Expression of Basigin was normalized to that of 18s rRNA. Preliminary data suggest that Basigin gene expression is not influenced by LPS, as no significant difference in expression was observed between the LPS and saline treated samples. At present, the hypothesis is not supported. The data suggest that Basigin expression is influenced differently in intestinal epithelial cells and blood vessel endothelial cells.



Fernando Guillen's Abstract.

Fernando Guillen

Miami Dade College, Miami, USA

Abstract (Posters)

A device was developed so that the pilot of a vehicle can direct a powerful light beam in a practical way. It consists of a vehicle attachable turret which is controlled via head movements or a smartphone app. The smartphone application gives versatility to the project since it opens the possibilities of controlling the turret.

The turret was controlled via head movements, in order to make a prototype for the project it was idealized to build a car robot that would simulate the final goal of putting the device in a vehicle, in order for testing, a controller device was necessary, and for connecting the controller to the robot JavaScript was very useful since it would allow the mini-computer on the car robot to connect to the controller via internet.

In the process of better understanding robotics the Quanser Qube-2 was utilized. A little, programmable robotic device that can be used to understand reverse kinematics, a field in physics very relevant for robotics engineering when designing a robotic piece and making sure it will work as intended.

After honing skills with the Quanser Qube-2 it was possible to make the stick in it stand on its own and it was able to get back up after being dumped thanks to a code based on complicated mathematical equations that take into account kinetic, and mechanical energy, between other things. This helped students consider many factors in the bigger scale of the project.



Head Tracking Assisted Driving Module

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Abstract (Posters)

The purpose of this study is to develop and test the viability of a robot that will assist delivery drivers in visually acquiring important contextual delivery information, such as: house numbers or building numbers, in unfavorable conditions such as night or heavy rain.

The system uses head tracking technology and a multidirectional robot that can be easily attached to the roof of a vehicle. The multidirectional robot could be outfitted with many different attachments depending on the requirements of the operator. Such as multidirectional illumination on unfavorable conditions, enhanced vision, night vision, optical zoom or personal safety.

The efficacy of the module and different attachments will be tested in the lab and in the real world by having drivers read signs under unfavorable illuminated conditions. First with and after without the aid of the module.

We also aim to test the development skills of a small team, such as ours, to fully grow this technology from the ground up using only open-source development tools and cheap and highly available consumer electronics while maintaining reliability.



The temperature-sensitive role of the TRPA1 ion channel on longevity in *Drosophila melanogaster*

Mariam Rizvi

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Abstract (Posters)

Numerous environmental and genetic factors contribute to the aging process, and temperature is one aspect of the environment that has been shown to play a large role in longevity. Prior studies have established that cold temperatures contribute to lifespan extension in a variety of organisms, including nematodes, vertebrates, and flies. Recent findings have shown that lifespan extension is not simply a result of general thermodynamic changes but instead, changes in temperature regulate specific cellular pathways that alter physiology and metabolism. Transient receptor potential (TRP) channels play diverse roles in sensory systems, including thermosensation, and have been found to be evolutionarily conserved in *Drosophila melanogaster*, *C. elegans*, and mammals. While the TRPA1 channel has been found to regulate *C. elegans* lifespan in response to temperature, it is unknown whether TRP channels contribute to cold-mediated longevity in other organisms. The proposed study investigates whether the TRPA1 ion channel in *Drosophila melanogaster* contributes to temperature-sensitive longevity. Expanding knowledge regarding the genetic and environmental factors that regulate lifespan can contribute to a better understanding of the underpinnings of aging and disease in mammals.



Species growth of *Cosmarium* cultures treated with cadmium chloride

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Abstract (Posters)

Cosmarium is a genus of green algae with diverse morphological differences that play a vital role in ecological balance. As an indicator species, *Cosmarium* is sensitive to changes in their environment including the addition of heavy metals, pH, and temperature changes. However, some studies have also shown that *Cosmarium* demonstrated a high level of tolerance in heavy metals that even promoted population growth. This study aims to determine the effects of cadmium chloride on the frequency of occurrence of different *Cosmarium* species and the overall growth of cells when cultured under controlled laboratory conditions. It is hypothesized that there is no significant difference in the species composition, percentage frequency of species occurrence, and the total number of cells between *Cosmarium* cultures treated with cadmium chloride from those grown in standard culture medium. Cells were monitored weekly for five weeks using a Nikon light microscope and micrographs from 6 replicate samples for each treatment were used to identify *Cosmarium* shape. Identification of *Cosmarium* species was done using the cell outline in reference to published literature. Results indicated that cadmium chloride promotes the growth and frequency of occurrence of varying *Cosmarium* species thereby rejecting the null hypothesis. Cadmium accumulates in algal cells affecting their metabolic processes with varying effects among different *Cosmarium* species. The different species present display varying tolerance to cadmium chloride resulting in sustained growth. Future studies will be conducted to identify local *Cosmarium* species in Florida waters with metal tolerance for bioremediation. (Funding provided by Southeastern University)



Examining the Effects of NOD2 on Activation and Regulation of 5-Lipoxygenase

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Abstract (Posters)

Inflammation is important in mediating host defense. However, chronic inflammation can lead to the development of numerous lifelong disorders. Specialized pro-resolving lipid mediators (SPMs) are lipid mediators that actively inhibit inflammation and enhance resolution. The enzyme ALOX5 has been implicated in the production of both pro-inflammatory lipid mediators and SPMs. While there has been a lot of progress elucidating the biosynthetic pathways catalyzed by ALOX5 leading to SPM production, the upstream cues governing activation and regulation of ALOX5 are still not fully understood. Our laboratory has discovered that engagement of the NOD2 pathway led to the production of not only pro-inflammatory lipid mediators, but also SPMs. Using transient transfection to explore potential mechanisms by which activation of NOD2 signaling could influence lipid mediator production, we found that the presence of NOD2 promoted the phosphorylation of ALOX5. Furthermore, increasing the amount of NOD2 transfected appeared to decrease the levels of ALOX5 in a dose-dependent manner. Lastly, mass spectrometry analysis of ALOX5 in untreated or MDP(NOD2 agonist)-treated M1 or M2 macrophages showed a stimulus-dependent and polarization state-dependent proline hydroxylation of ALOX5. Collectively, these data seem to point to agonism of NOD2 as an important point for regulation of ALOX5 activity. This work proposes to determine the molecular basis for such regulation. Success in these objectives will provide the needed information to potentially harness endogenous cellular mechanisms in order to control lipid mediator production and temper inflammation.



Assessing Mobile Predator Populations in Tampa Bay using Baited Remote Underwater Video

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Abstract (Posters)

Traditional methods to study underwater communities focus on direct capture methods like trawling or underwater dive surveys, which either alter the ecosystem or introduce the effect of humans as part of the landscape. Remote video technologies are being developed worldwide as a tool to survey underwater community structure. While highly developed techniques are already in use in the southern hemisphere standardized methodology is yet to be established in the northern hemisphere. In this study, we utilized baited remote under water (BRUV) units to use to survey underwater seagrass and open bottom habitats to investigate changes in mobile predator populations over time in Tampa Bay. In addition, we assessed water chemistry and turbidity levels to determine the utility of the technique across a range of water quality parameters. Additionally these surveys are being used to standardize survey efforts and create a video catalog for behavioral studies of underwater organisms.



Identifying Natural Products as Use for Potential Anti-Bacterial Drugs

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Abstract (Posters)

Antibiotic resistance has become a major public health issue. Bacteria are growing more resistant to medications and microbial infections are increasing globally. To defend against these threats, the free-living marine bacteria *Nocardiopsis* has been a source of intrigue due to its diverse applications in antimicrobial related research. Natural products from *Nocardiopsis sp.* can be the key to potential new antibiotic drugs. Alpha pyrones are an example of natural products in novel *Nocardiopsis sp.* that potentially exhibit strong antimicrobial activity. In this project, Isolation and determination of five new alpha pyrone structures is in progress to test their potency against different strains of gram-negative and gram-positive bacteria in hopes of garnering new methods to combat the eminent threat of antimicrobial resistance.



The Feasible of Recycle Coarse and Fine Aggregate

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Abstract (Posters)

This study was designed to evaluate the possibility of utilizing Recycled Crushed Concrete (RCA) in concrete. The effect of Superplasticizer (Super_P) and water-reducing (WR) admixtures impact was also analyzed. Finally, a life-cycle cost study was undertaken to describe RCA in concrete. To meet these goals, a 4,000-psi concrete mix without RCA was selected. This mix was redesigned using different quantities of RCA. Four (4) blends were created: no recycled (CVFV), fine RCA (CVRF), coarse RCA (CRFV), and totally RCA (CRFR). All mixtures were exposed to Florida summer weather. The compressive strength at 7, 14, and 28 days was used to evaluate performance. CVFV_0.47_SP was the mix with the highest strength, 6,756 psi, with only 697 lb/yd³ of cement. The mix with the second highest cement content (1,083 lb/yd³) CRFR_0.30 did not even reach the expected strength at 28 days. Its strength was 48% less, whereas it contained 36% more cement. Both Super_P and WR enhanced the compressive strength of the mix. On average, the strength increases to 65% and 53%, respectively. The cost of CRFV and CRFR was the highest. They cost 10%-15% more as compared to the virgin mix, respectively. This research shows that RCA concrete is not necessarily a cheaper alternative. More research is recommended to find an admixture to produce a more affordable RCA mix.



Discovery of the Inducamide Natural Product Gene Cluster

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Abstract (Posters)

Inducamides A, B, and C comprise a family of chlorinated alkaloids produced by the marine actinomycetes *Streptomyces* sp. 109-M3. Inducamide C is of particular interest, having been shown to stop the growth of certain cancer cell lines. Natural production of Inducamide C results in low yield, unviable for large-scale production. Identification of genes responsible for inducamide production was sought to explore and characterize their unique biochemical pathway. The sequenced genome of the native host was translated to its amino acid sequence and compared to previously characterized proteins, providing insight into their possible function. Proximity of two likely halogenase-encoding genes led to identification of a hypothesized inducamide-encoding gene cluster. This gene cluster was heterologously expressed in well-characterized bacterial strains: *Streptomyces lividans* TK24 and *Streptomyces coelicolor* M1152. Further, multiple types of media and small-molecule inducer combinations were compared for optimal inducamide production. Presence of the inducamides was evaluated by LC/MS via comparison to chemically pure solutions of each analyte. Inducamide A was detected in both heterologous hosts, while Inducamide B was detected only in TK24 treatment groups. Nutrient-rich media produced significantly higher yields across most media/inducer combinations. However, the effect of small-molecule inducers remains unclear, and Inducamide C was not detected in any cultures.



The effects of osmolytes and cations on actin filament mechanics

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Abstract (Posters)

Actin is a highly abundant protein in most eukaryotic cells. The assembly of actin monomers to double-helical filaments is crucial for many cellular functions, including cell movement, cell division, and muscle contraction. Actin filament assembly in cells occurs in a crowded intracellular environment consisting of various types of molecules, including cations and organic osmolytes. Recent studies show that cation binding stiffens actin filaments and a small organic osmolyte trimethylamine-N-oxide (TMAO) modulates filament mechanics. However, how cation and TMAO combined affects actin filament stiffness is not understood. We hypothesize that depending on the concentrations of cations and osmolytes, there will be different effects on the stiffness of actin filaments. In this study, we evaluate actin filament mechanics in the presence of varying concentrations of TMAO and potassium chloride using total internal reflection fluorescence (TIRF) microscopy imaging. The bending persistence lengths of actin filaments were measured to assess filament bending stiffness. Our preliminary results indicate that the effects of TMAO on filament stiffness are enhanced with increasing potassium ion concentrations up to 100mM. However, the filament stiffness is decreased at higher potassium ion concentrations. The observed decrease in filament stiffness at higher ion concentrations with TMAO could be attributed to the interaction between TMAO and the potassium ions. This study can provide insights on how osmolytes together with cation binding, modulate actin mechanics in living cells.



Novel Object Recognition in Intoxicated Zebrafish

Truth Clevenger

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Abstract (Posters)

Brevetoxin is known to cause harmful effects on vertebrates, including humans. In fact, the harmful algae product has been estimated to cause \$22 million of damage each year in the United States. Florida alone has lost millions in economic damage, especially from the tourist trade, due to harmful algal blooms causing beaches and other recreational areas to be closed. Novel object recognition is a common measurement of a vertebrate's cognitive activity. Zebrafish exhibit unique anxiolytic behavior when presented with a novel object, which can be examined using pennies and nickels. Preliminary data obtained in our laboratory indicates that zebrafish prefer familiar objects. In an effort to explore the effects of Brevetoxin (PbTx-2), zebrafish were exposed to 25 nM PbTx-2 and water solution. The data revealed that the intoxicated fish showed a decrease in swimming velocity and an alteration in swimming patterns. More experimentation will further elucidate the effects of PbTx-2 on novel object recognition in zebrafish and potentially the mechanisms involved in the changes in neurocognitive function.



Exploring the Role of ORF67 in KSHV Pathogenesis

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Abstract (Posters)

Kaposi's Sarcoma-Associated Herpesvirus (KSHV) is a known oncogenic virus responsible for causing cancers such as Kaposi's Sarcoma (KS) and Primary Effusion Lymphoma (PEL). KSHV establishes long infection due to successful immune evasion strategies that have not yet been fully revealed. Previous research has identified the critical roles of the cGAS/STING pathway in host innate immunity against KSHV infection, but its counteracted by KSHV-encoded proteins. Among these viral proteins, we aim to focus on ORF67 in this study and delineate how the cGAS/STING pathway is regulated by KSHV. Consistent with previous screening results based on luciferase reporter, when transfected into EA.hy926 cells, ORF67 inhibited the cGAS/STING dependent phosphorylation of endogenous TBK1 and IRF3, and suppressed endogenous IFN β at the transcription level. Next, we aim to further study ORF67's role during KSHV infection. Using a KSHV genome containing Bacterial Artificial Chromosome 16 (BAC16) system, we created ORF67 3XSTOP mutants and ORF67 3XFLAG mutants using two-step red-mediated recombination-based methods. Successful clones were validated by pulse-field gel electrophoresis and Sanger sequencing. We will use these mutants to study how ORF67 mutation will affect KSHV lytic infection by regulating the cGAS/STING pathway. We believe that analysis of the role of KSHV viral regulators such as orf67 in KSHV pathogenesis provides valuable knowledge on KSHV infectivity, cGAS-STING modulation, and potential therapeutic routes.



Can a growth mindset be used to increase covid-19 education and decrease vaccination hesitancy?

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Abstract (Posters)

Introduction:

Pandemic Win presents nonbiased Covid-19 information to communities, in hopes to reduce vaccination hesitancy. We utilized growth mindset characteristics: incremental success, embracing failure, changing our language, seeking outside help, accepting outside help, and to keep pursuing. By using them we were able to better engage with the community during our outreach events, measure our success, and have a better understanding of our data.

Method:

We used a growth mindset to engage Floridians in 3 different counties and build relationships with community partners to increase covid-19 education and decrease vaccination hesitancy. Our methods for engagement included social media outreach through generating Covid-19 educational Tik Toks, and Instagram posts, and attending over 100 community events in Volusia County, Flagler, and St. Johns. At these events, we would engage with the community through fun effective ways that allowed us to start conversations about Covid-19 and adequately translate complex scientific information about covid-19 to the community. At many of these events, through partnerships, we were able to bring covid-19 vaccines to the community.

Results:

Through social media, including Tik Tok, google maps, Instagram, and YouTube; we were able to engage with 8.4 million people. We engaged with 10717 people and contributed to 888 people getting their Covid-19 vaccination in 3 Florida counties: St. Johns, Flagler, and Volusia.

Conclusion:

By embracing a growth mindset, the Pandemic Win Initiative has been able to meet its yearly goals and expand on partnerships.



Changes in Plasma Anti-Mullerian Hormone Concentrations in Female Bonnethead Sharks in Relation to Sexual Maturity and Reproduction

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Abstract (Posters)

In the reproduction of female mammals, the protein hormone, Anti-Mullerian Hormone (AMH) has been shown to play an important role in early development of ovarian follicles. Because of this, AMH levels in circulation have been shown to have an association with female maturity and adult female ovarian reserve, which refers to the number of viable eggs capable of fertilization (Gordon and Yanushpolsky, 2021). Following this, the purpose of this study was to determine if AMH is an indicator of reproductive biology in sharks and rays. The presence of AMH has been confirmed in chondrichthyans by Adolphi et. al. (2019) through genetic analysis. However, no studies examining the role of circulating AMH in the reproductive biology of sharks and rays have been published. We used immunohistochemistry to detect AMH-like proteins in the early-stage ovarian follicles of female sharks. Following this, circulating AMH levels in female bonnethead sharks (*Sphyrna tiburo*) collected from multiple stages of sexual maturity and reproductive stage were examined. Since there are no dependable, non-lethal processes to verify female shark maturation/reproductive stage, researchers could utilize this data collection of AMH levels in the blood plasma to do so. Establishing the current reproductive condition of sharks is vital to determine when and where certain breeding events occur. Thus, allowing for better management techniques to be employed to foster healthy populations and sustainable, anthropogenic use of the marine environment.



Potential avenues to increase tPA administration in ischemic stroke patients: A review of tPA combination therapy.

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Abstract (Posters)

Each year, approximately 800,000 people in the United States experience a stroke, with over 85% of these being ischemic stroke. Although tissue plasminogen activators (tPA) are considered the first and only FDA-approved pharmaceutical treatment for acute ischemic stroke (AIS) cases in the United States, tPA is only used for a small fraction of these patients who meet inclusion criteria and present within 4.5 hours of stroke onset. This discrepancy of care can be attributed to the following reasons: decreased access to stroke centers, provider hesitation, and the adverse effects associated with delayed tPA administration, such as hemorrhaging and edema. The following FDA-approved drugs have been researched in combination with tPA and have been shown to limit the negative effects of tPA administration: edaravone (a drug currently approved and used for treating AIS in Japan and China), minocycline, ascorbic acid, and blood pressure statins. Both edaravone and ascorbic acid have been labeled as antioxidants with free radical scavenging activity, and minocycline and statins have been demonstrated to exert indirect antioxidant effects. Despite its widespread use in Japan and China, edaravone has a short half-life and neutralizes free oxygen radicals at a 1:1 stoichiometric ratio. As a consequence, other pathways are being investigated, one of which is actively being pursued in our lab. This further investigative research will serve to shed light on these effects and, in turn, spark further questioning of these therapies for potential future clinical use.



Numerical Models for Inertial Electrostatic Confinement Fusion with a High Ion Injection Current

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Abstract (Posters)

An inertial electrostatic confinement (IEC) fusion device traps plasma particles with a spherically symmetric electrostatic field that accelerates ions toward the device's center, where they can collide and potentially fuse. The IEC fusion device is simpler and less expensive to construct when compared to magnetic confinement devices, like the tokamak: its employment will benefit fusion research. Here, the plasma motion in an IEC device is numerically simulated by solving the Vlasov-Poisson system of partial differential equations in spherical coordinates with one dimension of space and one dimension of momentum. The stability and accuracy of solutions obtained by various numerical methods, including the finite element method and the finite volume method, are compared.



“Reassessing How Media Covers Climate Change and the Environment”

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Abstract (Posters)

Over the past 30 years, polarization regarding environmental issues have reflected growing political divisions between U.S. political parties. Beliefs regarding climate change have become a marker of political affiliation, with generalizations made concerning conservative or liberal perspectives. Past media studies work has demonstrated that conservative media is more likely to be on the opposing spectrum when tailoring towards the environment compared to liberal or mainstream media. Yet, there is no answer to the degree to which they differ or reach a consensus. This leads to important implications for members of society, specifically environmental communication scholars who search for methods to grow public support for significant issues such as climate change. Additionally, providing a better understanding of the phenomena of how environmental support remains high despite conflicting opinions from media coverage. In this study, we hand code transcripts between 1990 and 2021 based on various key variables to assess the tonality of news coverage (e.g. CNN and Fox News). Key variables include whether media coverage addresses the issue on a factual or opinionated basis and the overall support level demonstrated throughout the transcript regarding specific environmental issues. Exploring the frames of how partisan-leaning media targets its viewers' opinions is crucial to overcoming confirmation bias, as well as revealing effective communication strategies for politicians and educators alike to increase support for political action on environmental issues.



Food Insecurity and Stress Levels Among Head Start Teachers

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Abstract (Posters)

During the recent COVID-19 pandemic, Head Start school staff have endured heightened stress. Widespread health crises make individuals susceptible to increased stress, anxiety, and other psychological disorders. Crises comparable to the COVID-19 pandemic elevate isolation, physical health risks and economic troubles, which are widely discussed factors known to exacerbate stress levels (Rahman, et al, 2021). However, a potential salient inducer of this stress is the presence of food insecurity (FI), which is limited access to nutritious foods. Previous research suggests that food insecurity is also associated with poor mental health outcomes. This study aims to examine FI and stress in Head Start (HS) educators. Participants included 75 HS staff; the majority identified as African-American females. Data from the Perceived Stress Scale (PSS), short form, and a U.S Household Food Security Survey (HFSS)- short form, and a Health History survey were used to examine the relationship between educator's demographic, health factors stress and FI during the pandemic. About 15% of participants were classified as food insecure. Employees who were food insecure reported significantly higher levels of perceived stress. Perceived stress was also related to weight/BMI, and level of education. The obese group endorsed significantly more stress than the overweight/normal groups ($p < .05$). Employees with at least a college degree reported significantly less stress than those with a high school education or less ($p < .05$). These findings emphasize the need for intervention programs to alleviate the stress and food insecurity amongst this important group.



Provider Perceptions on the Usage of Psychedelic-Assisted Therapy to Influence Behavior Change in Individuals with Substance Use Disorders

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Abstract (Posters)

Recent research studies and clinical trials have suggested that psychedelic therapy and psychological support can offer beneficial and synergistic effects in reducing or eliminating substance use disorder (SUD) patterns and symptoms. However, very little is known about healthcare providers' perceptions of the usage of psychedelic-assisted therapy in SUD treatment. The present study will assess biomedical healthcare providers' perceptions and concerns to better understand potential barriers to the effective implementation of psychedelic-based therapies and formulate further recommendations for research efforts surrounding them.

This study will collect data through a short survey and qualitative semi-structured interviews from 15-20 participants involved in SUD treatment and care. Recruitment will begin in January 2023. Open discussion is encouraged in the interviews and will be recorded and transcribed using the Otter app. Data will be analyzed through Charmaz's two-step coding process, which will identify common themes and specific issues pertaining to the translation of psychedelic-assisted therapy to clinical application. The findings of this study will help provide a basis for engaging with biomedical healthcare providers to address concerns about psychedelic-assisted therapy in future research for SUD treatment.



Understanding & Learning How to Improve DWF Rates for Online Courses

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Abstract (Posters)

This research aims to find out the factors that contribute to the success of online classes at Florida Gulf Coast University (FGCU) from both students and faculty's perspectives. Our literature reviews have shown that social presence in online classes is a crucial factor when it comes to student success. In addition, being a self-disciplined learner and receiving online-teaching training are both coherent efforts that students and teachers should take. To find out students' and faculty's perspectives, attitudes, and experiences with online classes at FGCU, we have created surveys based on the Community of Inquiry (CoI) framework to examine the social presence, teaching presence, and cognitive presence in FGCU online classes. In addition, survey items relating to self-disciplined learners and teacher training are added. It is proposed that the surveys will provide insight into the online learning environments at FGCU. The results of this study will be used to inform the FGCU community and help design plans to improve learning outcomes of online classes, as well as enhance pedagogical strategies for instructors and learning strategies for students.



Identification of a Rapid Cost Effective Sexually Transmitted Disease Test using ELISA Technology

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Abstract (Posters)

As the rise of sexually transmitted diseases continues, the severity to find effective solutions remains paramount. Cheaper and faster detection serves to diminish the alarming rate and ensure earlier intervention. However, the process to monitor testing remains difficult, as nations worldwide continue to suffer from this epidemic of STDs. As a result, many researchers have explored the creation of point-of-care tests, tests self-administered by individuals. Chlamydia trachomatis and Neisseria gonorrhoeae lie as the most common STDs in the world, yet a rapid urine POC test does not exist. Our study utilizes ELISA technology to initiate the early developments of a lateral flow device that can detect Chlamydia Gonorrhoea . We identified the most abundant proteins in the two bacterial infections, the major outer membrane protein (MOMP). The researcher then found matching monoclonal and polyclonal antibodies to create an ELISA assay. Each of the two assays contained nine different antibodies and conjugate combinations to decipher the best detection combination. In collaboration with Biofront Technologies, we were able to see distinct pairing for the chlamydia assay and indistinct pairing for the gonorrhoea assay. From an entrepreneurial lens, data was extracted to learn of advancements in point-of-care tests, current competitors' market strategies, and ongoing legislation. In combination with interviewing health clinics and institutions, the researcher was able to create a market strategy that will benefit disenfranchised communities, minorities, and college students. The scientific findings coupled with the entrepreneurial data aids in creating a revolutionary lateral flow device that will aid in ending this epidemic.



What's in our Food? Geospatial Data Investigation on Microbiological Contamination in Food Recalls

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Abstract (Posters)

Background. Geospatial analysis is based on geographic coordinates and specific identifiers such as addresses and postal codes. It uses data from all kinds of technologies such as global positioning system (GPS), location sensors and satellite imagery to create data visualizations to understand phenomena and connect people and places. Biofilms are a community of micro-organisms that can grow on many different surfaces, one of those surfaces being our food. **Objective.** Identify trends and patterns within the years of 2017 and 2018 in microbiological contaminations among recalls. **Methods.** The United States Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS) website was used as a data source to obtain the location and type of microbiological contamination. Then using the information that was collected and gathered into excel, we were able to better analyze trends in the data using Tableau, a type of visualization software. **Results.** E. coli and its various strains had a total of 15 out of 59 recalls. Salmonella had 9 out of 59 recalls, Listeria had 22 out of 59 recalls. Listeria was the contaminant with the most recalls. The states that had the most recalls were Texas, California, and Pennsylvania. Lastly, 51 products were recalled before they reached human consumption. **Conclusions.** Within the years of 2017 and 2018, there were a total of 59 recalls due to microbiological contamination. Most were due to listeria, and they were found to be in states that were larger geographically. Fortunately, 51 products were recalled before they reached human consumption.



Emerging from the depths: Zebrafish use in Toxicology investigations of cognitive and neuromuscular function.

Jakob Paz

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Abstract (Posters)

One potential alternative to sentient animals in toxicology research is the zebrafish, due to their accelerated life span development, regenerative capacity, transparent physical appearance, ease in genetic manipulation, and ease of housing and care. Their greatest value is found in their 70% (+) genetic similarity with the human genome. This homogeneity has allowed the model to be used in cardiovascular, immunological, genotoxic, and toxicology studies. The zebrafish is an excellent model for cognitive and neuromuscular responses when exposed to toxicants. Neurocognition can be readily analyzed using visual discrimination, memory and learning, and social behavior testing in zebrafish. Neuromuscular function in zebrafish can be analyzed using such techniques as startle response, assessment of activity level, and evaluation of critical swimming speed. Mutagenesis in zebrafish is another novel application of this species in behavioral and pharmacological studies. There is a critical need in biomedical research to find ethical and less costly ways to develop new products, including drugs. Mutant zebrafish models have met this need, and the development of more complex zebrafish mutants is advancing the field in numerous areas of biomedical research.



Hydrosilylation of Allyl Methacrylate with Silicon Nanoparticles using Karstedt's Catalyst

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Abstract (Posters)

The goal of the project is to develop a new route to functionalize silicon nanoparticles (SiNPs) with polymerizable surface groups via hydrosilylation using Karstedt's catalyst. Hydrogen-terminated silicon nanoparticles (H-SiNPs) can react with unsaturated bonds via hydrosilylation to attach different groups onto SiNPs. Karstedt's catalyst is commonly used for hydrosilylation, but its use for functionalizing H-SiNPs with reactive monomers has not been explored. We investigated the catalytic hydrosilylation of allyl methacrylate (AMA), which contains a methacrylic and an allylic double bond, both of which can potentially attach onto the surface of SiNPs. We found conditions that can promote the addition of AMA to H-SiNPs through the methacrylic group. Using this route, we have attached ester, vinyl ester, and methacrylate groups to the surface of H-SiNPs using methyl methacrylate, allyl methacrylate, and trimethylolpropane trimethacrylate, respectively. This knowledge will provide a new way to functionalize H-SiNPs, which could help the development of improved energy-storage materials. SiNPs are becoming increasingly important for use in medicine, biology, and engineering due to their unique optical, electronic, and chemical properties. Their application in lithium-ion batteries especially is being highly studied because of the need for high-energy-density storage. Silicon has a high theoretical capacity (4200 mAh/g for $\text{Li}_{4.4}\text{Si}$), which makes it a very suitable candidate to replace the graphite anodes currently being used in lithium-ion batteries. Surface-functionalized SiNPs can then be incorporated into ion-transporting polymers and other matrices that form the basis for high-energy-density batteries.



Association between Diet and Coronary Heart Disease

Hunter Ruokonen

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Abstract (Posters)

Coronary heart disease (CHD) is a medical disease that reduces blood flow and increases clotting in the arteries of the heart, limiting the amount of oxygenated blood throughout the body. The ability to prevent or treat coronary heart disease successfully is vital as it is the leading cause of death in the United States and third worldwide. With diet being a modifiable risk factor, the objective of this study was to examine the effect of diet on coronary heart disease mortality rates, so that a possible relation could be investigated. An analysis of data provided by FIHealthCHARTS and previous research studies were done to determine a relationship between diet and coronary heart disease. The studies used contained a case-control study by Tzonu demonstrating that cooking with margarine increases the risk of CHD by 87% but lacks statistical significance, a retrospective cohort study by Fung showing that a higher food quality based diet resulted in a reduced risk of CHD by 59% in total incidence cases, and a retrospective cohort study by Satija exhibited a healthful plant-based diet lowered the risk of CHD by 75% and an unhealthful plant-based diet was associated with a higher risk of CHD by 32%. The retrospective cohort study designs were statistically significant. The research investigated in this study showed evidence that food quality can influence the risk and severity of coronary artery disease.



Sound, meaning, and music in Tolkien's Elvish languages and in Le Guin's invented language Kesh

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Abstract (Posters)

This project examines the connection between sound and meaning in three invented languages: Kesh, Quenya and Sindarin. Kesh was developed by Ursula Le Guin for her novel *Always Coming Home* and features in her musical composition *Music and Poetry of the Kesh*. Quenya and Sindarin are Elvish languages invented by J.R.R. Tolkien for his Middle Earth fictional world, featured in *The Hobbit*, *The Lord of the Rings*, and *The Silmarilion*. These three artistic languages had different linguistic influences, but share the goals of being aesthetically pleasing and highly melodic and musical.

This project examines the euphony and musicality of both authors' languages in the context of phono-semanticism, i.e., the concept that sounds carry meaning. Linguistic studies show that certain sounds carry meaning associations across several unrelated languages (Hinton et al. 1994; Blasi et al. 2016; Jao 2020, Mompean et al. 2020, inter al.). For example, 'r' sounds tend to be present in words conveying roughness across languages (Winter et al. 2021). Building on Farrugia's (2014) preliminary study of phono-semanticism in Tolkien's languages, we explore the phonetic similarities of Kesh to those of Elvish languages, and their relative distribution in words conveying musicality, beauty, good, evil, and roughness. This study will advance our understanding of how sound and meaning are connected and used in artistic creations.



The Impact of Fake News on Our Society

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Abstract (Posters)

This type of information can significantly impact our society, as it can lead to misinformed decisions being made by both individuals and groups. The term “fake news” has become a popular way to describe certain types of information that are shared online. Fake news is often spread through social media and other online platforms, and it can be difficult to determine what is true and what is not. Moreover, in what forms, after all, disinformation can cause a bad or sometimes lethal impact on society?

This project will explore what is fake news and what forms of fake news all of us are exposed to. Some people argue that fake news is simply any information that is not completely accurate, while others believe that it refers to deliberately misleading or false information. However, it is personal for each to decide what definition is better to use for your understanding of fake news.

There is no doubt that fake news is a problem that needs to be addressed and can be far-reaching and dangerous. For example, false reports about the outcome of an election that was happening in 2016. Based on various pieces of research for this project, I concluded that it is therefore important for everyone to be aware of the dangers associated with consuming fake news, furthermore, there should be created better fact-checking systems to ensure that accurate information prevails over misinformation.



Describing the Microbiome of an Ecologically Relevant Species, *Lagodon rhomboides*

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Abstract (Posters)

The pinfish [*Lagodon rhomboides*] is a keystone species within the marine ecosystems of the Gulf of Mexico and Western Atlantic Ocean. Despite overwhelming evidence that microbial communities play a major role in host health and fitness, there is a wide knowledge gap concerning the microbiome of aquatic organisms. As environmental stressors—mainly temperature—continue to threaten aquatic organisms over time, it is becoming increasingly important to understand the full extent of their influence on fish. Temperature has shown to be the main threat to microbial diversity within the fish gut and skin (Webster, et al. 2020). In order to better understand how environmental stressors influence fish, we need baseline assessments of microbial diversity. The purpose of this study is to identify and describe the microbes present in the skin, gills, and guts of pinfish via the 16S gene. This research is important as it opens the gate to studies that can determine how the microbiome changes at increased temperatures, allowing scientists a chance to fully understand how rising sea temperatures will affect organisms. The pinfish, as a keystone species, also provides the opportunity to understand how whole ecosystems will be impacted by environmental stressors in the future.



Trees Save Lives: a study on the efficacy of Xylem Filtration in the treatment of water for Fecal Coliform

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Abstract (Posters)

As natural filters, trees assist in removing from the air, soil, and water pollutants and bacteria that could be hazardous to human and environmental health. One of the most prevalent natural pines in the Southeast of the United States is the loblolly pine tree. It has been proven by the US government that using loblolly pine's xylem can be used as a straightforward, affordable tool for phytoremediation and filtration of various toxins and pollutants (in the case of the US government, Tritium). In this study, a simple pathogen-filtering device was built using the xylem of loblolly pine trees (*Pinus taeda*) in order to attempt to filter fecal Coliform, a species of bacteria commonly found within the digestive tracts of large mammals. The use of loblolly pines to filter water contaminated with fecal coliform, if effective could allow government agencies a cheap, low-tech way to produce potable water from water that normally would be unfit for human consumption. During testing, water from several impaired and contaminated waters was collected and then filtered using the xylem filters constructed. The Loblolly pine xylem showed to be effective at removing coliforms after 24 hours; however, coliforms were observed after 48 hours of incubation. Additional testing is needed to make a conclusion on loblolly pine's effectiveness in filtering fecal coliform from contaminated water. This study's limitations of time, methods of detection used (qualitative vs quantitative), and possible cross contamination when handling/analyzing are all errors that must be accounted for and corrected in further study.



Understanding COVID-19 Vaccine Perceptions Among Parents of Differing Socioeconomic Backgrounds through Health Literacy

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Abstract (Posters)

Vaccines act as an effective measure against the outbreaks of major diseases and, therefore, are a highly regarded form of protection in the field of public health. Currently, there is controversy surrounding parental decisions about childhood vaccination. Much of this controversy stems from misinformation and negative perceptions around the COVID-19 vaccines. With the rise of the COVID-19 pandemic, the COVID vaccine was rapidly created and dispersed, stoking new waves of vaccine hesitancy and igniting sects of the anti-vaccine movement. Parental hesitancy to vaccinate their children has become a significant public health concern during the COVID-19 pandemic. Studies have identified a range of factors that may contribute to parental vaccine hesitancy. This literature review aims to explore the relationship between parental vaccine hesitancy and both socioeconomic status and health literacy. We aim to focus on the factors that contribute to vaccine hesitancy amongst parents from varying socioeconomic backgrounds by examining the effects of health disparities and health literacy. It is crucial to address the concerns of parents and ensure that they have the information and resources they need to make informed decisions about the COVID-19 vaccine for themselves and their children. The purpose of this literature review, with an emphasis on health disparities, is to discuss and analyze the impacts of educational background and socioeconomic status that contribute to differing vaccine perceptions amongst parents.



Discovery of Antiplasmodial Compounds Using Ring Distortion

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Abstract (Posters)

The malaria parasite causes over six hundred thousand deaths and 247 million clinical cases annually. Worryingly, the parasite has also demonstrated increasing multi-drug resistance over the years, and infections are on the rise. In order to address the need for new antimalarial therapeutics, we are working in collaboration with the Huigens laboratory at the department of Medicinal Chemistry, College of Pharmacy, University of Florida (UF) to identify new chemical scaffolds that are active against the most lethal malaria parasite, *Plasmodium falciparum*. UF has generated a library of natural product-derived compounds via ring distortion. The approach involves reengineering of the ring systems of natural products to generate unique biologically active scaffolds. This involves reactions like ring cleavage and ring expansion. To test the utility of this library for antimalarial discovery we plan to test for both antiplasmodial activity and human cell cytotoxicity. Compounds are screened against both the multi-drug resistant Dd2 strain, and the drug-sensitive 3D7 strain. Promising compounds are then further explored by looking at the killing rate and a stage specific assay. Our research focus is to find novel ring distorted compounds that inhibit *P. falciparum* as a response to increasing drug resistance. Thus far, we have performed a preliminary screening on 350 compounds, from which four showed good potency against the parasite. Two of these compounds share the same inactive parent compound (reserpine). Serving as proof-of-principle that ring distortion manipulation produced a change in the biological activity of the parent compound. We are planning further research with the lead compound.



Uncovering the Gopher Tortoise Gut Microbiome

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Abstract (Posters)

The gopher tortoise (*Gopherus polyphemus*), endemic to the southeastern portion of the United States, is a keystone species with over 350 species relying on it and its burrows for survival. However, it has been deemed a threatened species within the state of Florida. It has a proclivity for longleaf pine forest ecosystems. Over the past century, along with ~90% habitat decline, gopher tortoise population has decreased by ~80%. Other than habitat loss, gopher tortoise population decline can be explained by road mortality, human predation, and poor park management (e.g., lack of controlled forest fires). Enteric and respiratory pathogenic loads are currently under investigation as potential threats to gopher tortoise population decline. Given that, in mammals, much of the immune system is found within the gut; and, that the microbiota therein have been implicated in immune and neurological function, such as gut motility and feeding behavior; and, that the reptilian gut microbiome is understudied, an inquiry into the microbial makeup of the gopher tortoise was warranted. DNA was extracted from 16 gopher tortoise fecal samples. The extracted fecal DNA was sent to Zymo Research for 16S rDNA metagenomic next-generation sequencing in order to predict the identity of the prokaryotic taxa within fecal samples. We will present our findings regarding the *G. polyphemus* microbiome. Our findings will provide insight in the microbial diversity within the gopher tortoise guts of a single preserve in Jupiter, FL. This information will help us understand the health and challenges of this threatened species.



Human Population Spike in Florida: Effects on the Florida Manatee

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Abstract (Posters)

Average manatee mortalities have increased significantly over the last twenty years in Florida. The human population in Florida has also increased significantly over the last twenty years. This paper discusses the relationship between an increasing human population and an increased mortality rate of Florida manatees. To determine if an increasing human population has influenced the population of manatees, vessel registration data recorded by the Florida Highway Patrol (FLHSMV c2010-2021) and manatee mortality statistics recorded by the Florida Fish and Wildlife Conservation Commission (FWC c2001-2021) were analyzed from 2010 through 2021. No other study has utilized these public data sets to determine a correlation. It was hypothesized that an increasing number of humans in an area would lead to increased numbers of registered vessels, ultimately increasing the mortality rate of Florida manatees. It was discovered that manatee mortalities increased by 54.2% from 2001 to 2021, while the human population increased by 34.9% from 2000 to 2022. Boat-strike-related mortalities increased alongside the influx of registered boats in Southwest Florida. These results provide evidence of a positive correlation between registered boats and manatee mortalities; however, the analysis does not account for boats registered elsewhere or undetermined mortalities. Boat operation protection zones are in place but should be increased due to diminishing seagrass beds. Additional research and analysis should be pursued to determine other ways that boaters affect manatee populations and analyze the effectiveness of manatee protection efforts.



The Wall Street Journal Case Study

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Abstract (Posters)

Florida Atlantic University has had the honor of participating in the American Marketing Association's case competition for the third year in a row this year. This year's sponsor is The Wall Street Journal (WSJ), a pioneer in the wildly competitive journalism industry, dedicated to providing trusted news and information and is widely known for its award-winning content. However, WSJ faces the challenge of remaining relevant and attracting new readers in the 18-24-year-old market. Students and educators lack awareness of the benefits offered by WSJ, which lessens the incentive for students to subscribe and stay loyal to WSJ. A strategic repositioning to entice their target audience and clearly express WSJ benefits will demonstrate their explicit value proposition.

WSJ gave objectives to increase brand awareness, generate higher conversion rates, and build retention. Before we created our IMC plan, we conducted extensive primary research. 380 students and 70 educators were asked questions about their habits, influences, and behaviors. We conducted two student focus groups and interviews were conducted with educators from multiple colleges and professionals from career services to identify perceptions of WSJ. Furthermore, we conducted social listening on various social media platforms to better understand unbiased thoughts and feedback on WSJ.

With this research in mind, we curated a marketing plan for WSJ which will help to promote brand awareness, express benefits offered, drive subscription purchases, and improve the user experience. Via our IMC plan, WSJ will be able to improve its growth, engagement and retention rates among college students.



The Role of Institutional Commitment in Fulfilling Communal Goals

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Abstract (Posters)

Students value communal goal fulfillment when making important career-related decisions. Previous research has shown that offering role relevant experiences and conveying goal endorsement can facilitate perceived goal fulfillment. The current study examined the possible mediators in the relationship between perceptions of institutions endorsing communion in STEM and students' importance of fulfilling communal goals in their future careers. A total of 244 undergraduate students (205 women, 179 white) took a survey rating the types of experiences they were involved in at their high school and college, the perception of their institutions' communal endorsement, the perceived importance their institutions placed on fulfilling communal goals, and the kind of goals they want to fulfill in future careers. Using Mplus, both Model 1 and Model 2 tested whether the relationship between institutions endorsing communion and the students' communal goal fulfillment, is mediated by student perceptions of their institutions valuing communal goal fulfillment. However, Model 1 had academic and extracurricular experiences mediating the first half of the relationship between institutional endorsement of communion and institutional importance in communal goal fulfillment. Model 2 was a better fit. The perception that their institutions endorse communion is a significant predictor of students' communal goal fulfillment in their future careers and this relationship is mediated by the students' perception that their institutions places importance in fulfilling communal goals. Future studies can expand upon the mediums through which institutions convey their commitment to communal goal fulfillment (e.g., extracurricular versus academic experiences) and how they can differ between school levels.



Machine learning and BERT based approach for detecting hate speech and offensive language on Twitter

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Abstract (Posters)

People of different cultures and educational backgrounds are increasingly using the internet, which results in toxic online content. The challenge of automatically detecting toxic text content is to distinguish between hate speech and offensive language. We present an approach for automatically categorizing tweets on Twitter into hateful, offensive, and clean categories. With the Twitter dataset, we create Pytorch Lightning dataloaders for training, validating, and testing. We load a pre-trained model and define the architecture, loss function, and optimizer. Predicted occurrences are based on validation and test sets. A precision calculation is used to evaluate the model.



The use of Low-Cost Particulate Matter Sensors and Their Future use with Unmanned Aircrafts

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Abstract (Posters)

Atmospheric pollution is responsible for killing more than seven million people around the globe, according to the World Health Organization. Among the pollutants that contribute to air pollution; aerosols, defined as any liquid or solid particulate matter suspended or dispersed in the atmosphere, are a significant contributor to human morbidity and mortality. Current attempts to measure atmospheric PM are not only cumbersome and costly but also lack high spatiotemporal resolution. Recently, low cost sensors have been used to address these economic, practical, and technological shortcomings. This research aims at using LCSs in diverse environments and across different seasons in order to address the existing infrastructure's spatial and temporal limitations. Commercial Low-cost sensors will be placed in three different operational modes in order to characterize the horizontal and vertical profiles of atmospheric PM. These modes vary in the dimensions that they sample: (1) stationary 1D collocated with a PM monitor based on the federal equivalent method at a suburban site, (2) mobile on a manned vehicle 2D touring the ERAU campus, and (3) mobile on unmanned vehicle 3D flying at urban, suburban, and rural sites. The different commercial LCSs will be used in this effort, relying on light scattering techniques or optical particle counters. Validation will take place by: (1) collocating LCSs with EPA monitoring stations, (2) comparing data to several other PM measurement devices, and (3) mounting a PM measurement device to a tethered balloon.



Understanding the Impact of Cardiomyopathy Variants in the TNNC1 Gene on Skeletal Muscle Function

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Abstract (Posters)

Cardiac troponin C (c/ssTnC) is expressed in both cardiac and slow skeletal muscle types, and little is known about the impact of pathogenic cardiomyopathic variants in the TNNC1 gene in slow skeletal muscle fibers. Due to the significant functional consequences in the heart, we anticipate that muscles with a greater percentage of slow twitch fibers will exhibit greater functional manifestation and fatigue than other muscle types. In this study we examined various skeletal muscles (soleus: slow twitch, extensor digitorum longus: fast twitch fibers, diaphragm: mixed fast and slow twitch fibers) in two different cTnC mouse models. The mice express pathogenic variants associated with hypertrophic cardiomyopathy with substitutions at Ala8Val and Cys84Tyr in the cTnC N-domain. Previous studies have shown that these variants influence Ca²⁺ sensitivity of contraction in skinned cardiac preparations, Mg²⁺-ATPase activity, cTnC Ca²⁺ binding studies. We assessed the cTnC mouse models for alterations in body weight, skeletal muscle weights, fiber type, and histopathology to determine whether the cTnC variants influence muscle mass and composition. To address the impact of the cTnC variants on skeletal muscle function we performed muscle mechanics measurements to assess their impact on muscle force generation capabilities and endurance. To assess the overall systemic effects of the cTnC variants expressed in the heart and slow skeletal muscle we will examine blood serum creatine kinase levels (cardiac CK-MB and skeletal CK-MM) and blood serum myokine levels to assess whether the presence of these variants promote muscle damage and inflammatory signaling in the cTnC mice.



Validation of a Nutrition Screening Tool for Critically Ill Children

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Abstract (Posters)

Aim: Pre-existing malnutrition is widespread among pediatric intensive care unit (PICU) patients. This study aims to validate a recently developed nutrition screening tool that will identify critically ill children who are malnourished or at risk of becoming malnourished during their hospitalization in the PICU. By validating a nutrition screening tool, patients who have malnutrition in the PICU will receive the appropriate nutrition interventions needed to reduce morbidity and mortality.

Methods: Patients admitted to the PICU at UF Health Shands Children's Hospital who meet the study's inclusion criteria are approached to discuss the study. Inclusion criteria include children over 30 days old and under 18 years old. Once informed consent has been obtained, an initial nutrition screen is performed by research personnel. Then, a dietitian or other healthcare personnel clinically evaluates the child's nutritional status by performing the Subjective Global Nutritional Assessment (SGNA). The SGNA is time-consuming and requires formal training to administer; the proposed screening tool is deployed in under 3 minutes and can be easily performed by any healthcare personnel.

Results: This study is ongoing. To date, 81 children have been enrolled, with a goal of 150 subjects from our center. Preliminary analysis has not yet been performed.

Discussion: Most PICUs worldwide do not have dedicated dietitian support. Validation of a rapidly deployable screen that does not require formal nutrition training could greatly improve diagnosis of pre-existing malnutrition at time of PICU admission globally, informing the need for medical nutrition therapy and potentially improving outcomes or length of stay.



DO PARENTAL STEM INTERESTS AFFECT CHILDREN'S MENTAL ROTATION PERFORMANCE?

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Abstract (Posters)

Mental rotation (MR) is the ability to rotate an object in our mind without physically rotating the object. MR skills have been suggested to be an important contribution to success in various science, technology, engineering, and math (STEM) fields. It is beneficial to further investigate what may influence a child's MR development. Studies have demonstrated how cultural contexts, such as values, language, and beliefs shared between parent-child dyads, can shape their child's MR development. These impacts are shown to be continuous throughout a child's development. The interactions between parent-child dyads play a role in children's development, and since the average interaction between parent-child dyads is unique, frequent, and engaged, it is beneficial to understand to what extent parents influence their child's development. Muenk et al. (2020) suggested that parents' beliefs about their children's spatial abilities can be influential on their children's spatial performance and likelihood to pursue a STEM career. We plan to add to the current understanding of how parents may influence their children, aged 3 to 6, MR development. Children's MR performance is based on a picture rotation task, and parents' STEM interests are self-reported via a survey. We hypothesize that children with parents who have high interests in STEM fields will, on average, perform better on MR tasks. We plan to have the preliminary analysis completed prior to the conference date. These findings may enhance our current understanding of how parents' STEM interests may directly affect their child's MR performance.



Gopher Tortoise (*Gopherus polyphemus*) 16s rDNA Gut Microbiome Analysis

Ashley Boswell, Dimitrios Giakoumas
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Abstract (Posters)

The gopher tortoise (*Gopherus polyphemus*) is a native species to Florida and the surrounding southern states from Southern Louisiana to South Carolina.. Gopher tortoises dig deep burrows for shelter and are considered a keystone species due to about 350 species relying on their burrows. Unfortunately, they are now considered federally threatened species. Understanding the gut microbiome of a species is essential in assessing their health and physiology. There have been only a few studies conducted on the reptile gut microbiome, and even less on gopher tortoise gut microbiome. Our research will focus on investigating the gopher tortoise gut microbiome and specifically its immunological relevance. Fecal samples were collected from a densely populated gopher tortoise region known as the Abacoa preserve in Jupiter, FL. There have been no gut microbiome studies previously conducted on the population in Abacoa. The bacterial DNA present in the fecal samples will be analyzed from twelve gopher tortoises. We will use 16s rDNA sequence data analysis at the species taxa level. The relative abundance of each bacteria will allow me to analyze the microbial diversity between the samples (including sex and age) and abundance of each bacteria present. This study will provide essential information in understanding the gut microbiome with respect to its immunological relevance in hopes to aid future studies to help preserve this keystone species.



How the transition to remote learning in higher education was reflected in the learning-centeredness of Physical Chemistry syllabi

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Abstract (Posters)

Physical chemistry is perceived as a difficult course often because students find the content overwhelming, which leads to many misconceptions associated with the course, even after the students completed the class. The syllabus is often the first interaction students have with a course and its content can set the tone for their learning experience. A previous analysis of the learning-centeredness of physical chemistry syllabi revealed that the document is largely content-focused. The transition to remote instruction in response to the COVID-19 pandemic, led to significant changes in instructional strategies, as well as syllabi structure. This change led to our research which consisted of analyzing the extent of change in the learning-centeredness in physical chemistry syllabi using specific key identifiers in the rubric used for the initial analysis. Post-COVID syllabi from the same institutions that were used in the previous study were collected and analyzed by identifying changes in the components on the learning-centeredness rubric. We noted an overall positive trend in learning-centeredness in post-COVID syllabi. Notably, most institutions changed the grading criteria from a more exam-based approach to a grading system based on participation, and effort on assignments. The positive trend in learning-centeredness can be used to identify course and syllabi components most affected by the transition to remote instruction and to inform further recommendations for changes in syllabi to increase learning-centeredness.



Automated Detection of Sarcasm In English

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Abstract (Posters)

One of the key challenges with sentiment analysis is that text can be often filled with sarcastic comments that make it difficult to decipher what the public truly thinks about a topic. If resolved, companies could make better business decisions to suit their consumers' needs. To investigate this in a binary classification setting, data from the SemEval 2022 competition's iSarcasmEval task (subtask A: sarcasm detection in English) was used, which consisted of a set of tweets labeled as either sarcastic or non-sarcastic, as intended by the original author. After preprocessing the data using techniques such as case folding/stop word removal and performing attribute selection, various classifiers in the Weka tool were trained with hyperparameter tuning in order to find the best-performing combination. Each model was evaluated using 10 times 10-fold cross-validation. After comparing the F1 scores for Decision Trees, Support Vector Machines, Logistic Regression, Multinomial Naïve Bayes (baseline), and Nearest Neighbor classifiers, it was discovered that the Logistic Regression model performed significantly better over the baseline, with a score of 0.76. While these promising results suggest that computationally detecting sarcasm is feasible, there is room for improvement. Future directions include applying deep neural networks and transformer models.



Pendimethalin's Effect on the Culex Mosquito's Role as a Vector for Diseases

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Abstract (Posters)

The Culex Mosquito is a group of mosquitos commonly found around agricultural fields, using the agricultural waterways to reproduce and develop. It is typical for there to be runoff containing pesticides in those waterways. However, the effects of common pesticides, like Pendimethalin, on the mosquito's immune system have not been examined. Pendimethalin may act as an environmental stressor that decays the mosquito's immune system. We tested this by raising larvae in six plastic bowls containing different concentrations of Pendimethalin until they were adults. Then once they were developed, we collected their RNA and converted it to cDNA. We then ran those samples against six immune genes to assess gene regulation using a qPCR machine. The genes represent the different pathways that a possible virus could be taking to infect the mosquito and make it a vector. Based off the results, there were four out of the six immune genes (Defensin, Dicer, R2D2, and MyD88) that showed that the treatment was evident for. The data showed that the agrochemical delayed the early stages of development as well as lowered the survival rate for adults after ten days. Ten days represents typical incubation period for some viruses when a mosquito feeds on an infected bloodmeal. Our experiment suggests the pesticide Pendimethalin is an environmental stressor on this group of mosquitos.



Effects of GABA_AR Targeting Compounds on Neuro-Transcriptional Profiles in Zebrafish

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Abstract (Posters)

GABA_A receptors are the main fast inhibitory neurotransmitter type in the mammalian brain and have been the target of compounds for applications ranging from the treatment of anxiety disorders to use as anesthetics and management of insomnia. Current screening methods for neuroactive compounds rely on receptor binding assays which preclude the contributions of cell signaling. Cell culture approaches capture cell signaling mechanisms with high throughput methods but undersurvey complex neuronal interactions. We pursued methods for screening neuroactive compounds in zebrafish to maintain complex cell networks while maintaining a high throughput. In our pilot study we screened several GABA_AR acting compounds including: propofol, ivermectin, and PTZ. We isolated neuronal and non-neuronal cell populations from NeuroD-GFP zebrafish using flow cytometry to assess cell-type specific drug effects. We then performed bulk-RNA sequencing to determine the expression profiles of each population. Downregulation of the GABAergic synapse pathway was noted in both ivermectin and propofol exposures. Principal component analysis for all tested compounds separates neuronal and non-neuronal compartments accounting for > 70% of the variance among our samples (72% ivermectin, 88% propofol, 89% PTZ). PC2 begins to distinguish by drug effect: Propofol and ivermectin both exhibited separation among neuronal transcripts (16% ivermectin, 5% propofol, 6% PTZ), whereas PTZ surprisingly distinguished only non-neuronal transcripts. Future work will include an expanded analysis of the GABA pathway for all populations in addition to screening compounds that possess GABA_AR subtype specificity.



Implementation of a Bilingualism and Culture Questionnaire: Can Discrimination Play an Effect on Dominance?

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Abstract (Posters)

Creating more robust definitions of bilingualism may lead to deeper explorations of experiences and the negative connotations some societies might ascribe to them. Thus, a question is whether Spanish-dominant students, as measured by the Bilingual Language Profile (BLP), are more likely to report higher levels of discrimination.

Using the Prolific Platform, data was collected online from 152 participants, 18 years of age and older, bilingual in English and Spanish. Measures in this study included the Bilingual Language Profile (Birdsong et al., 2012), a gold-standard measure of perceived discrimination (Williams et al., 2012), and a set of demographics and open-ended questions about their bilingual experience.

A regression analysis was conducted to explore the predictors of the number of reasons people were discriminated against. Questions of age, ethnicity and multicultural factors across development, education, and technology ownership were included. The overall model assumed ~7% of the variance in reasons discriminated against. The only significant predictor was having a college degree ($\beta = -0.91$, $p = .012$) - though whether they grew up in a multicultural environment was marginally significant ($\beta = 0.61$, $p = .074$).

Given the low variance assumed by this model (~7%), future work may benefit from unpacking what best predicts perceived discrimination, if not bilingualism, technology ownership, or other demographics. Questions about the country of origin and religion could be implemented. Given that our dataset was skewed to those with a country of origin of the United States, we intend to collect data to address this limitation.



Predicting fake news in elections: A machine learning perspective

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Abstract (Posters)

News data from political sources is always tricky to validate, since they report the same event from different angles simultaneously. Nevertheless, people seek out and consume news from social media due to its low cost, easy access, and rapid dissemination of information. The downside is that it allows 'fake news' to spread widely, i.e., low quality news containing intentionally false information. Fake news may adversely impact individuals and society due to its rapid spread. Therefore, fake news detection on social media has recently become an emerging field of research that is attracting a lot of attention. Fake news detection on social media presents unique characteristics and challenges that make existing detection algorithms from traditional news media ineffective or not applicable. Our model detects fake news in a dataset by using machine learning. Our results are highly accurate and precise. In this study, we applied a RoBERTa transformer to a dataset containing news articles pertaining to the United States Presidential elections to classify the articles into two categories: Fake News and Real News.



Tracing Direct Neuronal Projections from the Mouse Perirhinal Cortex to the Hippocampus

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Abstract (Posters)

To date, the current published body of literature has conflicting information as to whether the mouse perirhinal cortex (PRh), and more specifically the rostral deep layers (IV-VI), send direct projections to the dorsal CA1 region of the hippocampus. Our lab has previously published many studies in which the circuitry underlying memory was manipulated. The conclusions of these studies rely on the notion that the manipulations performed acted on the direct projections from the PRh to the CA1, as opposed to the indirect projections through entorhinal cortex. This study aimed to trace the projections from PRh to CA1 in the specific regions that our previous studies had targeted for pharmacologic and chemogenetic manipulations. Light-sheet microscopy is a powerful and valuable tool that permits the tracing of neuronal populations all projections. Therefore, we injected a retrograde tracing virus into the dorsal CA1 region of the mouse hippocampus and imaged whole brains using light sheet microscopy to investigate the direct and indirect projections from PRh to CA1. Our findings support the previous literature that suggest that the PRh sends projections to the CA1 of dorsal hippocampus directly and indirectly via neighboring regions.



The Study of DNA Hybridization via Assembly of a Localized System of Logic

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Abstract (Posters)

Our goal is to develop a DNA computer for biomedical applications. Such smart DNA-based machines capable of detecting diseases by recognizing gene markers and performing therapeutic actions to treat diseases. To develop devices of highly complex computations, molecular models are required¹. In this study an experimental model for the integration of multiple logic gates was developed. The structure will serve as the basis for designing complex DNA processors. The integration of multiple YES gates arranged in series into a DNA scaffold helped us to assess the communication and signal relay from one gate to another. This project provides a big step to scaling DNA logic gates to more complex circuitry and processors. Proving the stability of each 4-way junction A and B fragment through the addition of an input, or analyte in future applications. Using fluorescence that is produced when all layers are present between the input and fluorescing molecular beacon. A threshold of three times the background fluorescence was chosen based on the separation of fluorophore and quencher of layer 5 for each combination of layers. The layers were then immobilized in a scaffold to improve performance toward the threshold, the best propagation of signal was seen in the Alternating Long and Short design. In future applications the crossover DNA strands that make up the 4-way junction, called an X sensor, could be utilized in future biological systems, nanotechnology, and target DNA recognition to propagate through an extended DNA nanostructure in a controlled manner.



The Lived Experience of Childbirth

Chiara Mosher

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Abstract (Posters)

This qualitative study applies the Giorgi (e.g., 2009) method of phenomenological analysis to the lived experience of childbirth. Twelve participants submitted their experience of childbirth, starting from when they perceived it as beginning to holding their child for the first time. From these accounts an eight-part general structure was formed from emerging themes. The structure is as follows: 1) labor begins: the initial reaction, 2) managing pain, 3) facing medical intervention, 4) mothers' intuition, 5) pushing 6) being affected by context, 7) completing the birth, and 8) the immediate post-partum effects. Though there is a clear beginning and end, the main body of the structure is non-chronological, instead weaving together throughout the experience. This project was designed to allow flexibility in what women needed to share about their births, especially regarding which moments and interactions had cemented in their minds. Ultimately, this project exposed the importance of context in childbirth, both location and individuals involved, pointing to the necessity of a birthing system better suited to the relational, intimate experience that childbirth is.



Effects of Microplastics Exposure in the Sea Anemone, *Exaiptasia pallida*

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Abstract (Posters)

Microplastics are one of the most common forms of pollution found in marine environments, and their small size (<5mm) allows them to be easily ingested by marine biota. *Exaiptasia pallida* is a solitary anemone native to the western Atlantic that harbors symbiotic dinoflagellates like those of reef building corals, and passively feed on prey such as brine shrimp. To assess the influence of microplastics on *E. pallida*, a series 48-hour laboratory experiments were conducted in which symbiotic and aposymbiotic anemones were exposed to 100 μ m polystyrene microplastic beads in the presence and absence of brine shrimp. Ingestion and egestion of microplastics, and photosynthetic parameters were measured at 3, 24, and 48 hours following initial exposure. At 48 h, anemone tentacles were harvested and analyzed for algal symbiont density. Physiological stress in the anemones was investigated via assessment of antioxidant enzymes, superoxide dismutase, catalase, and glutathione peroxidase. *E. pallida* consumed polystyrene beads in every microplastic treatment, and both presence of brine shrimp and symbiotic state significantly increased microplastic ingestion. Aposymbiotic anemones ingested more microplastics than symbiotic anemones, suggesting that bleached anemone communities may be more susceptible to microplastic pollution.



Pain and Sleep Disturbances in SUD Treatment: Disentangling Chicken From Egg

Ioanna Lysandrou, Caroline Monokandilos, Priyal Ganguly, Apollonia Lysandrou, Scott Teitelbaum, Amanda Janner, Laurie Solomon, Ben Lewis
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Abstract (Posters)

Pain and disrupted sleep are recognized as major antecedents and consequences of substance use disorders (SUD), and are common concerns in early treatment. While the reciprocal nature of pain and sleep is recognized, in the context of early abstinence there is limited understanding regarding which may be the greater risk factor or more advantageous treatment target. We aimed to investigate the directionality of this relationship by applying statistical models that facilitate causal inference. We hypothesized that pain would be a causal indicator of sleep quality.

Patients receiving residential treatment for SUD ($n=973$) completed assessments of pain intensity (NIH PROMIS) and sleep (PSQI). Data were collected at treatment entry, 30 days, and discharge. Cross-lagged panel models were applied to examine causal relationships.

Pain and sleep remained associated across treatment ($p_s < .001$). After controlling for these associations, we observed a significant relationship between pain at baseline and subsequent measures of sleep quality ($p < .001$), implying that pain may be causally related to sleep quality. This directional relationship was apparent across the first month of treatment, but not observed between one month and treatment cessation.

These data provide a novel indication that in the context of SUD treatment, pain may be an important intervention target in ameliorating sleep disturbances. Our results confirm that sleep and pain are closely related, but indicate that changes in pain drive subsequent changes in sleep quality. Given the import of pain and sleep to quality of life and treatment success, these results provide important, actionable guidance to treatment providers.



How Does Fast Food Affect People and Culture?

Sheirf Admas

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Abstract (Posters)

Fast food has been growing in America and around the world for the last half century and has had an immense effect on how we eat. The growing fast food industry around the world is detrimental to culture all around the world. Fast food affects both how we eat and where we eat. It has lowered eating at home and greatly increased eating on the go. It also affects how people make nonfood related decisions, such as causing people to save less and desire immediate gratification. People who tend to eat fast food usually have less financial patience and less patience overall. Fast food advertising has also greatly affected the world. It has caused many people and especially children in urbanizing foreign countries to turn to fast food as their main diet source and has taken away from indigenous cuisines. These have led to greatly increased obesity and more sedentary lifestyles. Fast food has also enforced long work hours with short break times because people don't have the time to have a proper meal and must go for fast food. Fast food does provide industry in developing countries and is a sign of modernization. Fast food does offer people an easy way to obtain food if they don't have much money, time or knowledge to cook food. However, this is a solution to a problem that shouldn't exist. Fast food promotes eating faster and less healthy and greatly degrades people's overall lifestyles.



Flume Experiment to Evaluate Shear Stresses Under Variable Flowing Conditions

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Abstract (Posters)

In fluid dynamics, the flow along a solid boundary produces shear stresses which decrease the velocity of the fluid in the boundary layer. One important application of shear stress measurement is the evaluation of soil erosion and sediment transport in water bodies. Due to climate change, extreme rainfall events are occurring with more frequency and intensity causing overflowing and breach of water retaining structures.

The experiment conducted will consist of a controlled environment and a flume that will stimulate a riverbed at an angle. The Wave Lab houses a 4,000-gallon tank measuring 30 ft in length, and 4 ft in width, within which, a flume will be installed measuring 2 ft by 25 ft with a slope of 5%. On the 20 ft marker, the flume will have a working envelope where a plate with shear stress sensors will be installed. A MicroPIV system consisting of microscopic fluorescent seed particles and a laser will be used to measure the flow velocity. The data from the MicroPIV will be captured by an AOS high-speed camera that has the capability of shooting 2,000 frames per second.

Successful execution of our research will produce shear stress and flow velocity ranges at given flow rates. A Computational Fluid Dynamics (CFD) model using COMSOL will be developed to demonstrate the flow variables including turbulence and roughness of the bed.



How Personality and Perfectionism Traits Predict Aspects of Test Anxiety in College Students.

Kelly Johnson, Dominique Berrette, Mackenzie Doyle, Starlette Sinclair PhD
Florida Gulf Coast University, Fort Myers, USA

Abstract (Posters)

The college experience is a complex and challenging journey for most students. Academic anxiety can make academic success harder to achieve. Research has shown that personality and perfectionism traits may relate to an individual's risk of experiencing academic anxiety—particularly surrounding assessments like tests. For instance, Eum and Rice (2011) reported that unhealthy perfectionism traits were related to test anxiety, underachievement, and avoidant goal orientation in college students. In a recent meta-analysis, Burcaş and Creţu (2021) explained that perfectionistic concerns (i.e. thoughts) were a stronger predictor of test anxiety than perfectionistic strivings (i.e. behaviors). Stoltz and Ashby (2007) demonstrated that certain personality traits are related to dimensions of perfectionism. Chamorro-Premuzic et al. (2008) reported that neuroticism had a strong relationship with test anxiety. In our study, we investigated whether a combination of personality and perfectionism traits can significantly predict test anxiety experiences—namely, whether knowing an individual's personality and perfectionism traits can help identify whether that person may be at risk of experiencing test anxiety to levels associated with negative academic outcomes. Specifically, we explored what Big 5 personality traits (Goldberg et al., 2006) and Big 3 perfectionism traits (Smith et al., 2016) predicted overall and components of test anxiety (Spielberger et al., 1983). Our findings may provide support for the consideration of personality traits when creating interventions for college student success.



Investigating Electronic Properties of 2D Materials

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Abstract (Posters)

Here, we work with two types of characterization techniques, Scanning Tunneling Microscopy (STM) and X-Ray Photoelectron Spectroscopy (XPS), to investigate the properties of 2D materials. Transition Metal Dichalcogenides (TMDCs) are a class of 2D materials which have the chemical formula MX_2 , where M is a transition metal atom and X is a chalcogen atom. We can use STM to explore the electronic properties of our material, as well as achieve atomic resolution images to help us understand the structure of our material. XPS tells us about the chemical composition and how these elements are bonded in the material. We can use these techniques together to understand the overall lattice structure of our material. In a previous project, we used these characterization techniques to explore phase changes in TMDCs when exposed to excess metal. The use of STM with XPS can help us determine where the excess M positions itself in the lattice. In our next project we will be working with doping and magnetic characterization of TMDCs.



The Effects of Anxiety on Vision Related Performance Among Collegiate Athletes

Aviana Fedele

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Abstract (Posters)

Anxiety is an intense feeling of worry or fear and can often be overwhelming, taking over someone's everyday activities. Often, individuals with anxiety can get physical symptoms such as increased heart rate, sweating, fatigue, and rapid breathing. Anxiety can also affect an individual's quality of vision. In highly stressful circumstances, an individual's vision can diminish temporarily, affecting the peripheral vision and making central vision blurry. It compares the impact of being in stressful situations among athletes with and without vision disorder during athletic events. By conducting a study focusing on collegiate athletes at the University of Central Florida and comparing their anxiety levels and any changes in their eyesight/perception, we can assess the association between stress and eyesight and whether this correlation impacts their performance. This study aims to assess a potential relationship between athletes' performance, with and without vision-related disorders, during highly stressful situations. 31 participants between the ages of 18-27 participated in this study. The survey was sent out to all student-athletes using UCF Qualtrics and incorporating the State-Trait Anxiety Survey into an online modality. By comparing the data collected in SSPS and One-Way ANOVA, there was no significant difference in the mean anxiety scores between the tested variables, including the type of sport played, the type of refractive errors, and wearing corrective lenses. Future research can focus on assessing a larger athlete sample and assessing anxiety and vision during performance to better understand the true relationship between anxiety and vision disorders among athletes.



ASSESSING GEOMORPHIC VARIABILITY OF NOURISHED AND NON-NOURISHED BEACHES IN NORTHERN PALM BEACH COUNTY, FL.

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Abstract (Posters)

Beaches provide important habitat space, support the economy and tourism, and serve as a buffer for storm impacts and flood reduction. Loss of sediment from coastal systems are resulting in significant beach erosion. Coastal erosion is a natural phenomenon but is becoming a growing problem due to many factors such as rising sea levels, frequency of major storms, and anthropogenic activities. These factors and beach nourishment can alter the size, shape, and composition of beaches. The objective of this study was to assess sediment characteristics and beach profiles of nourished and non-nourished beaches in Palm Beach County following nourishment and restoration efforts. Sediment samples were collected and analyzed for color and grain size characteristics. Beach morphology was surveyed and examined in Microsoft Excel. Results of this study found the characteristics of the sediments from the recently nourished beach and non-nourished beach were similar in both color and grain size. Beach profiles exhibited an increase in elevation and width on the nourished area that had offshore material placed in February 2022. Overall, the only major difference was the widening and elevation increase of the nourished beach in comparison to the non-nourished beach, no significant differences in sediment were found. The results of this study support that ongoing beach nourishment and restoration efforts in Palm Beach County follow best management practices by achieving a positive impact on beach habitat with placed sediment matching native sediment resulting in a more resilient, wide beach.



The Sephardic-Mizrahi Moment: Cultural Renewal, Jewish-Arab Rapprochement, and Zionism in the 1920s

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Abstract (Posters)

This study examines the Sephardic-Mizrahi strategy for Arab nationalism and Zionism in the British and French mandates of the early 20th century. Whereas historians have largely clarified the approaches employed by Ashkenazi Zionists and Palestinian-Arabs, scholars including Abigail Jacobson, Moshe Naor, and Yitzhak Bezael have highlighted that Sephardic-Mizrahi sources point to a third nationalist strain currently understudied. Utilizing Hillel Cohen and Alex Winder's conceptual framework for violence, Yehuda Shamir's conceptual framework for culture, and Rashid Khalidi's analytical framework, this study broadens the research on Sephardic-Mizrahi communities, the development of 20th century nationalism, and the origins of the Arab-Israeli conflict. Drawing on correspondences, reports, and newspapers, this paper argues that a Sephardic-Mizrahi Moment opened by 1925, employing institutions—such as activist organizations and the press—to simultaneously achieve cultural renewal, Jewish-Arab rapprochement, and Zionism. However, by 1929 the Sephardic-Mizrahi Moment ended, with the Western Wall Riots signifying that institutions ironically wrought cultural decoupling, Jewish-Arab violence, and the defeat of Sephardic-Mizrahi Zionist organizations. While the brief rise of the Sephardic-Mizrahi Moment represented the diversity of early 20th century nationalism, its fall symbolized the closure of possibilities for Jewish and Arab nationalists as their ideologies narrowed towards the partition and violence which would dominate the 1930s and 1940s. This study of the Sephardic-Mizrahi Moment is also relevant for diversifying popular history, mitigating problematic popular discourse, and galvanizing new possibilities for Israel-Palestine.



How Can a High School Student with Little to No Building Experience, Construct an Inexpensive and Reliable Aquaponics System for School Usage?

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Abstract (Posters)

Aquaponics is the conjoined farming of fish and plants in the same system, relying on the nutrients generated from fish feces to help plants grow. This farming method has been around for most of human history in Southeast Asia, Africa and South America. They did this by building floating rafts on lakes where the roots of the plants would float in the water (Keeper, 2016). However, it is only in recent years that this method of cultivation is coming back into common use (Keeper, 2016). Researchers have found that aquaponics can provide many educational and nutritional benefits to schooling of all levels such as educational opportunities, aiding in community building and access to fresh food, but many schools lack the funds to build them (School Systems, n.d, 2021). This finding from previous studies sparked the present study's question: How can a high school student with little to no building experience, construct an inexpensive and reliable aquaponics system for school usage? To answer this question a convergent parallel mixed study was conducted with the consultation of advisors, comparing the fish and plant growth, ease of maintenance, and construction of two different aquaponics systems, one of a raft design and another based on a pipe design. The study was conducted at Singapore American School. In the end it was concluded that a pipe system would be better for schools, as it resulted in a better growth rate of both plants and fish, along with lower costs, easier maintenance and simpler construction.



Changes in Oxygenated Flow Patterns in Breast Cancer Patients Treated with Radiation Therapy

Sydni Spencer

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Abstract (Posters)

Breast cancer accounts for around 30% of the cancers diagnosed in women each year. 95% of those patients that undergo radiation therapy (RT) develop radiation dermatitis (RD) which, if severe, can slow healing of the tissue. The underlying physiological changes occur before the visually identifiable changes which clinicians use to diagnose RD. The tissue's physical appearance is compared to the Common Toxicity Criteria for Adverse Events (CTCAE) scale to determine the grade or severity of RD. This study was conducted to determine whether changes in oxygenation flow patterns in irradiated tissue can provide information about the onset of RD in breast cancer patients. A near-infrared optical scanner (NIROS) and breath-holding paradigm was used to image patients each week during treatment, and at a 1-3 month follow up. A modified beer-lambert law was used to create tissue oxygenation (in terms of oxygen saturation) maps. These maps were used to create flow correlation maps. The changes were related to the grade of RD by qualitative and quantitative assessment of the correlation maps. It was found that the synchronicity of the flow in the tissue across contralateral sides of the chest wall changed between the imaged weeks of RT. This oxygenation flow pattern was related to the presence of a clinical grade of RD, as well as skin hyperpigmentation. Thus, it was observed that tissue oxygenation flow patterns can objectively assess effects of RT from a physiological perspective to complement the subjective visual changes with the onset of RD and/or hyperpigmentation.



Can 8 Wait? A Review of Police Use of Force Policies in Florida

Tyler McCreary, Adam Rose, [Lara Japiassu](#)
Florida State University, Tallahassee, USA

Abstract (Posters)

The use of force by law enforcement officers has become a leading topic of public discussion, especially in light of recent tragic deaths of civilians in police custody. As a result of these fatal encounters and expanding conversations about the issue, there has been an increasing demand for reform in police agencies' approach to the use of force. However, there has been little systematic research to contribute to policy discussions, making further systematic policy review necessary to address these public safety concerns. In response to reform conversations, the Campaign Zero movement established in 2015 proposes a set of eight policies under the name of "8 Can't Wait" aiming to decrease police violence incidents in the United States. This project conducts a systematic review of police use of force policies across different city and county police jurisdictions in Florida, collected through email and public records requests. It evaluates which jurisdictions have adopted the "8 Can't Wait" proposals, as well as an additional policy mandating the provision of emergency medical services in the event of physical harm. Once this systematic review is complete, we will review possible statistical correlations between policies and reported incidents of police use of force, as well as any demographic trends in the areas where policies have been adopted.



Gender Differences in Environmental Policy Support

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Abstract (Posters)

Environmental policy is becoming an increasingly salient issue in the United States, with more Americans learning about climate change and the dangers it poses. However, Americans often prioritize many other policy issues over environmental policy (Egan and Mullin 2017). Policy priorities are not uniform across the population, as existing literature describes how women and men vary in their risk perceptions of environmental issues and concern over health-related environmental issues, affecting their support for environmental policy.

In this paper, I will examine the differences between men and women's support of environmental policies over the last few decades in the United States. Using a question that has been asked on the General Social Survey's from 1973 to 2021 regarding the level of spending on environmental issues in the United States, I will examine whether there has been a shifting gender gap over this time. I will also use a logistic regression analysis to assess whether these gender differences are consistent across many racial and ethnic communities. Based on the literature I expect that women will have higher levels of support for environmental policy than men- and I predict this relationship will vary over the last 40 years and that this relationship will be larger among white respondents than other races. This research will provide new insights into gendered and racialized perceptions of environmental protection- which will facilitate politicians running for office, and the design of public awareness campaigns for environmental groups.



The effects of increased sea surface temperature on the survival and germination of turtlegrass *Thalassia testudinum* seedlings

Ariel Alibocas, Olivia Marita
Barry University, Miami Shores, USA

Abstract (Posters)

Description and scope of research: Our research investigates the effects of elevated temperature on the survival and growth of turtlegrass *Thalassia testudinum* seedlings. In July-August 2022 we collected turtlegrass seeds washed up on the beach along Key Biscayne, FL and are raising them hydroponically in laboratory aquaria. Half of the seeds are maintained at 26°C, the average summer temperatures in nearshore south Florida waters, and half are maintained at 28°C, the predicted end-of-century temperature. We are monitoring survival and leaf length of the seedlings.

Rationale of the poster: Seagrass beds are common habitats in shallow Florida waters. They are economically and ecologically important ecosystems that support numerous fishes and invertebrates, stabilize coastal sediments, and store carbon. Little is known about the potential effects of global warming on turtlegrass, the most common seagrass species in Florida. Our research will be relevant to conference attendees with an interest in marine biology, climate change, and plant biology.



Protecting Public Health through Improved Rapid Detection and Monitoring of Legionella in Potable Water Melanie Gavilanes and Nwadiuto Esiobu, Ph.D. Miami Dade College, Eduardo J. Padron Campus, Miami, FL Applied Biotech Inc, Center Point, Deerfield Beach Florida

Melanie Gavilanes

Miami Dade College, Miami, USA. APPLIED BIOTECH INC, Plantation, USA

Abstract (Posters)

Cases of Legionnaire's disease – a serious pneumonia with fatality rate of 10%, quadrupled in the United States since 2000, becoming a major emerging public health threat. It is caused by a fastidious bacterium - Legionella pneumophila, found in buildings with large water systems - hostels and Cruise ships. Contaminated water droplets usually spread through showers, faucets, cooling towers, hot tubs, and such. Monitoring these building waters is a priority for public health.

This industrial research aimed to manufacture the Legionella culture media (BCYE), BCYE without L-Cysteine and BCYE with GVPC using ISO 17025 inhouse-standards; develop a rapid molecular confirmatory assay and finally to compare the CDC Elite culture methods with the Applied Biotech Inc rapid assays. Duplicate water samples collected weekly from the North and Kendall MDC Campuses in Summer 2022 were tested for Heterotrophic bacteria (HPC) and Legionella spp. Plates were incubated at 2.5% CO₂ for 3-7 days. PCR targeted unique Legionella sp. sequences in the metagenomic DNA extracted from samples. Standard ATCC strains of Legionella served as controls.

Reproducible results were obtained within 4-5 hours using the molecular method. The gym shower in Kendall Campus showed the highest bacteria - 7000 cfu/ml for HPC and legionella 1260 CFUs/ml; however, on the third week these numbers dropped to 6250 and 30 CFUs/ml respectively. Out of 6 samples, 40% produced presumptive positive Legionella sp on culture but PCR determined that none of these isolates was Legionella pneumophila species. This project underscores the need for rapid and specific detection methods.



Sequencing the Toll-Like Receptor 4 Gene of *Gopherus polyphemus*

Daniel Peramune, Jon Moore, Kelsie Bernot, Ericca Stamper

The Harriet L. Wilkes Honors College of Florida Atlantic University, Jupiter, USA

Abstract (Posters)

The burrowing *Gopherus polyphemus* (gopher tortoise) is a keystone species in most of the Southeastern regions of the United States. These tortoises play a vital role in the dispersion of seeds, and their burrows provide shelter and refuge for over 360 species of wild animals that live in their habitat. The genome and the toll-like receptor 4 (TLR4) gene of the gopher tortoise are yet to be sequenced, however, many of its closely related species have a sequenced genome and a sequenced toll-like receptor 4 genes. The TLR4 gene plays an essential role in innate immune system; specifically, it aids in identification of Gram-negative bacteria and the initiation of the downstream pathway that leads to an immune response. In this study, we designed primers to the TLR4 exons based on the closely related species *Gopherus flavomarginatus* and *Gopherus evgoodei*. We performed PCR reactions on genomic DNA isolated from nucleated blood of the tortoise and obtained clear single bands. We will present the proposed *G. polyphemus* sequence that was obtained by Sanger sequencing. The toll-like receptor 4 gene is known to be a conserved gene due to the role that it plays in the innate immune system. Identifying the sequence of the toll-like receptor 4 gene may provide insight as to why some pathogens are able to infect *G. polyphemus*, despite the presence of TLR4. Additionally, this knowledge could be useful in developing therapies for these pathogens.



Quality Control In 16s-Based Microbiota Compositional Analysis

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Abstract (Posters)

Introduction: Human microbiota has been widely recognized as a key mediator in both health homeostasis and many pathologies. High-throughput sequencing of the 16S rRNA gene, the bacterial marker gene, has led to the generation of massive metagenomic data, creating a pressing need for efficient bioinformatic protocols to process the raw sequence reads. Significant ambiguity exists as to how to best perform 16S-based microbiota compositional analysis, as many programs exist for this purpose. This study evaluated three of the most used algorithms for taxonomic inference (DADA2, QIIME2, and mothur). Additionally, parameters for quality control of sequence reads were examined and optimized because there is a growing recognition to move away from “off-the-shelf” data processing.

Method: Two key parameters, based on Illumina-assigned quality scores, were isolated across our pipelines: (1) limits on allowed base-pair errors per short-read fragment and (2) truncation of erroneous read ends based on a quality score threshold. First, impact of parameter value on retention of input sequence reads was assessed. Then, output compositions were compared to a known mock community via weighted UniFrac distance.

Results: How parameters are set significantly affects read retention. Optimal value for allowed error limit was pipeline-specific while there was unanimous agreement on best quality score threshold for read truncation. Sensitivity and specificity of mock community approximation varied by pipeline.

Conclusion: To improve inference of microbiota compositions, 16S-based analysis must be performed with consideration for unique user dataset. Results generated based on this marker gene should be interpreted with caution.



The Prevalence of The Novel Species of *Anaplasma: Candidatus Anaplasma testudines* in the *Gopherus polyphemus* Southern Florida's Population

Helen Hong, Kelsie Bernot, Ericca Stamper, Jon Moore
The Harriet L. Wilkes Honors College of Florida Atlantic University, Jupiter, USA

Abstract (Posters)

The gopher tortoise is an ecologically important keystone species whose burrows provide shelter for other organisms and increase plant biodiversity. However, gopher tortoises are threatened and protected in Florida as their populations are low due to numerous reasons such as habitat loss, overcrowding on preserves, and various diseases. The objective of this study is to investigate the presence of the newly emerged blood pathogen, *Candidatus Anaplasma testudinis* in the Southern Florida population; specifically, the Abacoa Greenway and Florida Atlantic University Boca preserves. This candidate pathogen belongs to the *Anaplasma* genus and *Anaplasmataceae* family, which has been studied in relation to the clinical symptoms of mild to extreme anemia. The species we are interested in studying, *Candidatus Anaplasma testudinis*, has been discovered in both gopher tortoises and other reptiles. We isolated DNA from nucleated gopher tortoise blood and performed PCR reactions using 16S rRNA primers. PCR-positive samples will be purified and submitted for Sanger sequencing and analyzed phylogenetically. These findings will help us characterize the pathogen threats to gopher tortoises in Southern Florida and contribute to the ongoing anemia research in this species.



Evaluation of Upper Captiva's Roadway Quality

Luis Angeles, Ana Avella, Lily Silva, Duane Heller Jr.
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Abstract (Posters)

Florida Gulf Coast University (FGCU) faculty members in the College of Arts and Sciences and College of Engineering have teamed up with authorities in Upper Captiva to evaluate the roadway on the island. Four (4) different sites were identified. Raw materials were collected on two (2) separate occasions. The materials were tested for organic content, calcium chloride, moisture "water" content, and aggregate gradation. The organic content of the soil cores at all sites ranged from 1.2% to 3.3%. Schooner Low contained the highest organic content (3%), followed by Mourning Dove Road (2.75%), Pointhouse Road (1.39%), Kingfisher (1.28%), and Schooner High (1.21%). A substantial amount of moisture (10%) was observed on the surface of the sites. The moisture content was increased to 32% on samples taken on the surface compared to the bottom of the road. The grain size distribution was conducted on coarse aggregate (#57 stone) and fine aggregate before and after compaction. A substantial amount of degradation was observed on the coarse and fine aggregate after the materials were compacted. A pilot study using more robust and cost-effective materials such as Recycled Concrete Aggregate (RCA) will be conducted in the future.



Rural Children's Health: Intersectional Studies of Vulnerability to Environmental Stressors Across the Lifespan

Alicia Hellman¹, Maribel Trejo², Laurie Abbott³, Jessica Bahorski³, Claire Berryman⁴, Joseph Grzywacz², Robert Hickner², Gregg Stanwood⁵

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Abstract (Posters)

Pesticides are ubiquitous, particularly in rural communities where agriculture is often the dominant industry. In adults, exposure to pesticides has been implicated in neurologic disorders, cancers, as well as reproductive and metabolic disorders. Additionally, non-persistent organophosphate and pyrethroid pesticides are implicated in a variety of children's physical and developmental consequences including birth defects, neurodevelopmental delays/disorders, and cardiometabolic complications. Therefore, rural populations often experience large health disparities that may result from pesticide exposure. However, there is an absence of research that systematically studies typical exposure to populations (i.e., chronic, low dose exposure to multiple compounds). To fill this gap, our multidisciplinary Rural Children's Health team has initiated a study of parent-child dyads recruited in a rural community in southern Georgia. Core assessments include food diaries, anthropometrics, pesticide exposures based on dust samples from the home, pesticide metabolites based on urine samples, inflammatory and cardiometabolic risk markers in blood, fecal microbiome, neurobehavioral functioning, and survey of health factors in the child, mother, and family. We will present our recruitment strategy, key demographic data of participants, and preliminary data on assessments. This interdisciplinary, data-driven approach will advance the pursuit of bridging the health disparity that exists for our rural communities. Future studies will focus on generating hypotheses concerning mediating factors of vulnerabilities, health impacts, and the intersection of chemical and non-chemical stressors in children from underserved rural communities.



Challenges of Using Body Temperature as a Screening Method for COVID-19

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Abstract (Posters)

The use of body temperature measurements has played an essential role in disease prevention and identification in recent years, especially during the COVID-19 pandemic, when the public embraced its use as a biosecurity measure. An important step in determining the usefulness of body temperature measurements is to measure their ability to identify infected patients with high body temperature. In this study, we focused on the correlation between new daily local cases of COVID-19 and patients with high body temperature (above 99 °F) at the moment of entering a non-urgent medical practice. A reliable screening method is expected to detect more patients with COVID-19 symptoms as COVID-19 cases become more prevalent, supporting it is a reliable method. A secondary aim of this study was to analyze the relationship between environmental temperatures and changes in the frequency of patients with high body temperature. This study examined a subsample of over 3,000 patients in a medical practice. Results showed a negative correlation between high body temperatures and daily positive cases of Covid-19. Also, environmental temperature predicted patient body temperature.



The Effects of Imagined Support on Perceptions of Stress and Speech Performance

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Abstract (Posters)

Social support can buffer the effects of stress (Uchino et al., 1996). However, in many situations social support is unavailable, and imagining social support may help to reduce the impact of stress. Although imagined physical touch has been shown to be an effective stress buffer, little research has compared it to other types of imagined support, such as emotional or tangible support. To gain greater insight into these processes, the purpose of this project was to identify whether imagining supportive touch, emotional social support, or giving emotional support is best at moderating stress during an impromptu speech task conducted over zoom. Participants completed initial measures of life stress, personality, and social support. Next, they indicated their stress levels at baseline and after the speech task. Participants also self-rated their speech performance, and the recorded speeches were rated by research assistants. Results showed that changes in perceived stress did not significantly vary by type of support. However, the control condition had greater increases in stress compared to the support conditions as a whole. Additionally, imagined support indirectly related to speech performance through changes in stress such that support predicted lower increases in stress which in turn predicted better self-rated speech performance. Research assistant ratings of speech behavior did not significantly vary by changes in stress. As a whole, results indicate that imagined social support can be useful for dealing with potentially stressful situations.



Measuring Differences in Cortical Activity Between High and Low Self-Monitors using fNIRS

Ambriel Cohen, Isabel Suazo, Christopher Leone, Hannah Thomas, Karli Friedman, Magnolia Lake, Emma Queener, [Dalia Elkhatab](#)
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Abstract (Posters)

Self-monitoring is a psychological phenomenon in which individuals attempt to regulate the way they present themselves and are perceived in social situations. Self-monitoring involves emotional regulation and exists on a spectrum. At one end of the spectrum, there are high self-monitors who more strategically manage their self-presentation and emotional reactions in social situations. On the opposite end, there are low self-monitors who do not regulate their emotions or contextually adjust their behavior in social environments. The current study aims to investigate how self-monitoring affects localized neural activity in the prefrontal cortex (PFC) by using functional near-infrared spectroscopy (fNIRS), a non-invasive brain imaging technique. fNIRS uses wavelengths of near-infrared light to detect concentrations of hemoglobin, which is associated with cortical activity and cognitive effort. Participants of the current study viewed emotionally valenced images from the International Affective Picture System (IAPS) and performed the following tasks in separate blocks: inhibiting facial expressions, producing a facial expression appropriate to the shown image, and producing an expression inconsistent with the shown image (self-monitoring condition). We expected that high self-monitors will exhibit decreased activity in their PFC and be more proficient at regulating their emotions when performing the self-monitoring condition, whereas low self-monitors will have increased activity in their PFC due to emotional regulation being more difficult for them. Our data shows a trend of decreased activity in the orbitofrontal cortex for high self-monitors, and a slight increase in activity for low self-monitors when they express emotions inconsistent with the emotional valence of the image.



Impact of Parental Feeding Style on the Neural Bases of Emotion Regulation in Preschoolers: An fNIRS Study

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Abstract (Posters)

During pre-school years, there is a shift from undereating to overeating in children which indicates factors such as parent feeding styles could be in play. Emotional eating, the act of eating in response to emotional arousal, may be one of several negative effects of more controlling parental feeding styles along with lack of emotional and behavioral regulation skills. The current study looks to investigate the relationship between parent feeding practices, pediatric emotional regulation, and emotional eating in 5-year-old children. In study one, we hypothesize that using food as a soothing tool will lead to lower emotional regulation and predict higher emotional eating rates. Mothers of the children will complete MTurk questionnaires to assess coercive control, regulation abilities, and emotional overeating to be later analyzed through correlations and mediation analysis. Study two will explore activity in the child's dorsolateral prefrontal cortex (DLPFC) during an emotion regulation task and in relation to previously assessed parental feeding styles, regulation skills, and emotional eating. This activity will be measured through functional near-infrared spectroscopy (fNIRS), which measures oxygenated hemoglobin levels in the cerebral cortex of the brain. Higher oxygen levels show more localized activity in the respective brain region. We hypothesize that lower activation of the DLPFC, one of the main emotion regulation centers of the prefrontal cortex, will be correlated with higher coercive control and higher emotional overeating. Using questionnaire and fNIRS data, we will run correlations to determine the relationship between the DLPFC and emotion regulation, emotional eating, and parent feeding styles.



Ancestral Black Holes of GW190521

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Abstract (Posters)

When two black holes merge, they release such massive amounts of energy that they make the very fabric of space-time ripple, like throwing pebbles into a pond. These waves, called gravitational waves, travel for billions of years until they eventually reach and pass-through earth. In May of 2019, a merger was detected which was too heavy to explain by the usual means we expect them to form: stellar core collapse. A possible explanation of such heavy black holes is that they themselves are the remnants of previous mergers of lighter black holes. Here we estimate the masses of the ancestral black holes of GW190521, assuming it is the end product of previous mergers.



Mobile ECGs in Detection of Subclinical Atrial Fibrillation in High Risk Outpatient Populations

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Abstract (Posters)

Background: Outpatient populations are at a greater risk of developing arrhythmias. A Smartphone-based Mobile ECG screening can potentially provide a cost effective and preventive mean of detecting atrial fibrillation (AF) at outpatient clinics with a rhythm strip.

Methods: A survey and 30-second ECG recording with the KardiaMobile ECG device was taken on 17,07 enrolled participants across 4 clinic sites (Nephrology, Sleep, Ophthalmology, Urology). All participants agreed to partake in the study and answered a questionnaire aimed at revealing potential risk factors for cardiovascular disease. Physicians were notified if AF was detected in patients and followed-up with a 12-lead ECG or equivalent order. The integration of the Mobile ECG device was also assessed by recording the time taken for data collection.

Results: As of October 17th, 2022, 1,707 of 3,930 (43%) participants have enrolled in the study. Through the survey, 27.7% of participants reported a history of hypertension; 7.5% reported having heart stents; 18.9% reported having a history of congestive heart failure, heart attack, and coronary artery disease; and 8.8% reported already being diagnosed with AF. 232 abnormal readings were reported through the KardiaMobile rhythm strip: 63 readings were labeled as possible AF, 138 readings were labeled unclassified, and 28 were unreadable. These readings are currently under analyzation by a cardiologist.

Conclusions: Data collection is ongoing and still in its initial stages. However, the preliminary data shows promise regarding the feasibility of using KardiaMobile ECGs for the prevention, treatment, and diagnosis of cardiological disease in outpatient clinics.



Evaluating Smart Irrigation Technologies for Water Conservation

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Abstract (Posters)

Adequate irrigation is critical for optimal turf quality. Excess irrigation not only results in a waste of freshwater but also leaching and/or runoff of nutrients thereby causing pollution of freshwater resources. Use of smart controllers for irrigation scheduling can play a significant role in minimizing water loss and nutrient leaching by optimizing water application depending on several soil and weather conditions. This research investigated the performance of the feature commercially available controllers Hunter Hydrowise, Rachio, and Rainbird with the goal to determine which of the smart controllers were the most efficient in water conservation. Soil moisture data was collected over time using soil moisture sensors with their corresponding apps. Teros 12 moisture sensors were used to collect soil moisture, EC bulk, and temperature. Water usage taken in units of gallons and were measured using water meter readings. Results demonstrated that the Hunter smart controller had the highest efficiency in terms of water conservation compared to the other two smart controllers. The Hunter smart controller saved 33,224 gallons of water per acre in one month when compared to the Rainbird smart controller. Based on Miami-Dade county's water usage price, Hunter Hydrowise can save \$272 per month for one-acre turfgrass area compared to the Rainbird smart controller. The broad impact of this project is that it would allow for greater water reduction costs for homes to large multiacre facilities and parks throughout the county discovering the most suitable brand for local turf and crop irrigation saving money and time for consumers.



Upper Respiratory Tract Disease prevalence in the Gopher Tortoise Abacoa Population

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Abstract (Posters)

One of the most prevalent diseases found in Gopher tortoises is Upper Respiratory Tract Disease, or URTD. It is highly contagious and assumed to be a main reason for the decline in population. Common symptoms of URTD include nasal discharge, ocular discharge, edema of and around the eyelids, and conjunctivitis. Previous research demonstrated evidence of *Mycoplasma* infection based on antibody titers. However, antibody titers indicate past exposure, not active infections. Our aim of the study is to obtain genetic data regarding the current prevalence of *Mycoplasma agassizii*, which is the pathogen that causes URTD, within the Gopher tortoise population in Abacoa, located in South Florida. We collected nasal swabs and performed DNA extraction, followed by PCR for 16s rRNA gene. We will present the prevalence and genetic data regarding gopher tortoise URTD. This information will help us understand the diseases facing the threatened gopher tortoise population.



Design and development of an Autonomous Robot-Boat.

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Abstract (Posters)

The care of water and marine species is becoming increasingly essential to maintain life on earth. Water quality in rivers and lakes is important to ensure the ecological balance between species. The lack of care and surveillance of the different water quality factors occasionally causes algae bloom and fish kill. These phenomena have occurred in different states throughout the United States. For this reason, this project proposes the design and construction of an Autonomous Ship capable of navigating along rivers and lakes in Florida to develop Remote Sensing tasks. Propellers make the boat's propulsion system out of the water to protect and avoid accidents with marine life in the water. The boat features a central control system based on an onboard computer, a wi-fi communication system, a power control system for brushless motors, GPS, IMU, and an onboard battery system to ensure autonomy. The system will have different types of sensors that will allow for taking samples of temperature, turbidity, salinity, water pH, and chlorophyll density, among other factors. The current state of this research is in developing the boat with the motor control system and the wi-fi network to generate telemetry and remote control of the system as a backup system in case of failure of the autonomous system.



Lane detection using artificial vision for lateral control in Autonomous cars

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Abstract (Posters)

The automotive industry has evolved towards electric vehicles in the last decade. Electric cars are beginning to dominate the market and are expected to become the standard of mobility worldwide. This evolution of gasoline vehicles towards electric vehicles has facilitated the approach and development of autonomous driving systems. It is expected that the future of mobility will be based on the development of autonomous driving systems to reduce accidents and pollution. This project proposes developing a lane detection algorithm to generate a lateral control system in autonomous vehicles. The lane detection algorithm will be used in an artificial vision system with 360-degree cameras. The algorithm uses classical image processing techniques such as thresholding, Gaussian filters, canny filters, Hough transform, and non-linear regression models. The second stage of this project includes the inclusion of the mathematical model of the vehicle to integrate the lane detector algorithm into the lateral control system of the self-driving car system. Additionally, this project will use car detection algorithms using visual information to improve the lateral control system development.



Driver behavior detection using a Deep Learning approach

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Abstract (Posters)

Car accidents reach 1.4 million people annually worldwide, and it is estimated that 3700 people die daily in these accidents. Most accidents occur due to the imprudence of the drivers, lack of attention to the road, or physiological circumstances such as the driver's microsleep. Therefore, this project proposes the development of a driver behavior and status surveillance system through Machine Learning and Deep Learning techniques. The system uses cameras inside the vehicle that monitors the driver. The visual information acquired through the cameras is processed to detect the driver, the main driver's pose, face, eyes, and point of visual attention. Processing this information is planned to detect situations where the driver is not paying attention to driving the vehicle. It is desired to detect situations such as cell phone use while driving, visual attention to different places on the route, and some exceptional cases such as microsleep. Machine learning and deep learning technologies, such as convolutional networks and posture analysis, are used to achieve the project's objective. The current state of the project involves identifying the driver inside the vehicle, his posture, and the position of points of interest, such as hands and face. In the future, it is expected to analyze this information to be able to finish and detect some of the driver's risk situations while driving.



Sharenting Workbook: Guiding a Conversation between Parents and their Children about Social Media Boundaries

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Abstract (Posters)

Sharenting is the act in which parents upload visual and informational posts regarding their children on social media. Sharenting has significant benefits (e.g., social support) and drawbacks (e.g., privacy risks). Previous research on sharenting indicates that sharing information about children is a widely accepted practice. However, parents typically do not obtain permission before submitting these posts. Parents also believe they should have more control than their children over these posts. As a result, parents must be taught how to protect their children's data online, and encouraged to seek consent from their children. We will create a workbook that will be completed by parent-child pairs. This workbook will guide a conversation between parents and their children about their individual boundaries on social media thus helping them to identify the type of content the child wants their parents to share online. Another goal of this workbook is to teach ,parents and their children, the dangers of sharenting, and how to identify dangerous situations online. This workbook will be distributed in Bloomington, Indiana and Orlando, Florida, and targeted towards parents with children of ages,10-12 years old. A pre-test and post-test will be administered to parents and children. This will assess their knowledge of the dangers of social media and privacy settings before and after completing the workbook with a view to see how the workbook has changed their social media activity.



Exogenous Ketone Supplementation to Offset Age-Associated Cognitive Decline

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Abstract (Posters)

A growing percentage of the population is over 65 and the cognitive health span of older adults has not kept pace with the increasing life expectancy. Recent research has established that inducing non-pathological nutritional ketosis through carbohydrate restriction is an effective method for improving cognitive function in older adults and other animals. Community dwelling populations, however, have difficulty maintaining a ketogenic diet. Thus, our study evaluates the effectiveness of exogenous ketones as dietary supplements for improving cognition using animal models. Young and aged male and female Fischer-344 brown Norway hybrid rats were given beta-hydroxybutyrate (BHB) and medium-chain triglyceride (MCT) oil supplement in their food and blood glucose and BHB levels were recorded at 0, 1, 3, and 24 hours postprandial after 1, 4 and 7 days of the supplement to assess age and sex effects on the bioavailability and absorption of BHB. The supplement lowered blood glucose and increased BHB in all groups and no significant age or sex effects were found. After this pilot data was collected, the supplement was administered and spatial learning, memory, and visual discrimination (cognitive processes often implicated in human aging) were assessed before and after via mnemonic description tasks. The study is ongoing, and currently a second cohort of animals are undergoing the aforementioned process to ensure the statistical validity of the forthcoming results.



Hu|FlixB|Dis|Pea|Mount PrimeMAX+: Henry Jenkins's Convergence Culture and the Fragmentation of Our Monoculture

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Abstract (Posters)

With the creation and popularity of streaming platforms such as Hulu, Netflix, HBO Max, Disney+, Peacock, Paramount+, Amazon Prime, and Apple TV+, the idea of popular culture, within the entertainment industry, has fractured into different niches. Convergence culture, coined by Henry Jenkins, directly addresses the manner in which streaming platforms have lessened the ability for narratives to dominate the popular sphere, also known as the monoculture. Through the creation of streaming platforms and social media, the idea of 'Popular culture' has muddied. The definition oscillates between mass and popular culture; mass culture is based on production while popular culture is based on public reception. The blending of the two, or rather, the sixth definition of popular culture by John Storey in his book *Cultural Theory and Popular Culture: An Introduction*, provides context to Jenkins's Convergence Culture where there is a blurring line between what is made for production or artistic integrity. Created through industrialization, Convergence culture puts a focus on quantitative qualities of the media/culture industry where companies release the greatest number of media to be successful. For example, the Marvel Cinematic Universe will have produced seven films and eight television shows throughout 2022 alone. Convergence culture offers both pros and cons; the former the ability to find new narratives catered to a particular interest and the increased continuation of beloved stories, and the latter a lack of ability to bond over narratives outside of a niche or, in opposition, more difficulty with staying updated on current narratives.



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Smooth Transition Functions in Multiple Dimensions

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Abstract (Posters)

A smooth transition function connects two separated functions respective to their domain through an infinitely differentiable and continuous function. In this discussion, we share some examples of a smooth transition function applied to multiple dimensions, as well as the analysis of finding these functions and manipulating them.



An Analysis of: The Study of the Progression of Bacterial Conjunctivitis Symptoms Upon Antibiotic Treatment

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Abstract (Posters)

Background: Bacterial conjunctivitis is one of the most common eye infections in the United States, affecting around six million Americans annually. As it is a highly contagious infection, bacterial conjunctivitis is transmittable through everyday behaviors, such as close contact with an infected individual, using contaminated sunglasses, and touching one's face with contaminated hands.

Objective: The aim of this project was to analyze a clinical trial and treatment for bacterial conjunctivitis, and determine whether or not the treatment is suitable for patient use. While analyzing the trial, we asked whether or not we'd prescribe this treatment to patients as future healthcare providers.

Study Design: This was a two group randomized control trial, double-blind phase four study. There were twenty-four participants, sixteen women and eight men, assigned to one of two groups; an experimental group or placebo. The experimental group was given 5 mg/mL Vigamox (Moxifloxacin) ophthalmic solution thrice daily for seven days. The placebo group was given a balanced salt solution for the first three days and then Vigamox solution for the rest of the seven days.

Results and Outcomes: The results of the study were the placebo group experienced greater clearance of bacterial eradication when compared to the experimental group. However, both groups had relief of symptoms.

Conclusion: Overall, this study presents the need for further study in using saline solution prior to antibiotic treatment for bacterial conjunctivitis. As Vigamox was almost as effective as the delayed response placebo, we are confident in this treatment for patients.



Satirizing the Cyclical Nature of Imperialism in Dar Williams's Protest Song "Empire"

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Abstract (Posters)

It is an oft-quoted adage that history repeats itself. American singer-songwriter Dar Williams's 2005 song "Empire" uses this concept of historical recurrence to critique the Bush Administration, the War on Terror, and the nationalistic response to the 9/11 terrorist attacks. Galvanized by the Abu Ghraib prison scandal, Williams's folk-rock song "Empire" is a scathing critique of imperialist rhetoric and the cyclical nature of empires. Williams discusses the ubiquity of authoritarian ideology using the lens of historical recurrence. Williams uses sociological storytelling, singing from the perspective of a satirized fascistic everyman. Using the framework of musical form, I will analyze "Empire", comparing Williams's use of the musical medium to other iconic American protest songs, as well as contrasting her methods to her contemporaries. In this presentation, I will show that Williams successfully criticizes the nationalist rhetoric that emerged post-9/11 through the sardonic caricaturization of such beliefs. Moreover, her anachronistic allusions towards past empires such as the Roman Empire, Imperial Japan, and Nazi Germany generate a metacommentary on the failure of previous activists to enact institutional change, and laments her own ineffectiveness in stopping injustices. I will determine the effectiveness of her satirization and the limitations of the musical form. This presentation will show that the ironic approach creates a more memorable and broadly applicable critique of the War on Terror while remaining untethered to a specific era or movement, creating lasting cultural relevance that can be applied to many different conflicts throughout time and place.



Utilizing the Resilience Theory to Develop a Popular Music Curriculum in the Secondary Music Classroom

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Abstract (Posters)

Students who are deemed 'at-risk' oftentimes face prejudice within curricula that might see them for this 'risk', or life challenges rather than their incredible potential. By developing a curriculum that includes popular music, music teachers can tap into this potential, helping assist students who are in difficult circumstances to develop community-building skills and build resiliency by employing the Resiliency Theory framework. In this work, we will examine different popular music education methodologies including poetry/rap therapy, community partnerships, biography projects, and Garage Band, and the various ways they can be applied to the 'thriving' qualities that students need to develop for survival in challenging life circumstances. Resilience Theory puts great emphasis on the learner being in control of their education, the role of the community in trauma response, and developing an understanding that situations can be improved and that the venture is worth the cost (Thriving). Students come into our classroom with a wealth of knowledge, previous experiences, and views on the world, while concurrently bringing in trauma, situational turmoil, and strain. The role of music educators is to offer them real-life tools to be able to successfully navigate these challenges.



Conceptualizing the Cloth of the Desecrated Child: Textiles Associated with Chimú Mass Sacrifice in Huanchaco, North Coast of Peru.

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Abstract (Posters)

This study discusses broader questions surrounding the textile remains uncovered with the victims of the largest series of mass child sacrificial events on the North Coast of ancient Peru. Recent investigations are helping to understand Chimú sacrificial practices and the ideologies fueling their performance. In contrast, little has been done to contextualize the sacrificial garments within the overarching pantheon of Chimú weaving. To correct these breaks in scholarly thought, I have conducted in-depth visual analyses of twelve textiles uncovered with the child sacrificial victims buried at Pampa la Cruz, Huanchaco. This poster is focused on the results obtained after I recorded the construction techniques and denoted a plethora of other attributes, such as size, and material composition of the fabrics. These findings allow me to extrapolate information revolving around the weavers who created these textiles and their conceptualization of the sacrificial child. As a result, I propose three scenarios which could explain the role played by these textiles and how they could help to investigate the identity (gender, age, ethnicity, familial affiliation) of the children buried atop Pampa la Cruz.



Changes in style through time; An analysis of Salinar Pottery in the North coast of Peru

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Abstract (Posters)

The late Early Horizon (400-200 BCE), also known as the Salinar in the North Coast of Peru, was a prolific moment in Andean Prehistory since it was immediately after the influence of Chavin de Huantar sphere of interaction. The people of this period left behind vast amounts of pottery, many of which carry distinct designs and motifs that have never been properly studied. This poster presents a first systematic analysis of the various designs on ceramics found on Salinar occupational levels at residential and ceremonial sites in Huanchaco. This analysis yields a timeline of designs presented on Salinar pottery throughout this period in order to show the changes in design through time along with changes in frequency of design by the type of archaeological site (ceremonial or residential). These changes are reflecting functional, environmental, political, ritual, or cultural perspectives that the people of the Salinar period experienced. Overall, the distinctive white on red ceramic style of the Salinar period gives way to a distinctive timeline of change that can tell us more about the sociocultural aspects of this period and their experiences through the use of the painted, carved, applied, and sculpted designs placed on their pottery.



The Effect of Income on Anxiety During the COVID-19 Pandemic

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Abstract (Posters)

The COVID-19 pandemic affected everyone around the world, particularly raising anxiety rates. Nevertheless, the effects of anxiety varied based on household income. Lower-income has also historically been linked to increased rates of mental illness. The present empirical study investigates differences in anxiety across household income groups in the early months of the COVID-19 pandemic. Data got collected at a crucial time in 2020 before the vaccine was available to the public. Participants were recruited from the US with the Mechanical Turk (MTurk) platform to take an online survey. It included a validated screening tool for anxiety, the General Anxiety Disorder Seven (GAD-7), and demographic questions. The results indicated that different income groups had significantly different GAD-7 scores. Participants in the lowest annual household income group (less than 10- 39,999) experienced the most anxiety. Income groups above the lowest group had progressively lower anxiety scores as income increased. These results suggest the need for more affordable and available support for lower-income families and individuals. Further research is needed to outline the mechanism behind the association between income and anxiety.



Happiness on the Timeline: Investigating the Impact of Social Media Content Preference on Mental Well-Being among College Students

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Abstract (Posters)

With billions of users connecting and sharing content on sites like Facebook, Twitter, and Instagram, social media has ingrained itself into modern life. Social media content use and happiness, however, have a complicated and incompletely understood relationship. Social media may be a source of connection and support for users, according to some research, while others have found that excessive usage of the platform can make people feel lonely and depressed.

The type of content that people prefer to engage with on these platforms is one factor that may influence the relationship between social media use and happiness. People who primarily consume positive or uplifting content on social media, for example, report higher levels of happiness, whereas those who engage with more negative or controversial content may experience more negative emotions. As such, this study plans to use surveys within college-level students to investigate the significance.

Overall, the relationship between social media, happiness, and content preference is complex, and more research is needed to fully understand it. However, it is clear that how people use social media and the types of content they consume can have a significant impact on their mental health.



Whose fault is it? Externalizing Academic Responsibilities is associated with lower GPA

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Abstract (Posters)

A core tenet of Bandura's (1986) Social Cognitive Theory is that cognitive factors motivate human behavior. For instance, believing that earning high grades will result in a desirable job will motivate one to earn higher grades. Here, we suggest that externalizing the responsibility of one's college education are more likely to struggle academically.

As part of a larger study, college students (N = 396) from three universities reported their externalized academic responsibility (Chowning & Campbell, 2009), self-esteem (Rosenberg, 1985), narcissism (Gentile et al. 2013), and GPA. It was hypothesized that externalized academic responsibility would be negatively associated with GPA. In an exploratory follow-up analysis, we examined whether narcissism or self-esteem moderated this association.

There was a negative correlation between externalized academic responsibility and GPA ($r = -.37$, $p < .001$). Placing the burden of a successful education on others is associated with lower GPA. Follow-up analyses (Cohen et al. 2003) suggested that narcissism moderated this association. Specifically, students with high narcissism and high externalized responsibility had lower GPAs. Self-esteem did not moderate this association.

Applied to young adults in college, these findings align nicely with Bandura's idea that one's expectations will influence their behavior and success. Furthermore, it builds on these ideas by suggesting that personality characteristics, namely narcissism (but not self-esteem), moderate the effect. This gives researchers an avenue to explore: how do non-cognitive variables like personality impact the social-cognitive link?



Evaluation of Plant Growth in Amended Lunar Regolith Simulant

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Abstract (Posters)

Long-term lunar missions plan on utilizing in situ resource utilization as a method to reduce mission costs and prevent ecologically unsustainable practices. With humans returning to the moon's surface as soon as 2023, it is imperative we understand how to remediate lunar regolith into a viable substrate for sustainable agriculture. Generally, plants prefer slightly acidic, nutrient rich substrates; while lunar regolith is alkaline (pH 8-9), nutrient poor, and dusty. Dust is known to affect photosynthesis rates by preventing sun exposure, however the impact on growth is poorly understood. Additionally, research on extraterrestrial plant growth has focused on microgravity and cold environments, with little focus on remediating regolith or its impact on plants. This study focused on the evaluation of *Tagetes patula* in Exolith lab's Lunar Highland Simulant (LHS-1). LHS-1 was amended with various soil amendments commonly used on Earth and sieved for target particle size ranges to determine the minimum amendment needed for prolific plant growth. Amendments consisted of worm castings, sphagnum moss, and/or liquid fertilizers while particle size ranges were 0-100 μ m (dust), 101-400 μ m, 401-700 μ m, and 701-1000 μ m. Germination and root growth was consistent across all particle size ranges, except below 100 μ m, where no germination was observed. LHS-1 amended with moss had higher germination rates than when amended with castings, however, *T. patula* experienced observable deficiencies unless additionally amended with liquid fertilizers. Prolific growth was observed in LHS-1 amended with worm castings, however when combined with sphagnum moss, plant growth significantly decreased.



Pediatric OSCEs Within the Metaverse: A Virtual Reality Solution to the Inefficiencies in Modern Nursing Education

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Abstract (Posters)

The first year of an undergraduate nursing program historically culminates in a well-known examination, the Objective Structured Clinical Examination (OSCE). This examination requires nursing students to demonstrate, within a standardized medical simulation, the clinical and diagnostic skills they acquired over their first year of studies. To effectively perform these simulations, nursing departments commonly hire actors, who are trained to play the role of a patient for both the objective and subjective portions of the exam. Although this works in general, there exist a variety of simulation scenarios wherein such methodology is inapplicable, most notably, pediatrics. The goal of this project is to explore the usage of virtual reality as a means of simulating pediatric OSCEs. We developed an open-source, virtual-reality application designed for use on the Meta Quest 2. Within this application, students are immersed in a realistic and engaging simulation designed to model traditional well-visits as well as sick-patient visits. The simulation begins with the subjective portion of the exam, where the student converses with the AI parent and discusses the patient history of the infant. An objective exam then follows, with the student performing a comprehensive physical examination of the child. The application grades students on the correctness of the patient history as well as that of the physical examination. Finally, students are provided both formative and summative assessments, thereby allowing them to practice for the OSCE prior to the final examination.



Resilience and Mental Health in College Students

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Abstract (Posters)

Research suggests a moderate incidence of depression, anxiety, and especially stress among college students (Ramon-Arbues et al., 2020). It is reasonable to believe that these mental health outcomes might be inversely correlated with resilience, the ability to adapt to new challenges.

In this study, we hypothesize an inverse correlation between resilience (as measured by the self-reported BRS-6) and stress, anxiety, and depression (as measured by the DASS-21). In other words, college students who feel resilient will experience greater mental health and wellness.

To replicate previous research that suggests these effects in females only (Ahmed & Julius, 2015), biological sex differences will be examined. Few other studies have attempted to see whether these correlations are similar for both sexes.

Finally, we want to examine whether first-generation status is implicated in these associations. Alvarado et al. (2017) suggest that although first-generation students reveal higher levels of resilience than non-first-generation college students, they also show lower levels of emotional intelligence. The next logical question is, "is there an association between resilience and mental health for both first-generation and non-first-generation students?" Our exploratory hypothesis is that there will be an inverse correlation between resilience and stress, anxiety and depression amongst first-generation college students.

Our preliminary findings suggest an inverse relationship between resilience and depression, stress, and anxiety. This relationship also exists for both first-generation and non-first-generation students with no differences. However, our findings did not reveal a correlation between resilience and stress for males.



Going with the Flow: An AI Approach to Solving the Puzzle Game FlowFree

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Abstract (Posters)

Can we solve FlowFree? FlowFree, also known as Zig-Zag Numberlink, is a popular puzzle game where the player connects 'flows' on a board with the goal of finishing each connection, avoiding intersecting flows, and filling up the entire game board. We employed two methods for solving puzzles: A* search and boolean satisfiability (SAT). A* searched through a tree of board states, choosing between states one cell apart based on a heuristic that considered distance to a completed flow. The search tree was pruned with the help of several constraints of varying complexity to check for. Constraint extrapolation further allowed the framing of FlowFree as a constraint satisfaction problem (CSP), which allowed the solving of boards as SAT problems. Solving as a CSP involves the conversion of puzzles into SAT variables, indicating the truth value of possible flow directions and color at each individual cell, arranged into conjunctive normal form clauses representing the constraints, feeding to a SAT solver and subsequently decoded from a set of true variables to a solved puzzle. SAT showed significant speed improvement over A*, with the difference being more pronounced in larger puzzle sizes. Puzzles were collected from the FlowFree mobile app and converted using computer vision to text files; A GUI application was also created to allow inputting custom puzzles as well as partially solving a puzzle before solve time.



Triumph Through Trials

Andrew Ruby

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Abstract (Posters)

Some of the greatest artists in history have been men and women of suffering. For example, Langston Hughes became one of the greatest poets and influencers of the Harlem Renaissance in an era where African-Americans were looked down upon in society. Cases like this caused me to explore whether trials are necessary for an artist to produce works of significant importance.

To discover this, I've done research on the effects of personal struggle on creativity and conducted 15-minute interviews with fellow artists from different disciplines to understand how important tribulations were to the expression of their talent. I found that going through difficulties causes one to look for ways of escape. One's artistic talents are often one's outlet for expressing what one cannot express in a regular conversation. Although we may not always go through tough times, those painful moments help us to gain an appreciation for the times of joy and peace. Therefore, we can better comfort others through our vulnerability in our artistic disciplines.

As a result of this study, I expect to change the perspective of trials from one of gloom to one of joy. The fruit of that labor is a spoken word poem.



A qualitative study of barriers/facilitators to harm reduction program sustainability

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University of Central Florida, Orlando, USA

Abstract (Posters)

Introduction: The US is experiencing an ongoing opioid overdose crisis and increasing rates of injection-related HIV/AIDS. Harm reduction programs (HRPs) have responded to these issues by providing syringe services, education, and referrals to drug treatment and other services. Research shows the effectiveness of HRPs in reducing overdose and the HIV transmission, however little scholarship exists on the different factors that impact the sustainment of such important programs. In response, we sought to identify barriers and facilitators related to sustaining HRPs, including ongoing participant access, in the US.

Methods: We conducted 15 focus groups with a national convenience sample of 62 HRP leaders recruited through the National American Syringe Exchange Network. We analyzed the qualitative data using iterative categorization to identify themes related to barriers and facilitators of program sustainment.

Results: We identified the following themes that hinder or support HRP sustainability: funding, trust between HRPs and their participants, government policy, relationships with the local community, stigma, and physical availability of services. Notably, stigma was directly or indirectly related to all other themes.

Conclusions: Because stigma appeared related to all other sustainability themes, public health professionals and others seeking to ensure HRP sustainability could prioritize addressing drug use-related stigma.



Age and Emotion: The Effects of Defendant Age on Juror Emotionality

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Abstract (Posters)

Stereotypes jurors hold related to age could affect their feelings towards defendants and victims in murder trials. American adults feel pity and sympathy towards older people (Cuddy et al., 2005), which could influence their feelings toward different aged defendants and victims. 251 participants were recruited using SONA (74.7% female; Mage=19.98, SD=3.00). Participants read trial transcripts detailing the murder trial of a young (mid-20s) or older (early-70s) defendant and victim. Half read transcripts including stereotypical language relevant to defendant age (e.g., “feeble, 72-year-old” vs. “young, agile 25-year-old”). Participants were expected to express greater anger towards young-defendant and young-victim rather than older, with the young-defendant stereotype condition resulting in the greatest anger. Participants in the older-defendant stereotype condition were expected to express the greatest depression. For the young-defendant condition, jurors reported more defendant-oriented depression with stereotype absent ($M=7.21$, $SD=3.09$) vs. present ($M=6.16$, $SD=2.33$), $F(1,241)=4.01$, $p=.046$. For the older-defendant, stereotype presence didn’t affect defendant-oriented depression ($M_s=6.59$ and 6.99 , $SD_s=3.07$ and 2.69). Same findings were found when victim was young (stereotype mattered) vs. older (stereotype did not matter). Moreover, when stereotype was absent, jurors in the young (vs. older) defendant condition reported more victim-oriented depression ($M_s=10.12$ and 8.77 , $SD_s=3.66$ and 3.89), $F(1,241)=4.01$, $p=.046$. Finally, anger towards the victim was greater when defendant was young vs. older ($M_s=6.58$ and 5.77 , $SD_s=3.11$ and 2.43), $F(1,241)=5.25$, $p=.023$. Overall, these findings suggest that defendant and victim age influence jurors’ emotions, which could ultimately influence decision-making.



Using Geochemical Tracers to Differentiate Freshwater Inputs to a Coastal Estuary: Biscayne Bay, Florida

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Abstract (Posters)

Biscayne Bay is a crucial estuary for an array of marine life and eco-tourism. Historically, freshwater inputs came from groundwater discharge from the adjacent karst Biscayne aquifer. As urban development grew in south Florida, point-source inputs like canal water have been sources of freshwater discharge to the bay. The objective of this project was to identify the dominant freshwater inputs to the bay. To address this objective, the water chemistry of Biscayne Bay water was analyzed by collecting water samples from Deering Estate, Florida, adjacent to Biscayne Bay. Water sampling occurred twice a week, for twelve weeks (May to August) in two different sites of Deering Estate during the wet season. One site was an inland freshwater spring and the second site was on the western shore of Biscayne Bay. Prior to water sample collection, the salinity, temperature, and specific conductance of the sites were collected using a YSI 2030. The water samples were processed for cations and anions, and stable isotopes of oxygen and hydrogen as geochemical tracers to identify different sources of freshwater in the bay. The salinity values of the inland freshwater spring ranged from 24.2 to 0.3 ppt, and the second site ranged from 26.5 to 4.1 ppt. The results from the chemical analysis support that rain is the dominant freshwater input, followed by canal water, and then groundwater. Understanding freshwater inputs to this crucial estuary may provide insight for future restoration projects in this area and may be applicable to coastal estuaries worldwide.

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Metacognition and Cognitive Insight's Relationship to Hoarding Disorder, Anxiety, and OCD

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Abstract (Posters)

Hoarding disorder (HD) is a psychiatric condition that is attributed to having intense difficulty in parting with items which can lead to accumulation of clutter. Individuals with HD may have deficits in cognitive impairment and hindered abilities to do everyday tasks which can affect one's quality of life. Metacognition and Cognitive Insight refer to a person's ability to understand their thought processes and acknowledge that these processes may not always be entirely accurate. The present study investigates metacognition and cognitive insight and their relationship to HD, anxiety, and OCD. We hypothesize that individuals with higher reports of cognitive insight and metacognition will reflect less severity of symptoms across HD, anxiety and OCD. We examined the relationship between these variables through an online study of adult participants (N=2100) who were recruited from Amazon Mechanical Turk. Through a multiple linear regression analysis, we investigated the relationships between HD, anxiety, and OCD symptomatology and the Metacognition Questionnaire (MCQ) and the Beck Cognitive Insight Scale (BCIS). The preliminary results indicate that metacognition and cognitive insight is explained between 27% to 40% of the variance in HD, anxiety, and OCD. The results counter our hypothesis of an inverse relationship. We found that higher reports of metacognition and cognitive insight predict greater symptom severity of HD, anxiety, and OCD. These results suggest that an individual's thought processes are related to their symptomatology and highlight that awareness of one's own thought patterns may play a significant role in the severity of an individual's symptoms.



The Relationship between Incarceration Rates and New HIV Diagnoses in Florida Populations

Alex VanBennekom, Sarah Adolphe, Aadil Siddiqui, Abigail Deweese, Hana Tomik
University of Central Florida, Orlando, USA

Abstract (Posters)

Introduction: Current literature supports the theory that a correlation exists between the incarceration rates and new HIV diagnoses due to moderators such as sexual contact in prison settings, socioeconomic status, and injection drug use that are higher within incarcerated and formerly incarcerated populations.

Methods: This ecologic study was held to assess the correlation between incarceration rates and new HIV diagnoses at both the county and state level in Florida adults. To assess this relationship, data from FLHealthCharts was analyzed for correlations of both r and p values for incarceration rate and new HIV diagnoses across Florida counties in 2021 as well as at the state level over the past 8 years.

Results: Our findings revealed a strong, statistically significant, positive relationship between incarceration rates and new HIV diagnoses at the state level ($r=0.905, p=0.001$). Our results also identified the detrimental effect of prison gerrymandering on incarceration data at the county level in Florida.

Conclusions: As incarcerations rates in the state have increased, the rate of new HIV diagnoses has also increased. Prison gerrymandering, a faulty data reporting system still used by the state, does not accurately portray incarceration rates geographically, skewing any local research investigating relationships between incarceration rates and other variables.



Effects of Signage Antecedent Manipulations on Student Acquisition of Sexual Wellness Products

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Abstract (Posters)

Condoms, lubricants, oral barriers, and other sexual wellness products (SWPs) have the potential to decrease health risks (Grubb et al., 2020; Gutierrez et al., 2022) and increase pleasure for individuals that engage in sexual activity (Kennedy et al., 2022; Philpott et al., 2006). Despite ease of use and product availability, SWPs are often underutilized by many relevant populations including college youth (American College Health Association, 2019). The purpose of this protocol is to increase college student access and acquisition of SWPs by expanding upon previous behavior-analytic research examining antecedent manipulations and subsequent condom-taking.

Phase 1 will include an anonymous needs assessment survey that will be distributed to undergraduate students to collect information about SWP use, perceived SWP access, sexual behaviors, and personal identities. Phase 2 will involve analyzing the data from phase 1 to inform an antecedent manipulation intervention that aims to increase rates of SWP acquisition by students and people in the community. A concurrent multiple baseline design across sites will be used to assess whether the signage content at locations that provide access to free SWPs impacts rates of acquisition. A reversal design will also be employed that varies signage between three conditions. Condition A will include a general SWP product label, condition B will include signage relating to sexual health/pregnancy risks, and condition C will include identity and pleasure focused signage. Through gaining a better understanding of how antecedents (i.e., signage content) impact SWP acquisition rates, we can progress towards increasing their use among community populations.



Designing of Experiment to Analyze and Study the Physiochemical Properties of Honey

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Abstract (Posters)

As interest in STEM-related fields increases, more research opportunities should be given to undergraduate students pursuing a future in STEM careers. However, there need to be more opportunities for students to perform research under the guidance of research faculty. One proposed method for introducing undergraduates to research was to implement the idea of research in the preexisting laboratory coursework. In the past, laboratory coursework was based on the “cookbook” method of instruction. The instructor would give students a set of materials and steps to follow to complete the experiment. This method is ineffective for learning and inaccurate to situations that occur in STEM careers. In short, they do not fully encapsulate how STEM careers function. However, the proposed course-based undergraduate research experiences (CUREs) plan to introduce research into the course to fully immerse students in research-like experiences. Like undergraduate research programs, those participating in CUREs attempt to solve research-based questions. This entails the design of their own experiments, collecting and analyzing their data, and potentially publishing their peer-reviewed research journals. For this experiment, we researched the physical and chemical properties of honey. This poster contains various projects: Lugol’s, Benedict’s, Tollen’s, Seliwanoff’s, Bial’s, Biuret’s, and Deflagration.



Dimensions of Trust and Healthcare Seeking Behaviors in Social Media

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Abstract (Posters)

Social Media is extremely prevalent amongst college students, becoming a common source of medical information as it allows for easily accessible mass consumption of information. Individual's intent to use social media for healthcare-information seeking is linked to whether they find the information useful and trustworthy. However, trust is a multidimensional construct and each dimension of trust may have a differential impact on social media use. Aspects of trust are benevolence (no intent to harm), integrity (provides honest information), and competence (provides desired needs). The present study examined social media use in a sample of 183 undergraduate students (64.5% female) in the context of healthcare-information seeking across social media platforms (i.e., Facebook, Twitter, Instagram, and TikTok) and their trust and perceived usefulness of information. In our sample, an individual's trust in social media was not a significant predictor of social media use ($\beta = -0.11$, $p = .42$), but perceived usefulness of social media health-information was ($\beta = 0.98$, $p < .001$). When examining individual dimensions of trust, results show that a person's perceived integrity ($\beta = -0.02$, $p = .82$) and competence ($\beta = 0.11$, $p = .12$) of social media healthcare-information does not predict use, while the perceived benevolence ($\beta = 0.21$, $p < .001$) is a significant predictor of use. The results suggest trust and social media use for healthcare-information seeking is complex and warrants further exploration. Additionally, usefulness of the social media healthcare-information is much more important than trust as a predictor of use.



Drosophila Model for Potential Plasticizer Induced Hyperactivity

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Abstract (Posters)

Plasticizing additives such as phthalates, are known to cause disruptions in human nervous systems linked to neurological disorders, thus with the Drosophila activity monitoring (DAM) system test can be conducted to consider whether the flies are exhibiting hyperactivity (Hlisníková et al., 2021). Drosophila is a useful model for exposure of metabolic compounds followed by general and specific assays of their effects. Our experiments propose a link between exposure to phthalates and hyperactivity between humans that can be investigated with flies as a model for testing hyperactivity (Praveena et al., 2020). The link that is proposed is a cross-sectional study that collected urine samples of children and then scored kids based on attention-deficit/hyperactivity disorder (ADHD) (Kim et al., 2009). The DAM system is a method in which flies are individually monitored for activity during the day and night to notice any differences in general activity, locomotion, and circadian rhythms. The general activities of the flies would be examined alongside a baseline of Drosophila activity, alongside flies induced with glucose to measure any differences in hyperactivity. The addition of glucose is to give a baseline of what hyperactive flies will look like in their sleep cycle and movements in the DAM system We hypothesize a significant increase in hyperactivity in phthalate-exposed flies over both high-glucose and normal flies because phthalates are disrupters in the nervous system, thus may cause signs of hyperactivity when administered to the flies.



Projections for Rubin Observatory Legacy Survey of Space and Time (LSST) Telescope's detection of new Milky Way satellite dwarf galaxies

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Abstract (Posters)

The annihilation of weakly interacting particles (WIMPs) produces energetic particles including gamma rays. Dwarf galaxies are a great target for indirect dark matter detection since they have high concentrations of dark matter and low astrophysical background. In this project we will predict the amount of satellite dwarf galaxies in our Milky Way that the Rubin Observatory Legacy Survey of Space and Time (LSST) telescope might detect for indirect dark matter detection. This will be achieved by modeling the telescope's survey using a Monte Carlo. To perform an accurate modeling, we will first simulate the discoveries made by the Sloan Digital Sky Survey (SDSS), Dark Energy Survey (DES) and Pan-STARRS1 (PS1). The dwarf galaxies simulated will then be used to see their impact on dark matter detection and their constraints.



Analyzing the Relationship Between the Quality of Life and Race of Lung Cancer Survivors

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Abstract (Posters)

Purpose: The relationship between racial disparities and the health-related quality of life (HRQoL) of lung cancer patients is not well understood. The purpose of this study was to quantify the overall HRQoL of lung cancer patients and compare differences in HRQoL among racial groups in the United States.

Methods: Utilizing data from the Behavioral Risk Factors Surveillance System (BRFSS), a population-based national cross-sectional study conducted by the Centers for Disease Control and Prevention. The BRFSS is conducted annually in all 50 states and collects information on demographics, health behaviors, health-related experiences, health conditions, use of medications, and use of preventive services. Three HRQoL scores (unhealthy days per month, frequent mental distress, fair/poor health) were generated using the four Healthy Days Measures questions that have been validated as HRQoL measures by previous research.

Results: We found that the HRQoL measures of the Non-Hispanic Black group were not statistically different from those of the Non-Hispanic White group for any of the three measures examined. However, the Hispanic group (OR = 3.14, 95%CI=1.40 – 7.02) and Other races (OR = 1.85, 95%CI=1.04-3.27) had significantly higher odds of frequent mental distress when compared to the Non-Hispanic White group.

Conclusions: Quality of life among lung cancer patients is a heavily under-researched area of the cancer survivorship experience. Rarer, is data examining specifically how racial disparities affect the quality of life of lung cancer survivors. More research is needed to examine this important topic to create a foundation for more beneficial lung cancer interventions.



Enzymatic Degradation in Silk Sponges for Biomedical Applications

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Abstract (Posters)

Silk sponges, made from silk fibroin proteins isolated from *Bombyx mori* cocoons, are useful biomaterials for tissue engineering due to their tunable mechanics, cytocompatibility, and controllable biodegradability. Silk sponges degrade enzymatically *in vivo* and the addition of bioactive components can encourage cell proliferation, migration, and infiltration. However, we do not understand how to predict the rates of scaffold degradation or cell infiltration *in vivo*.¹ Thus, we have two objectives: 1) to evaluate enzymatic degradation of silk sponges in cell-free systems and 2) to develop methods for assessment of degradation by polarized macrophage-like cells (RAW264.7 cells).

First, we found that the experimental design had an impact on the degradation timeline and hypothesize that this is due to the negative influence of the drying and weighing steps in the cell-free experiments. Using a discrete sampling method, the degradation data were fit with Michaelis-Menten kinetics, and parameters $K_M = 25 \text{ mg/ml}$ and $k_{cat} = 66.1 \text{ mg}/(U \cdot \text{day})$ were found. Second, we analyzed cultured and polarized (via small molecule stimulation) macrophage-like cells (RAW 264.7), which are commonly used for the analysis of immune responses and cell-material interactions. For our assessments, we developed a protocol to analyze antibody-stained cells in fluorescence microscopy images using CellProfiler[®]. The next steps include quantifying the production of enzymes by polarized cells for predictions of degradation rates using the Michaelis-Menten model parameters determined from cell-free studies to predict silk scaffold degradation caused by these cells.



The Use of Exogenous ACRP30 as a Promising Amelioratory Compound Regarding Insulin Resistance and Type II Diabetes Mellitus

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Abstract (Posters)

As numerous bodies of research have characterized the adipocytokine adiponectin (ACRP30) as an anti-diabetic compound, this work serves as an analysis to partly elucidate the potential usage of supplementary adiponectin as a therapeutic compound in the treatment of type II diabetes mellitus. In this work, a meta-analysis was conducted to centralize large amounts of data on adiponectin's insulin sensitizing characteristics in conjunction with like-minded studies utilizing metformin treatment as the diabetic standard of care. Upon comparison of fasting glucose, fasting insulin, and glucose tolerance test area under the curve reduction percentages, it is quite clear that ACRP30 has significant insulin enhancing properties in mouse models rivaling SOC metformin. Yet, inconsistent dosing comparisons in this analysis, the unknowns of chronic hyperadiponectinemia in humans, as well as variations in age of human diabetic patients warrant further standardized research to suggest that adiponectin supplementation can rival that of modern-day standard of care for type II diabetes mellitus.



Investigating *Eisenia fetida* Survival in High Fidelity Lunar and Martian Regolith Vermiculture

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Abstract (Posters)

For long term habitation of a lunar and martian base, it is necessary to utilize in situ resources to develop economic and ecologically sustainable agriculture. However, in situ regolith is dusty, nutrient-poor, and contains phytotoxic minerals. To grow crops in these environments, the regolith needs to be heavily amended for nutrients, texture, and remediated to remove phytotoxins. Worms are commonly used for soil enrichment on Earth to sequester heavy metals, increase nutrient availability, aerate soils, improve soil texture, and therefore have great potential for in situ regolith remediation. Additionally, worms consume animal and food waste to produce worm castings, further decreasing Earth resources necessary and increasing the bioavailability of nutrients in the compost. This research seeks to refine our understanding of *Eisenia fetida* (*E. fetida*) fitness, casting quality, and efficacy of *E. fetida* to remediate lunar highland (LHS-1) and martian global (MGS-1) regolith simulants. In a preliminary study, fifty worms were added into a mixture of regolith with composted horse manure, monitoring moisture levels and surface feeding weekly. After 12 weeks, *E. fetida* in LHS-1 regolith thrived, reproducing every ~60 days. Reproduction in the desert-sand (control) vermicompost transpired shortly after. However, very few worms survived in the martian regolith. In the proposed work, we will further analyze the quality of fertilized regolith and increase our understanding of vermiremediation of nutrient-deprived lunar and martian soil, which hasn't been studied in great abundance. In particular, we will investigate if the difference in survival was due to the salt concentration of MGS-1.



The Constituent Counting Rule in Meson-Baryon Photoproduction

Alejandra Granados, Lei Guo, Brian Raue, Christopher Leon, Trevor Reed, Frank Vera
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Abstract (Posters)

In 1975, S.J. Brodsky and G.R. Farrar proposed the dimensional scaling laws as an approach to understand the energy dependence of high energy scattering processes at a fixed center-of-momentum angle. The Constituent Counting Rule (CCR), based on perturbative Quantum Chromodynamics (pQCD) framework, predicts the scaling behavior of the differential cross-sections of scattering processes at high energies: $d\sigma/dt=f(\cos\theta)/s^N$

Where s and t are Mandelstam variables, θ is the scattering angle, and $N=n-2$, in which n is the number of constituents fields in the reaction. On meson-baryon photoproduction, N is expected to be 7. Nonetheless, various studies have shown that it does not hold true for all reactions at all kinematic regimes.

We present a systematic study of pseudoscalar mesons photoproduction reactions in the 3-8 GeV² s -range. At the same time, we study the evolution of N with respect to the transverse momentum of the produced particles.

We investigate the energy dependence of pseudoscalar-meson photoproduction by analyzing previously published data from Jefferson Lab's CLAS experiment. The different production mechanisms of the reactions and the energy range of the data may arise differences in results. We are collaborating with theorists to better understand the photoproduction of the pseudoscalar-mesons.

This research is supported by the Department of Energy - Office of Science award DE-SC0022007



The Effect of Water Reducing Admixtures and Construction Variability in Concrete Containing Recycled Concrete Aggregate (RCA)

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Abstract (Posters)

This research is aimed to evaluate the feasibility of using recycled concrete aggregate (RCA) in fresh concrete. An analysis was also conducted to determine the quantities of RCA, admixture, and curing. To meet these goals, a 27.6 MPa mix was selected using only virgin aggregate. The mix was designed with various varieties of RCA, Superplasticizer (SuperP), and Water Reducing Admixtures (WRA) were also used. All the mixes were exposed to the actual Florida summer temperature (uncured) and cured by the ponding method. Care was taken to maintain the slump to 135 millimeters and the compressive strength of the mixtures within 30 to 35 MPa. Doing so provides an effective method to adequately assess the true benefits of the mixes.

From the analysis, it was found that the mix with complete RCA never reached the 27.6 MPa target when it was uncured. The highest compressive strength recorded was 25.5 MPa at 28 days, even at the highest cement content attempted. The admixtures had significant effects on the mixes. When the admixtures were introduced, all the mixtures reached the target strength. However, high cement content was recorded, especially for the mixture with full RCA. To reach the target strength of this mix, 642.7 Kg/m³ of cement was used in that mix compared to 338.3 Kg/m³ of cement in the virgin mix. This was an increase of 90% in cement content. Similarly, curing treatment had positive effects on the mixtures, allowing many to reach the target compressive strength.



How Differing Matrix Mechanics Affects YAP Intensity in Drug-Resistant Non-Small Cell Lung Cancer Cells.

Heyang Wang, Miao Huang, Daniel Parra
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Abstract (Posters)

Yes-associated protein (YAP) is a protein that regulates cell division and the cell cycle. This is especially important in regulating the proliferation of cancer cells, specifically non-small cell lung cancer. PC9 cell lines are not typically mechanosensitive to mechanical stimuli, as indicated by a homogeneous distribution of YAP in the nucleus and cytoplasm. However, drug-resistant PC9 cells are mechanosensitive. We observe the expression of YAP in the nucleus versus the cytoplasm of drug-resistant cells - the YAP N/C ratio - across different types of substrate stiffnesses. In drug-resistant PC9 cells, the YAP N/C ratio is higher on stiffer substrates than that on softer substrates.



Synthesis of vanadium alkylidenes for productive and unproductive olefin metathesis

Celine Gomez, Konstantin Bukhryakov
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Abstract (Posters)

Olefin metathesis (OM) is a powerful and versatile method to form C-C double bonds. The three major categories of this process are ring-opening metathesis (ROM), ring-closing metathesis (RCM), and cross-metathesis (CM). While this process is taking place, degenerate results can occur, meaning that the starting material is regenerated as a product of the metathesis reaction. In industrial settings, olefin metathesis is utilized to produce propylene and linear α -olefins. Unproductive metathesis has applications in isotope labeling, useful for the pharmaceutical industry. The most used and well-known catalysts for metathesis contain rare transition metals Ru, Mo, and W. Vanadium is more abundant in the earth's crust, which makes it a cost-effective and greener alternative.

Our lab recently synthesized complexes with varying imido groups and neutral ligands that are active to RCM of several diacetylene compounds containing different functional groups. However, synthesized catalysts decompose in the presence of ethylene which leads to low productivity in RCM involving terminal dienes. To improve stability, iMes-NHC (N-heterocyclic carbene) was used to replace phosphine as a neutral ligand. NHC is a strong σ -bond donor and a bulky size that hinders degradation. The new catalyst containing NHC ligands has increased activity and has achieved the highest TON yet. Our group has recently discovered vanadium oxo catalysts that are reactive toward unproductive olefin metathesis reactions, which we are exploring currently. My research focuses on synthesizing V alkylidenes to improve catalysts' productivity for RCM and unproductive metathesis.



Social Isolations impact Mediating the Relationship between Dysmenorrhea and Depression

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Abstract (Posters)

Dysmenorrhea is a common symptom of menstrual periods that is characterized by sharp, frequent cramps before, during, and after an individual's menstrual cycle. Individuals who experience dysmenorrhea are impacted through their quality of life, social relationships, and productivity. Research suggests that women affected by dysmenorrhea have had pains that led to negative consequences in an individual's mental health such as an increased risk for depression. Women who experience dysmenorrhea can encounter limitations in activity which can restrict their social development by creating barriers in their ability to engage in social interactions with peers. The decrease of social interaction can result in individuals feeling socially isolated from their surroundings which can alter their mental health status. Social isolation is defined as the lack of social relationships with others or deep feelings of disconnection from social circles. Social isolation can create a sense of separation from society where an individual begins to feel alienated. Individuals who face dysmenorrhea are detached from their surroundings which causes them to be isolated during their pain, putting individuals at risk for depressive disorders. Dysmenorrhea can limit the amount of interactions a woman has with society via physiological effects on the individual leading them to feelings of disconnect. The current framework suggests that women who experience dysmenorrhea face social isolation which can serve as the mediator for depressive disorders. While other factors may be at play, the proposal seeks to focus on social isolation as prior research highlights the negative social impacts of dysmenorrhea.



Enhancing Composite Resin Sealant Efficiency on Typodonts Using Biosilica from Diatoms.

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¹Southeastern University, Lakeland, USA. ²Penn State University, University Park, PA, USA

Abstract (Posters)

Dental caries is the most common disease worldwide, affecting about 34% of the global population. As a preventative approach against caries, dental sealants are commonly applied on the most susceptible molars. Resin-based sealants are widely used because of their affordability but glass ionomer sealants although pricey are reportedly more durable. Diatoms are unicellular algae encased in porous glass cell walls called frustules rendering a good potential additive to resin-based sealant, hence the purpose of this study. This research aimed to measure the difference in the degree of attrition on typodonts treated with frustule-enhanced sealant, as well as determine the most reliable method in carrying out the measurement process. Fifteen typodonts were grouped into five treatment conditions in three replicates: nothing added, + acid, + sealant, acid + sealant (Control), and acid + frustule-enhanced sealant (Experimental). To measure attrition on typodonts, digital images were taken using a camera set-up in similar settings for all treatment groups while the volume displacement method was used using a graduated beaker and deionized water before and after experimentation. Results from direct measurement by image analysis showed very low attrition in typodonts with frustule-enhanced sealant compared to all the control treatments while the volume displacement measurements were highly variable and unreliable. It was therefore inferred that the addition of diatom frustules enhanced the efficiency of resin-based sealant and image analysis is a better measure of attrition. Further studies on the subject are recommended involving animals or human subjects.



Improving the Wittig Reaction Through Solid Support Synthesis to Create a Teaching Lab

Katharine Wall, Deborah Bromfield
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Abstract (Posters)

The goal of Green Chemistry is to reduce the human and environmental impacts of chemical reactions by designing more sustainable reactions. The twelve principles provide a foundation of ways to improve the sustainability of reactions through the improvement of yield and the reduction of the reaction's overall toxicity. One such reaction that could be improved through the use of Green Chemistry is the Wittig Reaction. The Wittig Reaction is a chemical reaction used to convert an aldehyde or ketone to an alkene; the reaction is carried out using a Wittig Reagent, triphenyl phosphonium ylide. Although the reaction is successful in producing an alkene, the yield is low due to the reaction generating byproducts, mainly triphenylphosphine oxide. The focus of this study is to determine if the use of solid support synthesis can be used to remove the byproducts of the reaction, thus improving the green chemistry of the reaction. Solid support synthesis employs the use of solid support material, resin beads, to covalently link the desired molecule to the bead. In our study, solid support will be used to remove the byproduct of the reaction through the process of washing. If the use of solid support synthesis is proven to be beneficial in removing our byproduct, the study will expand to create a teaching lab for Organic Chemistry II students. The lab will focus on demonstrating ways to use polymers and will create a bridge between Organic II material and material presented in Biochemistry and Medicinal Chemistry.



Connections through a different Lens: A preliminary analysis of art-therapy interventions and prison populations.

Bressia Borja

University of South Florida, Tampa, USA

Abstract (Posters)

The poster being presented is a formal literature review of how art-therapy interventions similar to the Connections program, a free mental health art-engagement program situated at the Tampa Museum of Art, may be beneficial to individuals such as the prison population and formerly incarcerated individuals as a reform effort. This review was conducted to provide a starting point for any future outreach programs that might consider working with a prison population, as well as a possible expansion of the Connections programs to those who are behind bars or who have a history of being incarcerated. This paper provides a meta-analysis of the literature that touches upon mental health, the benefits of art-therapy for individuals who have been diagnosed, and how such benefits might help with psychological health implications of incarcerated individuals. My hope is that the conducted research can provide a stepping stone for community programs to see the benefits in extending its community to those who are, or have been, incarcerated and provide a foundation for such programs to flourish.



MicroRNA's and their potential role in canine congestive heart failure, secondary to Myxomatous Mitral Valve Degeneration

Carol Mitchell¹, Amy Bohan²

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Abstract (Posters)

Research is essential because it allows us to grow and learn to benefit and advance our future and life expectancy. Using biomarkers and technological innovations, we can answer unique research questions that have been a mystery until now.

Objective: In our focus regarding microRNA, single-stranded, small non-coding RNAs, we aim to understand miRNA's role and functional importance concerning congestive heart failure (CHF) and myxomatous mitral valve degeneration (MMVD). Characterizing expression profiles of circulating microRNAs via genome-wide sequencing for dogs with CHF secondary to MMVD.

Animals: 8 healthy client-owned dogs and eight middle age-matched client-owned dogs with CHF secondary to MMVD.

Procedures: Blood samples were collected before administering cardiac medications for the management of CHF. Isolated microRNAs from plasma were classified into microRNA libraries and subjected to next-generation sequencing (NGS) for genome-wide sequencing analysis and quantification of circulating microRNAs. Quantitative reverse transcription PCR (qRT-PCR) assays were used to validate expression profiles of differentially expressed circulating microRNAs identified from NGS analysis of dogs with CHF.

Results: Pending

Conclusion and Clinical Relevance: Awaiting data indicating the patterns of microRNA expression are distinctive and denote molecular biomarkers with CHF in dogs with MMV.



Predicting Pediatric Subsequent Organ Failure Through Admission Values: A Retrospective Chart Review

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Abstract (Posters)

While several screening tools exist for predicting mortality in pediatric patients, there is a lack of tools predicting subsequent organ failure. In this retrospective chart review, we aimed to determine if acute kidney injury can predict subsequent organ failure in critically ill pediatric patients and to compare values such as BUN/Cr values and ratios to determine which admission values are most predictive of failure. The Sequential Organ Failure Assessment (SOFA) score was selected to quantify organ dysfunction in the Sepsis-3, and the pSOFA is age-adjusted. Providers also use tools such as Pediatric Logistic Organ Dysfunction (PELOD) and Pediatric Multiple Organ Dysfunction Score (PMODS). While these tools are accurate in providing information about mortality, they do not predict specific organ failure. Providers observe a lower mortality rate in pediatric populations, so providers would benefit from a tool focused on organ failure. Preliminary literature review showed that AKI and specific biomarkers were strong predictors of organ failure and certain admission values (BUN, Cr, and fluid inputs/outputs) were also significantly associated with organ failure. We aim to develop a predictive model that will identify pediatric patients most at risk of multi-organ failure to create a guide for clinical decision-making. We hypothesize that AKI biomarkers and positive fluid balance may serve as robust tools for further organ failure and correlate to pulmonary and cardiac dysfunction. Our analysis supports the need to broaden the understanding of organ failure in pediatric patients; through mortality-based screenings, interventions, prediction models, and subsequent organ failure protocols.



“La Bella Vita- Rediscovering Community in a Post-Pandemic World”

Erin Byrnes, Abigail Neff

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Abstract (Posters)

Following the 2020 COVID-19 pandemic, many students continue to struggle with engagement outside of online activity and the classroom, returning to pandemic comfort zones. In a smaller university community, such as Jacksonville University, and across a variety of majors, students self-selected to participate in a five-week study abroad program during the summer of 2022 on location in Southern Italy. The purpose of this video project is to creatively share undergraduate student stories about how participation in the Communication, Culture, and Amalfi Coast program reignited student participation through engaged learning, while fostering a sense of community among the group.



Molecular and Behavioral Responses to Tiafenacil, a new PPO-inhibiting Herbicide, in Zebrafish (*Danio rerio*) Embryos and Larvae

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Abstract (Posters)

Tiafenacil is a newly registered contact herbicide within the pyrimidinedione chemical family classified as a protoporphyrinogen IX oxidase (PPO) inhibitor. Studies are lacking that investigate the potential for sub-lethal effects of PPO-inhibitors in aquatic species. As such, we conducted a series of toxicity assays using tiafenacil in zebrafish and measured molecular, biochemical, and behavioral endpoints in embryonic and larval fish. We hypothesized that tiafenacil induces apoptosis, oxidative stress, and behavioral toxicity in zebrafish. Embryos and larvae were exposed to tiafenacil at concentrations ranging from 0.1 µg/L up to 10 mg/L depending on the assay for 7-days post-fertilization. Decreased survival in about 50% of the population were noted at exposure concentrations >1 mg/L. This coincided with an increase in reactive oxygen species in larvae treated with 10 µg/L. Oxygen consumption rates of zebrafish were not affected by tiafenacil, nor did we detect differences in apoptotic events in larvae (acridine orange). We also measured eighteen transcripts related to oxidative stress and mitochondrial complexes I through V in larval fish but did not detect any change in steady state transcript abundance. Hypoactivity was noted in the light-dark preference test in larvae exposed to 100 µg/L. These data contribute to risk assessment evaluations for a new class of herbicide and suggest the presence of abnormal ROS induction and behavioral abnormalities in zebrafish exposed to tiafenacil.



Watching To Learn: Implicit Learning of Motor Behavior Through Observation in Middle-School Students

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Abstract (Posters)

There is a disagreement in the neuropsychological literature regarding the nature of observational learning, strictly without a motor component. While some studies claim explicit influences are needed in order for learning to occur, others argue that they are not. The current student aims at understanding this gap, in particular emphasizing the observation aspect, since there is a limited number of research on this component. An experiment was conducted to measure both the short- and long-term of this effect using a neutral parameter procedure among two groups and a control. It was found that there was a significant effect of implicit learning. These findings are analyzed in a behavioral aspect and taken into consideration for limitations, implications and future research.



The association between testicular cancer symptom recognition and stage of diagnosis

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Abstract (Posters)

There is a need to further explore the relationship between atypical symptom reporting and stage diagnosis to help develop a clearer-defined list of possible testicular cancer (TC) symptoms that could assist physicians to diagnose the disease earlier. A cross-sectional study was employed to explore possible associations between TC symptom presentation and stage of diagnosis. An original 40-item survey was distributed among TC survivors to determine the potential impact of several risk factors, experiences, and behaviors upon diagnosis. This analysis aimed to explore how certain patient-driven experiences (e.g., symptoms, perceptions, behaviors, etc.) could serve as catalysts for seeking medical care for testicular health concerns. Experiencing hot flashes or having no symptoms had a positive association with later-stage diagnosis while a change in shape had a significant negative association with later-stage diagnosis. The concern around uncommon/atypical symptoms is that they are indistinct and do not serve as clear signs that TC is present. However, perhaps in tandem with other more overt symptoms, their discovery can serve in a more confirmatory role for a suspect case. Further, if observed with other uncommonly reported symptoms, these uncommon symptoms could provide another pathway in the TC diagnostic process.



Parasocial Relationships As a Coping Mechanism For Individuals With Social Phobia

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Abstract (Posters)

Social phobia, otherwise known as social anxiety disorder (SAD), is defined by the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5) as a persistent irrational fear occurring for one or more specific social situations in which individuals may face scrutiny or embarrassment. Individuals with higher levels of SAD tend to use social media much more often. Social media allows people to regularly interact with people without the actual physical interaction, which is easier for individuals with SAD. By spending large amounts of time on social media platforms (YouTube, Reddit, Instagram, Twitter, etc.), users are likely creating parasocial relationships (i.e., one-sided relationships with a person(s) that they do not personally know ranging from celebrities to small influencers). Parasocial relationships may allow individuals with SAD to feel like they are less isolated and have a sense of belonging in the online world acting as a coping mechanism. The coping mechanism acts as individuals with SAD are emotionally connected with another social media user, and feel less anxiety when interacting with them. When a person feels safe and comfortable with their parasocial friend, they may feel as if they are approaching regular social situations resulting in more social media usage. The present hypothesis is that parasocial relationships will act as a moderator for the relationship between SAD and social media usage. It is important to understand the true connection behind these relationships, as SAD is a growing disorder that largely affects people that interact with social media.



Design of a CRISPR/CAS9 Therapy to Target a 4 Base Pair Insertion in Tay-Sachs Disease

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Abstract (Posters)

Tay-Sachs disease is a rare autosomal recessive disorder caused from one of numerous mutations in the genome. It causes neuronal death from a buildup of GM2 gangliosides due to a loss of function in lysosomal enzyme regulation. There are different variations that are accompanied by different symptoms depending on the time of manifestation in a patient's life, however it is most manifested in infants. The result of manifestation at such a young age is neurodegeneration and death. Most treatments available to those affected by Tay-Sachs disease only targets symptoms. Palliative care is necessary for a disease of this severity to decrease suffering, but a treatment is necessary to slow or stop neurodegeneration and the progression of it. The development of the CRISPR-/Cas9 and expansion of its applications have the potential capabilities to target neurodegeneration in diseases like Tay-Sachs by repairing a loss of function mechanism. Cas9 Nickase followed by homology directed repair is the specific method chosen due to the its high efficacy of it and less reduced liability to react with off-target areas of the genome. If successful, this method could prove valuable to those effected by Tay-Sachs disease in any age range.



Potential Antiviral Target Against SARS-CoV2 Present in the Spike Protein.

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Abstract (Posters)

The COVID-19 pandemic onset by the rapid emergence of SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) sparked a global interest in the development of pharmaceuticals for coronavirus treatment. This study focused on the investigation of the SARS-CoV-2 Spike glycoprotein to reveal any broadly neutralizing anti-viral target pockets that would be effective against current and future coronaviruses including the SARS-CoV-2 variants. The Basic Local Alignment Search Tool was used to identify Spike sequences for different coronaviruses for which a multiple sequence alignment (MSA) was made. The MSA was used to construct a phylogenetic tree to visualize the evolutionary relationships of the Spike sequences. Results demonstrated that Spike had low conservation. High conservation is important for medications to successfully bind to the virus on evolutionary timescales. PockDrug was used to identify potential binding sites (pockets) in the protein along with the respective pocket's "druggability" scores. All pockets had low (<0.5) scores but were still investigated. PyMol was used to visualize the pockets in 3D and to color the Spike protein by conservation. The pockets had low druggability and low conservation indicating that they are most likely non-viable pockets. No post translational modifications (PTM) were found within the two pockets. While these analyses indicate there is low viability for antiviral drug targeting within the Spike protein, the absence of PTMs in the pockets of an otherwise highly glycosylated and phosphorylated protein would be beneficial towards any potential targets.

KEYWORDS: COVID-19, SARS-CoV-2, Corona Virus, Spike, Glycoprotein, Glycosylation, Phosphorylation, Drug Pockets.



Social buffering of fear in a mouse model of autism spectrum disorder.

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Abstract (Posters)

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impaired social interactions and repetitive patterns of behaviors, symptoms which manifest differently among individuals. This is due to ASD being caused by a complex interaction of genetic and environmental factors. Although ASD is not caused by a single factor, various risk genes have been identified that are associated with particular phenotypes. One of these genes is the *Phosphatase and tensin homolog (PTEN)* gene, which is involved in many important cellular processes that affect cell division and brain growth. Macrocephaly is a symptom displayed in approximately 20% of individuals with autism, and in this same population subset, mutations in *PTEN* occur at a greater frequency than in the general population. A mouse model of ASD associated with *PTEN* mutations (*Pten* haploinsufficient mice) displays deficits in social approach and sensorimotor behaviors; however, the phenomenon of social buffering has not been yet studied in this model. Social buffering is a phenomenon in which the presence of a conspecific diminishes the negative effects of stressors. The objective of this project is to identify if *Pten* haploinsufficient mice experience social buffering by measuring freezing time compared to wild-type mice. Based on social interaction deficits displayed by *Pten* haploinsufficient mice, we hypothesize that these animals will be refractory to the effects of social buffering. Testing this hypothesis is the goal of the project, which we anticipate will lead to a deeper understanding of social behavior in a model of autism and macrocephaly caused by *PTEN* mutations.



Educational Missteps Schools Commit Regarding Hispanic/Latinx Students

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Abstract (Posters)

Education attainment is important for a number of reasons; for example, it's associated with current and future well-being (Ryan et al., 2017) and subsequent economic opportunities (Darling et al., 2018). However, research has consistently shown that Hispanic students underperform academically, particularly compared to white students (Schneider et al., 2006). More research is needed to understand why Hispanic students struggle academically, particularly in high school, to ensure that Hispanic adolescents improve their developmental potential. This qualitative study will help address this concern by asking Hispanic college students about their experiences in high school to identify what resources helped them academically and what resources they wish they had that could have helped them perform academically. Ten Hispanic college students completed semi-structured individual interviews over Zoom; some example questions were, "What resources would you wish you had in high school to assist your educational experience?" Multiple participants emphasized the utility of parental involvement and school administrators and faculty with whom they felt a sense of identification. Participants also reported that a lack of financial resources limited their ability to pursue additional college preparation, as well as a lack of confidence in guidance counselors caused students to not feel comfortable requesting additional assistance. One suggestion for schools would be fostering an open dialogue between faculty and students about what it is that students need in order to be successful beyond academia. Further suggestions will be provided to school districts regarding what improvements could be made to support Hispanic/Latinx students.



The Aquaculture of Sponges--Coral Reef Superheroes--in a Closed System by Remi Ventura, Bobbie Renfro

Remi Ventura, Bobbie Renfro

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Abstract (Posters)

Sponges have numerous responsibilities in coral reef ecosystems that support the survival and function of corals. Sponges provide structural support to reef corals improving their survival and assisting with coral reef regeneration following physical damage. Despite their importance to the maintenance of coral reef ecosystems, sponges are poorly understood in part because they are difficult to maintain in closed aquaculture systems used in many laboratory settings. The research conducted herein will improve our understanding of an integral part of closed-system sponge cultivation: proper food distribution. The effects of two different quantities of food on the growth and survival of the sponge, *Axinella pomponiae*, were tested in this study. Four individual sponges were subdivided to control genotype and half of each individual was used in each treatment group (Recommended food level: 60 mL and Elevated food level: 160 mL). Food treatments were calculated using a ratio derived from Reisinger (1971) who stated that 1 cm³ of sponge tissue can filter 1 liter of water per hour. Sponges were fed live phytoplankton containing four different species of microalgae. The results of this study can be used as a guide for cultivation of sponges in laboratory settings. Lab cultivation will allow for the generation of sponge populations to be used for research to better understand these diverse organisms. Additionally, this will allow for the maintenance of stock populations to be used for restoration, preventing the need for fragmentation of natural sponge individuals for restoration activities.



Hysterectomy in India: Impasses between Health Modernization and Feminism Stagnation

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Abstract (Posters)

Hysterectomy, the surgical removal of the uterus, has been performed for thousands of years and has evolved immensely as a treatment option. From its known inception in 120 C.E. until the 20th century, the procedure of hysterectomy was rarely survived due to unmodernized medical techniques and a general, at times experimental, mistreatment of female-bodied invalids. Recent medical innovation has made hysterectomy safer and therefore more widely available as an important medical intervention, but there remains much to be explored about its sociocultural applications in different regions of the world.

Even though hysterectomy is a safe and commonly-performed procedure in modern medicine, its prevalence is decreasing in developed nations in favor of less invasive, equally effective treatments for most gynecological ailments. But although there exist in India multiple alternative interventions to hysterectomy between biomedical, Ayurvedic, and other systems of medicine, patients continue to undergo hysterectomy for nearly all gynecological ailments. Studies of unindicated hysterectomy in India have associated the procedure with detrimental patient outcomes in the short and long-term, but hysterectomy rates continue to rise. This literature review synthesizes information from various sources to convey the cultural phenomena and healthcare trends contributing to the treatment's rising prevalence, as well as the socioeconomic trends in populations of hysterectomized individuals in India. In the future, more extensive public health education, support of feminist cultural initiatives, and greater respect for the individual agency of female-bodied people in Indian healthcare will eliminate the overuse of hysterectomy and ensure better health outcomes for the Indian population.



Evaluations of Applying Self-determination Theory Sub-theories to Reduce Worker Burnout.

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Abstract (Posters)

The workforce is dissatisfied with current work life as seen by both “great resignation” and “quiet quitting” which may be due to overall feelings of being burnt out. Employee satisfaction refers to the level of contentment one feels in their work environment and job duties, whereas burnout is defined by three aspects: mental exhaustion, depersonalization/cynicism, and the feeling of inadequacy or failure with work-related tasks. Research indicates that intrinsic motivation (e.g., internal rewards) leads to satisfaction and satisfaction leads to a decrease in feelings of burnout. There are theories in place that can contribute to the increase of intrinsic motivation, specifically the meta-theory of self-determination theory. Utilizing the six sub-theories that contribute to self-determination theory to create tools that can be used as guidelines for increasing workers' intrinsic motivation. The six sub-theories are cognitive evaluation, organismic integration, causality orientations, basic psychological needs, goal contents, and relationship motivation. The present evaluation of the prior research allowed researchers to provide examples of applications for the six sub-theories as possible baselines for future empirical research. The evaluation is constructed from a workers benefit upward perspective rather than working from management downwards (e.g., most examples are used to increase the intrinsic motivation of the fundamental workers). Further research and industry applications are necessary to assess if SDT sub-theories can provide the necessary groundwork to improve intrinsic motivation in employees and thus increase employee job satisfaction and decrease burnout as a result. Our aim was to push empirical research in the right direction.



Historical Case Comparison of Infrastructure Projects in Tallahassee, Florida

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Abstract (Posters)

Scholars have well-documented the negative consequences of urban renewal policies during the 1950s and 1960s that led to the displacement of entire African American neighborhoods across the United States. This research asks: How have infrastructure policies changed, if at all, in terms of equity and affordable housing issues? Using historical documents, academic research, newspaper articles, and plans, this research evaluates the equitable use of eminent domain policies in public infrastructure projects by comparing the historic case of Smokey Hollow in the 1960s with the contemporary case of Capital Cascades Trail in 2011. Preliminary results show that the two cases are similar in terms of racial composition and land use. There have been improvements in state provisions and housing policies such as the 1970 Universal Relocation Act (URA). This is a federal provision of requiring replacement housing stock that was not present in the historical Smokey Hollow case. Future research should investigate the number of people experiencing homelessness and the loss of cultural amenities that result from the use of eminent domain in African American neighborhoods.



Conceptual Models of Productivity and Accountability in Human-Machine Interaction: User vs. System

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Abstract (Posters)

In human-machine interaction (HMI), productivity is based on the performance of the system or user. Similarly, different mental models may exist when assessing accountability for productivity between a human or system. In a human-machine team, a user may view their productivity from a personal standpoint, while a supervisor may view it from a system-centric perspective. The present research examines how differences between user and system-based mental models of productivity and accountability affect perceived usability, usefulness, and intention to use technology within the Technology Acceptance Model framework. A scenario is used in which students and supervisors at a fictional university are trying to win a competition against a rival university, using a smartphone-based intelligent productivity app. Participants (n=71) were assigned to either a student or supervisor role and were introduced to the productivity application and its use. They then completed surveys regarding usability, usefulness, productivity, accountability, and intent to use the application within the context of the annual competition. Differential models of productivity and accountability showed differences in the relationship between usefulness, usability, and intention to use an intelligent productivity application. This research demonstrates that differing mental models of productivity and accountability within HMI teams will impact adoption of technology. Understanding these implications is important to understand how technology is accepted and implemented in complex systems.



Crossbreeding *Capsicum* peppers to produce offspring with more resistance alleles and offspring with earlier flower budding compared to parent varieties

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Abstract (Posters)

Pepper (*Capsicum spp.*) is a commercially important and widespread crop. One of the most notable members in the Solanaceae family, peppers are highly valued as a nutritious vegetable and versatile spice. There are five domesticated species of commercial importance: *C. annuum*, *C. baccatum*, *C. chinense*, *C. frutescens*, and *C. pubescens*. Here we document our attempt to breed highly resistant cultivars in *C. annuum* and *C. baccatum* through gene pyramiding. Using data from previous genotyping of 92 different varieties of *Capsicum spp.*, we cultivated multiple strategically selected varieties and documented their phenological traits. By cross-pollination of select individuals, we aim to produce a cultivar with 8 and 7 resistance genes in *C. annuum* and *C. baccatum* respectively.



Proposition for a New Analysis for Eating Disorders: A More Nuanced Approach

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Abstract (Posters)

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5) generally defines eating disorders as feeding and eating disorders that cause clinical distress and impairments in life. Despite this general definition, the DSM-5 tends to look towards extremes when classifying disorders which can result in blatant screening. These screenings may include asking questions such as: if they avoid eating due to fear of gaining weight (anorexia nervosa), if they overeat to the point that they feel sick (binge-eating), or if they force themselves to regurgitate their food (bulimia nervosa). Weight, self-image, and self-worth tend to dominate disordered eating screenings, while heavily emphasizing body mass index, leaving out more nuanced disordered eating habits/attitudes (DEHAs). While DEHAs may not warrant a diagnosis according to the DSM-5, it is crucial to understand DEHAs as these habits/attitudes can lead to greater health risks. Hence, there is a necessity to develop a more nuanced scale that does not focus solely on weight fluctuations or self-perception, but rather incorporates non-normative eating habits (i.e., consuming only one meal a day, drinking more fluids as meal replacements, or rationing foods and meals to last throughout the day). By understanding DEHAs as more significant issues than anticipated, insight may be gained into their prevalence or normalization within specific populations. The present study seeks to propose more beneficial ways to approach eating disorders that are not clearly classified by the DSM-5.



Comparing the Water Retention of a Soybean Colloid to Petroleum Jelly

Anagrace Bennett

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Abstract (Posters)

The continual usage of petroleum presents an urgent dilemma. Considered a nonrenewable resource, petroleum is further depleted due to dependency on the source for fuel, plastics, and cosmetics. Consumers also take the risk of purchasing petroleum cosmetics with carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs), which have correlated to an increased risk of skin cancer. To innovate a solution, a soybean colloid, composed of a soybean wax particulate and a soy emulsifying oil, was formulated to simulate a cream with the same density as petroleum jelly. This study focuses on comparing the efficacy in utilizing soybeans instead of petroleum jelly as an occlusive base. With the ability to match the density and texture, the soybean colloid and petroleum jelly was applied to separate petri dishes filled with a gelatin medium, mimicking the water retention of the skin barrier. Weighing the petri dishes, the decreasing percent mass change exemplified the water evaporating and losing the lipid to water bonds. This displays how efficiently an occlusive can maintain the coined phrase “moisturize the skin”. The hypothesis was that the soybean colloid would perform equally or better than the petroleum jelly in regards to retaining water in the gelatin medium. By using the two sample t-tests, the results fully support the null hypothesis that there is no difference in water retention rates. With the soybean *linoleic* and *oleic* natural chemical components, the lipids in these compounds simulate similar characteristics to petroleum jelly in creating a gradient between the gelatin simulated skin to slow water evaporation.



Particle-particle interaction and agglomeration characteristics during gravitational settling

Kostiantyn Ostapchuk, Ella Bethke

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Abstract (Posters)

Hydraulic fracturing is a leading technology in natural gas extraction from low-permeability reservoirs. Proppants entrained in fracturing fluid support the fracture and prevent premature closures. Thus, efficient proppant placement and settling impact reservoir permeability. Despite its importance, minimal attention has been given to understanding the complex proppant agglomeration mechanisms, a main cause of permeability impairment, especially from a three-dimensional aspect. While two-dimensional studies indicate a direct correlation between fluid viscosity and agglomeration, agglomerate-forming mechanisms in a settling slurry are still ambiguous. The present study utilizes a combination of high-speed imaging and particle image velocimetry to investigate the fundamental proppant agglomeration mechanisms in a three-dimensional domain. Multiple mesh-size proppants are released in a cell filled with viscous (glycerol-based fluid). To further explore the nature of agglomeration, this study identified an optimal proppant mesh size mixing ratio and fluid viscosity to facilitate hindered settling and lower slurry average settling velocity. A mechanical release system was utilized to achieve high-precision proppant release, while two high-speed cameras were set up for a full two-plane proppant PIV analysis and accurate agglomeration quantification. The results show the close relationship between unique agglomeration patterns with each solution viscosity and the existence of an optimal viscosity for reduced settling velocity. The results also indicate patterns associated with solution viscosity for reduced settling velocity with minimal agglomeration.



Dynamical effects of quantum spin dimers with a Dzyaloshinskii-Moriya

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Abstract (Posters)

The noncollinear Dzyaloshinskii-Moriya Interaction has been studied since the 1960s but has picked up significant interest over the last decade due to the emerging field of Spintronics seeing great potential for the mechanism. Hence, the finding of the effects of the DM Interaction has also been attractive to nanoscale magnetics. Here we uncover the effects of the DM interaction on the well-studied quantum spin dimer for $S_1 = S_2 = \frac{1}{2}$ and for $S_1 = S_2 = 1$ by providing an analytical solution to thermodynamic quantities such as heat capacity and simulating inelastic neutron scattering to find a structure factor describing the system. We use a simple, yet efficient Hamiltonian that accounts for the effects of the exchange interaction and antisymmetric DM interaction. Our interpretation of the results from this research is that the DM interaction splits energy eigenstates and changes the structure factor of the spin dimer by some non-negligible amount.



Visual Art in a Non-Hearing World: The Analysis and Creation of Meaningful Interactions between the d/Deaf Community and Art Spaces

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Abstract (Posters)

This presentation serves to examine the current relationship constructed between art museums within a given community and the d/Deaf population of individuals within that community. This is a research-informed proposal for a program that could potentially be integrated into art museums in an immediate community that centers around the d/Deaf community and the meaningful interactions and engagement opportunities that they have in these art spaces and exhibits. Traditionally and historically, the d/Deaf community is an underserved population within our society. In a mostly “hearing” world, the needs or acclimations of the d/Deaf community are often misunderstood or overseen. Under the Americans with Disabilities Act of 1990, cultural institutions are responsible and required to ensure equal access to all visitors, regardless of their physical, sensory, or cognitive ability. Many fail to do so. Because of this, many members of the d/Deaf community feel apprehensive when participating or existing in areas that lack inclusivity and accommodations. d/Deaf or hard of hearing individuals face numerous obstacles in spaces that do not provide American Sign Language interpreters or programs to aid them in creating meaningful experiences. This proposed research is valuable to art museums across the country, and results in a proposed program proposal divided into several integrated phases. I believe this research can not only emphasize the importance of translators and the positive interactions they provide, but also help to reform experiences of the d/Deaf community overall when they visit art spaces and exhibits.



Local field potentials as a predictor for optimal DBS contact for Essential Tremor and tremor-dominant Parkinson's disease

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Abstract (Posters)

Introduction: Deep brain stimulation (DBS) leads with segmented electrodes have been shown beneficial in the subthalamic nucleus (STN) in Parkinson's disease (PD) and the ventral intermediate nucleus of the thalamus (VIM) in essential tremor (ET). While phase-amplitude coupling (PAC) is one of the most well-studied interactions between oscillations at different frequency bands, limited research has explored the functional use of directional Local field potentials (LFPs) using PAC.

Objective: Based on the literature and previous studies, we have investigated whether PAC can identify sub-territories of the basal ganglia structures and guide selection of stimulation direction to assist device programming.

Methods: Participants were recruited from patients diagnosed with tremor-dominant PD or ET and scheduled to undergo DBS surgery. LFPs were recorded from the segmented DBS lead during DBS surgery using a gUSBamp biosignal amplifier at 2.4 kHz during resting. LFPs were re-referenced to their common average and time-frequency analysis was computed using a modified Welch periodogram method on MATLAB.

Results: PAC was found to be localized to the dorsal STN with amplitude frequency in slow HFO (200-400Hz) in PD subject with tremor. We found that phase of the VIM-LFP might be the main modulating factor in ET while it might be the amplitude of the STN-LFP in PD.

Conclusion: This is the first time that beta-HFO has been demonstrated in LFP recordings from directional leads in an ET case. These preliminary data suggest that beta power or beta-HFO PAC could be used to guide optimal selection when directional leads are used.



Mutations in Essential Molecular Chaperones and Their Relationship to Cancer

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Abstract (Posters)

Cancer is a common disease that results in an uncontrolled division of aberrant cells in the body. This unregulated cellular behavior is triggered by mutations in genomic sequences, resulting in abnormal protein function and thus leading to proteotoxic stress. The natural cellular defense from such stress is the network of molecular chaperones, with the central role of HSP proteins. One established way for cancer cells to use the advantageous role of HSP70 is via their increased expression leading to tumor progression and apoptosis inhibition. Alternatively, genomic mutations could be directly modifying activity of molecular chaperones to tailor them for cancer needs. The goal of this study is to investigate if cancer patient mutations in the HSP70/DNAJB1 system modifies its activity to benefit the cancer progression. Three various point mutations were selected from major genomic databases based on bioinformatic analysis. I focused on amino acid conservation and used available structural data to investigate potential structure and/or function alterations. To investigate the effect of selected mutations experimentally, I first focused on purifying DNAJB1 protein and its cancer variants. I used the expression system composed of *E. coli* host cells and a vector introducing a cleavable His-SUMO tag on the protein's N-terminus. The future investigation of chaperone activity of these mutated variants should provide new insights in the role of chaperones in cancer proliferation.



Comparing growth of *Chlorella vulgaris* in NaHCO₃ and CaCO₃ solutions

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Abstract (Posters)

Chlorella vulgaris, a freshwater photoautotrophic organism requires CO₂ and light to perform photosynthesis. Suspended growth microalgal reactor is a component of the BIOSYS Waste Management System for Mars, which will scrub cabin air from space camp by producing O₂ and removing CO₂. It will improve CO₂ removal efficiency of biorefineries. This system can be useful to operate biorefineries in urban areas and industrial plants (dual-use benefit).

Algae is also a good source of biofuels and nutrients (lipids & proteins). *Chlorella vulgaris* has been chosen because it grows quickly in a pH neutral environment. Its oil content is higher than crops.

This research is focused on growing microalgae with NaHCO₃ and CaCO₃ solutions instead of free CO₂. NaHCO₃ with air shows a biomass productivity of 0.04 g algae/L/day.



Behaviors and Biodiversity of Vertebrates on Restored Oyster Reefs in Mosquito Lagoon, FL

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Abstract (Posters)

Restoration of the eastern oyster (*Crassostrea virginica*) has become increasingly important as their populations have greatly decreased in recent decades. Moreover, intertidal oyster reefs provide essential foraging and resting grounds to many vertebrate species in Mosquito Lagoon, especially threatened/endangered wading birds. Biodegradable restoration materials have been utilized in recent years to reduce potential plastic pollution to the estuary. This study analyzes how these novel restoration materials affect the abundance, diversity, and behavior of birds, racoons, and small mammals visiting oyster reefs. The objective of this project is to determine if any animals avoid restored reefs based on the restoration materials. To observe abundances and behaviors, wildlife trail cameras were deployed on restored oyster reefs in summer 2022. Restoration on the observed reefs took place in 2021. Restoration treatments included: Biodegradable EcoSystem Engineering Elements (BESE) mats with attached oyster shells, cement-jute rings, and cement-jute squares. Natural reefs were used as positive controls and dead reefs as negative controls with 3 replicas of each treatment. Results to date have shown 23 different species interacting with reefs. 14.3% of individuals on dead reefs were foraging while natural reefs had a much higher number (46.7%). BESE mats and cement-jute squares had very similar numbers of animals foraging of 34.8% and 35.4%. Cement-jute patties showed a lower percentage of 19.6% individuals foraging, but had the highest percentage for loafing and grooming behaviors. This research is essential for understanding how biodegradable oyster restoration efforts affect non-target species, especially species listed as threatened/endangered.



Charles Chaynes' Trumpet Concerto No. 1: A Programmer's Perspective on Serialism

Jack Lyons

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Abstract (Posters)

Charles Chaynes' Trumpet Concerto No. 1 was commissioned in 1956 for the Concours de Prix at the Paris Conservatory. Chaynes drew inspiration from composers like Bela Bartók, Alban Berg, and Olivier Messiaen, all of whom were pioneers of serialism. Based on Chaynes' compositional influence and opening twelve tone material in his work, there are contrasting opinions of the piece's serialist nature. I believe that Chaynes' Trumpet Concerto No. 1 Movement 1 is not serialist-inspired.

I rendered an .xml file of Chaynes' Trumpet Concerto in the notation software MuseScore affording analysis via Python and Massachusetts Institute of Technology's music21 library. Since each pitch class corresponds to a number spanning zero to eleven, I created functions to describe each serialism operation to transform a given set of notes such that the permutations and transformations were analyzed via matrices.

I derived 48 unique sets of notes for each window, which holds a set of two to twelve notes from the score. By checking each derived set with every combination of notes across the first movement, 1 out of 3,598,848 combinations was flagged corresponding to the original row. Thus, Chaynes' Trumpet Concerto No. 1 Movement 1 does not rely on serialism as a compositional device.

Computational musicology affords a unique way to analyze music while limiting human error in analysis. This project illustrates that music in tandem with programming opens up many exciting options for the future such as software which can objectify and present suggestions to improve performance practices of musicians.



Optimizing superconducting $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ thin film growth utilizing Molecular Beam Epitaxy (MBE)

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Abstract (Posters)

We investigated the effect of stoichiometry, substrate temperature, and layer-stacking order on the critical temperature of superconducting YBCO thin films. The films we studied were grown using ultra-high vacuum (UHV) molecular beam epitaxy (MBE) with distilled ozone as the source of oxygen on (001) oriented lanthanum aluminate (LAO) substrates. To probe the effect of stoichiometry, the films were grown with varying yttrium, barium, and copper stoichiometry by $\pm 7\%$. We also explored different substrate temperatures to promote the growth of c-axis YBCO thin films (c-axis oriented along the film out-of-plane direction). In situ reflection high-energy electron diffraction (RHEED) imaging was used to monitor the film surface during growth. RHEED provided real-time feedback on second-phase nucleation due to off-stoichiometry. Following each growth, we made resistance measurements as a function of temperature using a four-point geometry; these measurements allowed us to determine the superconducting critical temperature. We find that a substrate temperature between 630°C and 680°C in an ozone partial pressure of 2×10^{-6} torr is ideal for the growth of c-axis YBCO thin films and that an anneal of around 5 minutes after each unit cell (specifically after the Cu-O_2 layer) helps with the crystalline quality of the sample.



DNA Analysis through Crop Dissection from Different Species of Fly Larvae for Forensic Investigation

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Abstract (Posters)

Forensic entomology focuses on the study of dead bodies through the arthropods that inhabit it. The goal of the research being conducted is to successfully extract DNA from a maggot's crop (stomach) and be able to identify specifically where the DNA is from. Traps were set using store bought meat, and maggots that formed on the rotting meat were collected. Control maggots were obtained and allowed to grow into adults to be able to identify the types of flies that were eating the meat; another set of controls were collected and stored in 95% ethanol. The maggots were stored until dissection occurred. The crops were dissected carefully using a microscope and the appropriate tools. A DNeasy Blood & Tissue Kit was used to extract the DNA from the maggot crops. Evidence such as this may be able to lead investigators in the right direction, providing them with either the previous location of a corpse, the identity of the individual, and/or the time of death.



The Universal Mass Function and its Applicability to Organic Molecules

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Abstract (Posters)

The ability to predict the yield when synthesizing an organic molecule is a challenging issue in organic chemistry and a major obstacle when planning a multi-step organic synthesis. It would be beneficial to predict the yield of the product such that the most time, money, and waste-efficient method can be used. The Universal Mass Function (UMF) states that cosmic objects on all scales are in direct relation to each other. It shows that massive objects are much rarer than objects with lower masses. The following research aims to examine if the UMF theory is applicable to the field of organic chemistry, specifically to the yield prediction. The primary reaction chosen for this research was the substitution reaction of alcohol to different derivatives of alkyl halides in protic environment. For that reaction, due to the widely known reactivity of the molecules in protic environment, we expect to observe results that are opposite of that which support the UMF. Due to the known reactivity of the molecules, the largest halide is expected to have the largest yield based off nucleophilic properties. However, preliminary results contradicted this and supported the UMF theory as we received higher yields from alkyl halides derivatives with lower molecular weights. Ratification of the Universal Mass Function on small-scale molecules is significant since in addition to helping overcome a major problem in the field of organic chemistry. It would make a huge impact on the pharmaceutical industry by enabling the prediction of the most efficient drug synthesis.



Academic Performance and Psychological Well-Being in College Students

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Abstract (Posters)

In recent years, an overall decline in mental health has been observed in college students. Poor mental health is associated with substance use and poorer physical health, and affects quality of life among college students. We investigated the association between the academic performance of college students, measured as GPA, and their psychological well-being, measured using Diener Flourishing Scale – Psychological Well-Being Score. In 2022, data (n=619) were collected online at a large southeastern university as part of the American College Health Association-National College Health Assessment III. We performed ANOVA to compare the mean psychological well-being scores among three GPA groups (GPA of A, B, and C/below). Then, we performed post-hoc comparisons between groups A and B, and groups A and C/below using Bonferroni adjustments. The results indicated that psychological well-being score ranged from 8 to 56 (mean=43.50, Standard Deviation=9.27). Moreover, academic performance was significantly associated with psychological well-being, $F(2,616)=7.33$, $p=0.0007$. Relative to students with GPA of A, students with GPA of B ($p=0.0048$) and students with GPA of C/below ($p=0.0104$) had lower mean psychological well-being scores. The study indicated that the mean psychological well-being scores differ among the three GPA groups: students with poorer academic performance, on average, reported poorer psychological well-being. Thus, there is a need for additional campus-wide strategies tailored to students who face challenges in academic performance with the primary goals of improving their academic standing and psychological well-being.



Surveying Antibiotic Resistance in Florida Sea Turtles

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Abstract (Posters)

Antibiotic resistance is a growing concern due to the improper use of antibiotics. Not only is antibiotic resistance increasingly occurring in human populations, but it appears to be spreading in wildlife populations as well due to their use and misuse in medicine, farming, and industrial settings, and the subsequent release into watersheds. The spread of pathogenic antibiotic resistant bacteria is also of great concern to marine wildlife, including both turtles in rehabilitation facilities and wild populations. This project examined the prevalence of antibiotic resistant bacteria in the gut microbiome of green and loggerhead sea turtles. Using cloacal swabs, wild-caught turtles were sampled from the St. Lucie Nuclear Power Plant and rehabilitation turtles were sampled from Gumbo Limbo Nature Center. These swabs will be plated and incubated using MacConkey agar to select gram negative bacteria. Then, the samples will be transferred into Mueller Hinton agar plates to test resistance against six frequently administered antibiotics in rehabilitation settings. Using the Kirby Bauer disc diffusion test, we found 74% of the samples resistant or intermediately resistant to two or more antibiotics and that 40% of our samples showed resistance or intermediate resistance to three or more of the antibiotics tested. The samples showed higher levels of antibiotic resistance to antibiotics frequently prescribed for humans rather than antibiotics used in turtle rehabilitation centers. Samples showed the greatest resistance to Ampicillin at 82% and Ciprofloxacin showed the next greatest proportion of resistant bacteria at 72%.



3D-Printed Stents to Speed Up the Development of Aneurysm Treatment

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Abstract (Posters)

An intracranial aneurysm is a vessel pathology that might result in life-threatening brain bleeding. Aneurysms can be treated by placing special implants that will reduce intra-aneurysm flow, e.g., flow diverter stents (FDS). However, treatment complications still occur. To overcome complications, new designs of implants are constantly being developed. However, the fabrication and testing of each prototype is labor- and cost-expensive. Thus, in this work, we developed a straightforward method to fabricate implant prototypes using 3D printing. The design variables can be optimized using 3D-printed stents. This will ultimately reduce the costs and speed up the development of new implants for aneurysm treatments.



An Overview of our Space History, with a Special Focus on Space Life Sciences

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Abstract (Posters)

Our space industry has evolved over the decades since we first launched humans into space in the 1960s. Students for the Exploration and Development of Space (SEDS), an aerospace student and young professional organization that promotes space exploration and development through educational and engineering projects, was founded by a group of students interested in getting involved with the space industry by designing, building, and flying their own space-related projects. Our chapter at Florida State University has on-going and future plans for projects in space science, technology, engineering, art, and mathematics (STEAM). Examples of these projects include the first biomedical studies investigating the physiological effects of deep space radiation, Lunar, and Martian gravity relevant to our human space exploration goals as we return to the Moon and beyond through the Artemis program. Here we have done a preliminary literature review of space history and related projects from diverse relevant disciplines, researching the different types of projects that have been completed as part of our space exploration journey to-date and to reflect upon as we return to the Moon.



The Effects of Trace Metals on RNA Synthesis by DNA Polymerases

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Abstract (Posters)

The central dogma of genetics warrants that genetic information is transferred from DNA to RNA with a high level of integrity. RNA synthesis is usually performed by RNA polymerases. However, recent studies from our group and others have shown that RNA can also be synthesized by repair DNA polymerases in the presence of the trace metal manganese. High concentrations of manganese have been found to cause neurodegenerative diseases that have similar symptoms to Parkinson's Disease. Our results showed that various concentrations of manganese stimulated RNA synthesis by DNA polymerase β (pol β) with low fidelity. We further hypothesize that manganese can modulate the RNA synthesis activity of DNA polymerases, compromising RNA synthesis fidelity and integrity. We are testing the hypothesis by determining the effects of manganese at low and high concentrations on RNA synthesis and its fidelity by pol β and translesion DNA polymerase pol η . We will determine the effects of toxic levels of manganese on DNA polymerase-mediated RNA synthesis and its fidelity in mouse brain tissue extracts. This study will create a new paradigm for revealing the newly discovered role of manganese in RNA damage repair mediated by DNA polymerases. Our results will facilitate the discovery of novel therapeutic targets for treating neurodegenerative diseases caused by toxic levels of manganese.



Magnetic Hyperthermia Therapy: Using magnetized nanoparticle heaters to kill cancer cells

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Abstract (Posters)

In this study, we are examining the effect of various magnetic interactions on the ability for heat dissipation in magnetic nanoparticles. Our goal is to help gain a better understanding for the dispersion of thermal energy through the clusters as well as biological tissue. Through this analysis, we hope to determine way to optimize the heating efficiency and provide better avenues for cancer treatment.



The zooarchaeology of Greece: a quantitative and cultural analysis of animal use at Helladic Lerna

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Abstract (Posters)

Zooarchaeological analysis, the study of faunal remains, provides a unique perspective by which archaeologists can further reconstruct the life of the past. In 2008 paleontologist Dr. David S. Reese undertook a reanalysis of the faunal remains present in the Late Helladic period (ca. 1050 BC) site of Lerna, Greece, excavated in the 1950s by the American School of Classical Studies headed by John L. Caskey. This site records a continuous history of human activity spanning from the Early Neolithic period to the Late Bronze age. However, the previous research conducted at this site lacks a comprehensive analysis of the historical anthrozoology. Through detailed statistical testing of Reese's faunal data, I will produce a quantitative and cultural analysis to determine critical features of early domestication relationships such as site use, dietary habits, depositional practices, and ritual use. These findings will contribute to understanding pre-classical Mediterranean cultures and how practices differ or remain the same through time and space.



The effects of long-term recovery from simulated microgravity and deep space radiation on the rat coronary structure and biochemical properties

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Abstract (Posters)

Human travel into space exposes them to the spaceflight environment, which includes extreme temperature variations, exposure to deep-space radiation, and the effects of weightlessness (e.g. microgravity). Physiological adaptations occur when exposed to these different environmental stimuli, increasing the crew's risk of developing medical conditions. Some of these risks include cardiovascular adaptations, musculoskeletal deconditioning, and spaceflight-associated neuro-ocular syndrome. To assess these risks and how they may affect the cardiovascular system, we conducted a study of the long-term single and combined effects of deep space radiation and microgravity exposure on rats. Our hypothesis includes studying changes in blood vessel structure and function, as well as biochemical pathway changes (e.g. endothelial nitric oxide synthase [eNOS], oxidative stress) resulting from simulated spaceflight exposure. Rat coronary arteries were collected and processed by cryostat sectioning to assess changes in protein pathways through immunofluorescence. Findings from this study will increase our overall knowledge in the field of space medicine and life sciences, as well as improve life on Earth through advancements made in medicine and health.



Antimicrobial Efficacy of Diatom-Enriched Dentifrice on Typodonts

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Abstract (Posters)

Dental caries brought about by microbial infection is one of the continuing problems of the human population. In many toothpastes, hydrated silica is used as an abrasive component. This uniformly shaped synthetic silicate is costly compared to the naturally occurring diatom frustules, which also come in various sizes and shapes. Silica's role in the inhibition of microbial biofilm formation on teeth is still unknown and is the basis of this study. The purpose of this research is to determine efficacy of diatom-enriched dentifrice in inhibiting microbial biofilm formation on typodonts using diatomaceous earth as additive to commercial toothpaste as experimental treatment compared with toothpaste without additive. The author's mouth was swabbed and cultured in nutrient agar dishes and were inoculated onto the typodonts using an inoculating loop and left in the laminar flow hood. The typodonts were then brushed for 2 minutes using the respective control or experimental treatment dentifrice prepared in three replicates for 3 days. Samples were then collected from each typodont and inoculated into axenic petri dishes and incubated. Bacterial growth from each dish was analyzed using a colony counter. Results showed that the experimental group containing diatomaceous earth was the most effective in inhibiting bacterial growth on typodonts. Aside from its abrasive effect, this could also be attributed to the porosity of the diatom frustules increasing the surface area for dentifrice adherence. Future studies involving testing on actual animal or human need to be conducted to validate the results.



Socially Assistive Robotics in Mental Health

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Abstract (Posters)

The research goal is to design a socially assistive robot (SAR) that will help in the day-to-day activities of a person with mental health issues. The social robot will react to the behavior changes in mental health deterioration and deliver interventions to mitigate such behavior changes. The SAR needs to be empathetic toward the user. In this research, it is hypothesized that the empathetic feature of the SAR can be achieved by matching the user's personality. The personality will be measured by using the Myers-Briggs Type Indicator (MBTI).



Slasher Films and the Origins of the Culture Wars in the United States, 1973-1996

Cassidy Sweeney

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Abstract (Posters)

Slasher horror films, defined as a movie featuring a killer or killers stalking and murdering a group of people, typically with a bladed weapon, grew more popular beginning in the early 1970s. Directors and producers of these films wanted to startle audiences and instill fear through a tense atmosphere filled with anticipation and suspense and gory special effects. Critics derided these films as unserious and poor quality. Protesters decried the violence depicted in the films and asserted that they were harmful to children, communities, and the cultural fabric of the nation as whole. This paper identifies the deeper messages behind the slasher films and their impact on some of the most important political, social, and cultural issues in the United States since the 1970s. I will examine three films produced since the 1970s: “Black Christmas” (1974), also known in the United States as “Silent Night, Evil Night”, “Silent Night, Deadly Night” (1984), and “Scream” (1996). One common thread among these films is that each made subtle social commentary about the times that they were made. Film reviews, interviews with filmmakers and critics, and news accounts reveal that each of these films provoked strong reactions not only among their audiences but also from the wider public. In this way, I argue that slasher horror films served as catalysts for discussions on abortion, religion, gender, and childhood, some of the most important touchstone issues of the modern era, and they provided more fuel to the wider ‘culture wars’.



Detection of *Eimeria* Species in *Gopherus polyphemus*

Ellen Diez

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Abstract (Posters)

Gopherus polyphemus, or commonly known as the gopher tortoise resides in the southeastern United States, including the state of Florida. Gopher tortoises are a keystone species and are very important because they profoundly affect the ecosystem. Gopher tortoises dig burrows that provide protection and shelter for over 300 species including Florida mice, snakes, and rabbits. Unfortunately, gopher tortoises are at risk and are considered to be a threatened species. A potential threat to gopher tortoises are pathogens, including one that belongs to the *Eimeria* genus. Using fecal samples that were collected from the Abacoa, FL population of gopher tortoises, I isolated DNA and performed nested PCR reactions and gel electrophoresis to detect the presence of 18S rRNA belonging to the target pathogen. Sequencing will be performed to verify the species identity. This research will provide insight into the prevalence of the *Eimeria* pathogen and the results could potentially lead to a better understanding of how to treat diseased gopher tortoises



Assessing Catch Efficiency of Bottomless Lift Nets on Artificial Oyster Reef Structures

Gabrielle Nelson

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Abstract (Posters)

This study aims to test bottomless lift nets' efficiency on two different oyster reef restoration methods at Wright's Landing. Grass shrimp, *Palaemonetes*, were gathered from Guana Lake, dyed, and released into the raised lift nets. Dip nets were used to sweep around the enclosed area and recapture the marked shrimp. Clearly marked shrimp were recorded and released. Shrimp that could not be clearly identified as marked were taken back to the lab to be inspected under a microscope. Once the data was consolidated from the field and lab analysis, the recapture rates for each of the treatments were calculated. The data was tested for normality using a Ryan-Joiner test. A single-factor ANOVA was conducted and found no significant difference in catch efficiency between the two treatments.



Evaluating the diagnostic quality of free-circulating versus exosomal microRNAs as biomarkers of canine congestive heart failure

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Abstract (Posters)

MicroRNAs (miRNA) show great potential as biomarkers, and eventually therapeutics in the form of mimics and inhibitors, in a diversity of diseases. miRNA can be found freely-circulating in the bloodstream (FCmiRNA) or secreted from cells in exosomes as exosomal miRNA (exomiRNA). Exosomes are extracellular vesicles that carry cell-specific cargo to targeted cells elsewhere in the body, traveling through body fluids. ExomiRNA shows great potential to be more reliable than FCmiRNA as a biomarker of disease due to the added membrane, which in theory preserves the miRNA cargo, and the theoretical increased likelihood of relevant miRNA to be present in exosomes. Multiple miRNAs have already been associated with the development of canine congestive heart failure (CHF) in dogs.

In this study, we (1) compared the expression of four miRNAs: miRNA 133, miRNA 1, miRNA29, and miRNA302 between healthy dogs and dogs with CHF, and (2) compared the expression levels of these miRNAs as FCmiRNAs and exomiRNAs.

We predict that the results will confirm association of the selected miRNAs and CHF status, meaning elevated levels of miRNA133 and miRNA1 correlate with presence of CHF, while decreased levels of miRNA29 and miRNA302 correlate with presence of CHF. We predict that exomiRNA expressions will be consistently higher than FCmiRNA expression among all four miRNAs, which suggests the exosomes protect the structural integrity of the miRNAs, and exomiRNA could be more reliable than FCmiRNA as a biomarker in diagnostic and prognostic clinical scenarios.



Bacterial Art: Where Science Meets the Arts

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Abstract (Posters)

Science and Arts have drawn inspiration from each other since the time of Charles Darwin and Alexander Fleming and both arts and science have benefited from and contributed to technological advances. This project derives inspiration from the emerging field of Bio Art where biotechnology is used to create artwork. We integrated art, engineering, biology, and photography in this project. Genetically modified *E. coli* strains were used as paint to create art pieces on an agar plate. *E. coli* transformed with plasmids containing genes for chromogens such as green fluorescent protein, blue chromogen, purple chromogen, and pink chromogen were used to produce bacterial colonies of different colors. These bacteria were grown on LB agar plate containing Ampicillin to maintain selective pressure and isopropyl β -D-thiogalactopyranoside to induce the expression of chromogen gene. Initially, art principles were used to create a template for the artwork. Some designs required stamps of unique designs which were created with 3D printing. Finally, cell cultures were used as paint to draw designs on agar plates. The plates were then incubated for 48 hours in a 37C incubator, after which colorful designs were visible because of growth of bacteria into bacterial colonies. Images of the bacterial designs were captured following photography principles and used to create displayable art pieces. This interdisciplinary project served a learning opportunity for art, engineering, photography and molecular and microbiology principles.



Magical Practices in China

Abbigail Sproul

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Abstract (Posters)

Magical practices in a variety of cultures and religions around the world have been routinely subject to a western perspective on what constitutes magic and how it should be perceived. With strong roots in ideas about what religious practices are and are not acceptable regarding Christianity, magic is oftentimes seen, from a western perspective, as separate from religion. This idea of magic as entirely separate from religion, however, is unfit to describe the presence of magic throughout Chinese history. Many practices in China throughout its history could be described as magical from a western perspective, but rather than being separate from religion, actually played major roles in its practice. The purpose of my research is to identify some of these practices and construct a general survey of magic as it was practiced as part of religion throughout Chinese history. Through conducting a thorough literature review, and comparing these practices with western counterparts, my goal is to recenter our views of practices that can be viewed as magical around the cultures and religions of their origins, rather than western society's views of them.



Intimate Introverts: Influences of Introversion on Self-Disclosure and Intimacy in Close Friendships

Naomi Battle

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Abstract (Posters)

In the present study, introversion's influence on individuals' closeness in their friendship relationships was investigated through a questionnaire related to measuring introversion, emotional self-disclosure, and congenial behavior. The research participants in the present study were primarily young adult females attending college. The scales utilized to measure friendship intimacy were the Emotional Self-Disclosure Scale and the Friendship Qualities Scale, and the PRCA-24 and the IPIP-IPC Scales were used to measure introversion. A positive correlation between higher levels of introversion and intimacy can be expected to be reflected in higher levels of self-disclosure and intimacy reflected in higher levels across the Emotional Self-Disclosure Scale and the Friendship Qualities Scale respectively.



Amine-Functionalization of Silica Nanoparticles for Efficient Drug Delivery

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Abstract (Posters)

Cancer is one of the leading causes of death, second only to cardiovascular diseases. Various treatments for cancer have arisen throughout the years, but one with high potential is nanoparticle drug delivery. Over the past year, our research has been focused on the objective of determining the best method to prepare amine-functionalized silica nanoparticles for the purpose of nanoparticle-based drug delivery. The amine functionalization is one small step in the overall process of preparing the particles to penetrate many barriers and obstacles within the matrices of tumors. A guanyl-urea group is being synthesized from a separate research group we are in collaboration with to help increase plasma residence time and improve transport of the nanoparticles through extracellular matrices. Functionalization will improve the attachment of this group and imply further applications for imaging and targeting. Starting from May of 2022 to December, we've collected enough data to articulate the proper course of action to synthesize amine-functionalized silica nanoparticles, as well the statistical significance of the difference between preparing these functionalized nanoparticles at room temperature as opposed to synthesizing them in reflux conditions. Our data draws notable conclusions of the value of synthesis conditions for silica nanoparticle functionalization, such as the difference in particle aggregation between washings via centrifugation and dialysis. As noted in Dr. McGoron's research, nanoparticle drug delivery has yet to reach its full potential in terms of beneficial impacts for cancer research. Any small step such as our research is significant and worth discussing.



Evaluation of Land cover changes in Valley of Flowers National Park using Satellite Imagery

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Abstract (Posters)

The Valley of Flowers National Park is a UNESCO World Heritage site located in Uttarakhand, India and is known for its unique variety of alpine flowers. The region has a temperate climate as it has long winters and short summers. The valley contains about 650 species of flowers including many medicinal plants. Most of the flower's bloom during the months of June and August of each year. The goal of this research is to assess and compare the land cover change in Valley of Flowers (VoF) National Park using time series Landsat imagery using remote sensing and GIS technologies. It is hypothesized that the climate change will affect the temperature regime, hydrological cycle and the flora, and fauna within the national park and the surrounding areas over the course of time. The specific objectives of the study are, 1) To monitor and map the vegetation changes in the national park, and 2) Analyze land cover changes using the Landsat imagery in the VoF park. Plant sample locations were surveyed and collected along the trek of VoF during Summer of 2022. Landsat imagery over a period of 3 decades were obtained and processed for land cover analysis. Spatial analysis was conducted using the ERDAS ERMapper and ESRI ArcGIS Pro software. Our research revealed that there was significant decrease in snow cover, increase in landslides and no significant changes in vegetative surface over the last three decades in the study area.



Dual-Tracer Laser-Induced Fluorescence Thermometry for Understanding Bubble Growth during Nucleate Boiling

Abel Abraham

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Abstract (Posters)

Over the past 50 years, computers have evolved from occupying entire rooms to now being miniaturized and classified as microelectronics. As devices become more compact and processing demands rise, heat management within such small devices becomes exceedingly important. Nucleate boiling associated with bubble growth has been commonly used as a remarkable thermal management strategy due to its large latent heat during phase change. However, questions remain regarding the fundamentals of bubble growth mechanisms, a major source of enhanced heat dissipation. This research aims to better explain heat transfer to bubble growth by accurately measuring three-dimensional, space- and time-resolved, local liquid temperature distributions surrounding a growing bubble through the dual tracer laser-induced fluorescence (LIF) thermometry technique. An artificial cavity of 1mm in diameter was constructed into a heat sink to serve as nucleate sites. The LIF technology is combined with high-speed imaging to accurately measure the two-dimensional bulk fluid temperature fields within 0.3 °C at a 30µm resolution near the growing bubble. Fluorescence and Sulforhodamine B are utilized as temperature indicators to improve the LIF measurement accuracy. We found that the temperature gradient is created from the heated surface toward the bubble top, indicating the effective heat transfer rate from the superheated liquid to the growing bubble. We also observed that the heated liquid blob exists on the top of the growing bubble, showing an isolated hot spot region.



Natural Seawater for Carbon Capture and Storage with Waste Concrete Catalysts

Sofia Wiskoff

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Abstract (Posters)

Carbon capture and storage (CCS) technology has become active research due to the pressing issue of global warming. Unfortunately, traditional carbon capture methods have drawbacks, including freshwater consumption, severe toxicity, and high operation costs. This research presents an environmentally-conscious CCS method using seawater and waste concrete, saving freshwater and reducing operation costs. The solubility of CO₂ in seawater is inherently low due to its salinity. However, waste concrete dissolved in seawater would provide alkaline minerals like calcium hydroxides to the seawater, increasing the pH of the solution and, subsequently, increasing CO₂ solubility. High-speed microfluidic techniques with optical and fluorescence imaging were utilized to evaluate waste concrete's catalytic effect. When the seawater-concrete solution was exposed to CO₂ gas in a microchannel, the real-time pH change due to CO₂ dissolution was measured and further used to estimate the CO₂ dissolution rate. Results indicate that adding concrete to seawater increased the CO₂ dissolution rate by 53% and dissolved 4x the amount of CO₂ compared to just seawater. Using waste concrete also comes with the potential of CO₂ storage in carbonate minerals like CaCO₃. The dissolved CO₂ dissociates into bicarbonate and carbonate ions, which form ionic bonds with calcium ions supplied from waste concrete, precipitating as CaCO₃. The precipitated CaCO₃ was found to be amorphous in structure based on the SEM and Raman spectroscopic analyses, which is beneficial for many aquatic processes like the growth of coral reefs and seashells.



PEGylated chitosan-palmitic acid nanoparticles as a promising drug delivery system to improve the bioavailability of cromolyn.

Seymour Haque

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Abstract (Posters)

Alzheimer's disease (AD) is one of the most prevalent diseases that lacks effective treatment options. Many hydrophilic drugs have shown to alleviate symptoms of AD and induce cognitive benefits in AD patients, such as cromolyn. However, drugs with high hydrophilicity often have poor bioavailability as they cannot cross the blood-brain barrier as effectively. However, with the use of nanoparticles (NPs) as a drug delivery mechanism (particles between 1-100nm), the bioavailability of these drugs can be improved. In this study, a PEG-coated chitosan-palmitic acid nanoparticle will be formulated using the reverse micellar method to encapsulate cromolyn to improve its bioavailability. A chitosan-palmitic acid copolymer will be synthesized using magnetic stirring and characterized using iodine method and HPLC. A mixture of cromolyn and copolymer will be synthesized; this mixture will be added to a organic surfactant solution containing Tween80. A cross-linking agent (tripolyphosphate) will be added after as a cross-linker and will be stirred for at least 18 hours to form NPs. These nanoparticles will then be purified using centrifugation and evaporation, as well as lyophilization. The nanoparticles will then be PEGylated via physical adsorption. The purified nanoparticles will then be characterized using AFM as well as DLS. The nanoparticles entrapment efficiency and drug release profile will also be quantified, as well as the potential cytotoxicity of these NPs. In this study, the novel NPs will be tested on a chosen cell line to see whether the novel NPs can improve the bioavailability of cromolyn in vitro.



Wildlife Trailcams Capture Coastal Gopher Tortoise Activity Patterns and Reveal Commensals

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Abstract (Posters)

Gopher tortoises (*Gopherus polyphemus*) are a keystone species native to upland habitats of the southeastern United States. Listed as Threatened in Florida and considered vulnerable throughout their range, gopher tortoises are of great conservation concern. The overwhelming majority of gopher tortoise publications focus on populations residing in longleaf pine ecosystems. As a result, their ecology in coastal habitats is dramatically underrepresented in scientific literature. We've undertaken a mark-recapture demographic study and are gathering basic data on gopher tortoise natural history in these understudied coastal areas. Our sites at the Guana Tolomato Matanzas National Estuarine Research Reserve in northeast Florida are increasingly rare examples of intact coastal dune, strand, and maritime hammock habitats that support healthy gopher tortoise populations. Beginning in 2021, we deployed RECONX Hyperfire 2 and JOH mini trailcams to document tortoise activity and community ecology at these coastal sites. Our data indicate that tortoise activity is primarily driven by circadian rhythms and thermal patterns, with activity peaking at ambient temperatures between 72°F (22.2°C) and 84°F (28.9°C). The types of commensals observed most frequently by our trailcams differ from those reported in longleaf pine studies. We also documented significant correlations between specific commensal taxa and ambient temperature. Our data provide a year-round picture of how coastal gopher tortoise ecology shifts seasonally, and is differentiated from inland populations. Trailcams allow continuous, noninvasive monitoring, and our work adds to a growing knowledge base about gopher tortoise ecology.



Perinatal exposure to cannabidiol (CBD) alters obsessive compulsive-like behavior, anxiety, and object memory in mice when raised to adult.

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Abstract (Posters)

Cannabidiol (CBD) is a derivative from the plant *Cannabis sativa* that has gained commercial popularity to mitigate anxiety and stress. Twenty-five percent of sampled uterus tissue has been found to contain Cannabis products, which raises concerns regarding its safety and effectiveness. Herein, we developed an oral route of CBD administration for pregnant dams to mimic CBD products consumed as edibles. Primiparous female mice were trained to eat jam containing solvent or 100 mg/kg CBD daily for two weeks, mated, and allowed a 3-week gestation period. Once CBD or control dams gave birth, pups were cross fostered to dams of the opposite treatment to isolate the effect CBD exposure in utero vs. that of lactation. Daily oral administration was halted upon weaning. At 3 months, adult offspring were examined for obsessive-compulsive-like behavior (marble burying), anxiety-like behavior (light dark box; LDB), and object memory (1 hour or 24 hour). We report that adults exposed perinatally to CBD show increased marble burying (1-W ANOVA, $p < 0.05$). Interestingly, the enhanced obsessive-compulsive behavior attributed to in utero drug exposure could be reversed for female mice with cross fostering during lactation, whereas it could not in males. CBD universally increased resident time in the light compartment of a LDB, but adult male mice administered treatments in utero fail to exhibit a location preference. Short-term memory (1 hour) was not impacted by CBD regardless of development age, route, or sex, but female mice showed diminished long-term memory (24 hour) succeeding CBD exposure in utero and lactation ($p < 0.01279$).



The Synthesis of a Chalcone Library and the Computational Evaluation of Inhibition of *E. coli*

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Abstract (Posters)

Escherichia coli (*E. coli*) is a gram-negative bacteria that kills roughly 200,000 people annually. The bacteria is transmitted through infected human and animal feces that contaminate water and food sources. The *E. coli* bacteria inhibits the gastrointestinal tract, leading to symptoms of diarrhea, stomach cramps, and vomiting. Antibiotics are the main source of treatment for bacterial infections, however, the rise in antibiotic prescriptions and the misuse of them is causing antibiotic-resistance. Antibiotic resistance can be addressed by developing new molecules with the same therapeutic effects or to develop a new mechanism of action for the drugs already on the market. Chalcones exhibit antimicrobial properties which can inhibit bacteria, while also resisting the bacterial-resistance through antioxidant properties. A library of chalcone derivatives were computationally evaluated using SwissADME and AutoDock. SwissADME evaluates the pharmacodynamics and pharmacokinetics of each molecule to assess how functional it would be as a drug. While AutoDock was used to evaluate the most promising chalcone derivatives in the binding site of the [ADD the details here] protein in *E. coli*. Promising derivatives will be synthesized using Green Principles.



The Relationship Between Diabetes Mellitus and the Risk of Amputation of the Extremities in Florida Adults

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Abstract (Posters)

Objective: The objective of this project was to examine the relationship between diabetic mellitus adults and the risk of amputation of the extremities.

Methods: There was an ecological analysis of data from FLHealthCHARTS and concise literature review. The relationship between diabetes and amputation was quantified by calculating correlation coefficients and p values for Florida at the county and state levels. Our conclusion was formed from a comparison of literature review and ecologic study data.

Results: FLHealthCHARTS data indicated that diabetes and the rates of amputations show a strong statistical significance ($p < 0.001$). It also portrays a moderate correlation since the correlation coefficient is greater than 0.30 ($r = 0.316$). The literature review studies had significant results for no show diabetic patients with prior hospital admission with a 60% greater risk of amputation (HR = 1.60, CI = 1.17-2.18) and incidence of any amputation being 400 (95% CI 307-512) per 100,00 patient years.

Conclusions: Analyzing the data collected and considering the proposed hypothesis there is significant evidence that suggests that there is a correlation between patients with diabetes mellitus and a risk of amputation.



How the Illustrious Company Revlon Impacted Beauty Standards of the 1950s

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Abstract (Posters)

The 1950s were seen as a hallmark of domestic gender roles for women and reinforced societal norms; it also became the era in which we think of classic beauty, domesticity, and femininity. I have heard firsthand about the socio-political environment of the time from my grandmother, who was born in the 1940s and grew up in the 1950s; she was expected to act and look a certain way every time she went out, or company came over and saw her (dressed usually in a skirt or dress and a small amount of rouge/blush, lipstick, and mascara). Diet, exercise, and beauty (wearing just a bit of makeup) were a big part of her everyday life. Many women emulated the movie stars and models they saw in movies and magazines. This was the main foundation of my project, learning about the political environment of the time, beauty standards, and how they related to one another.



How do undergraduate students studying general chemistry and physics approach designing multiple-choice questions in learner sourcing communities?

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Abstract (Posters)

Problem-solving pedagogies are becoming more common and continue to be supported using multiple resources. Learner-sourcing is one such pedagogical strategy, whereby students design assessment items related to course content. This provides alternative learning opportunities, the development of course specific test banks, and improved self-directed learning. Although, studies have demonstrated how learner-sourcing can support student outcomes, there remains some reluctance from instructors to implement such approaches, citing the frequency of student misconceptions, lack of control of content and poor-quality items. The aim of this study was to identify the prevailing themes associated with decision-making processes students adopt when designing multiple-choice questions. Twenty-two undergraduate students from a first-year general chemistry and general physics classes were recorded using a think-aloud protocol as they individually designed multiple-choice questions. The prevailing themes identified in this study demonstrate students improved self-directing learning through the organization and effective communication of ideas, ability to engage in self-evaluation and self-reflection, and identifiable gaps in knowledge throughout design of the multiple-choice question. Students dedicated their decision making towards the intended purpose, structure, and design of the item, with some design decisions influenced by behavioral characteristics. The impact of this study gives greater detail into the approaches and considerations made by students in learner-sourcing environments and provides evidence for improved self-directed learning.



Effects of increased viscosity on the conformational dynamics and ligand binding kinetics of globin x

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Abstract (Posters)

Proteins are highly dynamic macromolecules which undergo structure rearrangements over different time scales. Typically, most in vitro experiments on protein dynamics and kinetics are performed in aqueous solutions of low viscosity which differs significantly from the intracellular environment. Recent study on Swiss 3T3 fibroblasts has found the cytoplasm to be between 1.2 and 1.4 times as viscous as water. The viscosity of the solvent has been shown to restrict molecular motion and protein dynamics. Additionally, previous work on heme proteins including hemoglobin and myoglobin have shown the dynamics of these proteins to be sensitive to the viscosity of the solution. These viscosity dependent changes in protein dynamics have been previously shown to moderate ligand rebinding kinetics in heme proteins. To that end, we aim to study the effects of increased viscosity on the ligand rebinding kinetics and protein dynamics of the hexacoordinate globin protein, globin x, using transient absorption spectroscopy and photoacoustic calorimetry to determine the effects of increased viscosity on ligand rebinding kinetics and conformational dynamics in terms of the rate of ligand rebinding and associated volume and enthalpy changes. Globin X can serve as an excellent model for proposed studies as it shows high pH and thermal stability. In addition, the presence of the heme group and the photo-lability of the heme- gaseous ligand coordination bond allow to characterize the impact of the viscosity on protein dynamic on nanosecond to millisecond timescales.



The effects of long-term recovery from simulated microgravity and deep space radiation on the rat basilar structure and biochemical properties

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Abstract (Posters)

Human travel into space exposes them to the spaceflight environment, which includes extreme temperature variations, exposure to deep-space radiation, and the effects of weightlessness (e.g. microgravity). Physiological adaptations occur when exposed to these different environmental stimuli; one example includes brain function. Brain function is reliant on adequate blood perfusion supplied by the cardiovascular system. Both the cardiovascular system and the brain have been shown to adapt to extreme conditions such as spaceflight, where astronauts are subjected to environmental factors such as deep-space radiation and microgravity. Some of these changes include cardiovascular adaptations, musculoskeletal deconditioning, and spaceflight-associated neuro-ocular syndrome. To assess these risks and how they may affect the cardiovascular system, we conducted a study of the long-term single and combined effects of deep space radiation and microgravity exposure on rats. Our hypothesis includes studying changes in blood vessel structure and function, as well as biochemical pathway changes (e.g. endothelial nitric oxide synthase [eNOS], oxidative stress) resulting from simulated spaceflight exposure. Biological samples of the rat basilar artery were collected and processed by cryostat sectioning for immunofluorescence protein analysis. The findings from this study will increase our overall knowledge in the field of space medicine and life sciences as well as improve life on Earth through advancements made in medicine and health.



Genome-wide sequencing and quantification of circulating microRNAs for dogs with congestive heart failure secondary to myxomatous mitral valve degeneration.

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Abstract (Posters)

Myxomatous Mitral valve degeneration (MMVD) with subsequent congestive heart failure (CHF+) continues to be among the leading cardiological causes of morbidity and mortality among canines. MMVD is typically idiopathic and cryptic compared to other etiologies of CHF+ resulting in a difficult prognosis that presents risk for inappropriate treatment and therapy. Promising evidence suggests genomic analysis of circulating microRNAs using next-generation sequencing technology (NGS) may be the best metric to determine the pathological causes of CHF+. Our experimentation included two categories of client-owned canines, nine clinically normal and eight diagnosed with CHF+; proper precautions were taken to ensure that the canine's medical history did not interfere with results. 2 mL blood samples were collected from each canine and an aliquot of supernatant was added to each in vitro sample to isolate the microRNA in the plasma. Afterward, the microRNAs were added to a small RNA library preparation set before undergoing reverse transcription and qRT-PCR assay amplification for analysis. 326 microRNAs were identified with 5 canine specific microRNA's (miR-133, miR-1, miR-139, cfa-let-7e, and miR-125a) being significantly upregulated CHF+ plasma group and 4 microRNA's (miR-30c, miR-128, miR-142, and miR-423) being significantly downregulated in the test group, indicating possible biomarkers for CHF+. It is possible that discrepancies in circulating microRNA expression may be indicative of varying myocardial pathologies depending on the classification and stage of heart disease and myocardial wall stress. Therefore, there is promise microRNA and NGS can be further researched as a prophylaxis for varying heart conditions, such as acute-MI.



A Study to Elucidate Matrix Metalloproteinase 14 Expression in Pancreatic Cancer Cell Lines Under Both Normoxic and Hypoxic Conditions.

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Abstract (Posters)

Pancreatic cancer is the eighth and tenth most common cancer in men and women respectively. Early detection is challenging and when successful associated with a relative five-year survival rate of 9%. Various key players have been implicated in the development of pancreatic cancer, among these is a member of the matrix metalloproteinase (MMP) family of proteolytic enzymes, MMP-14. This enzyme's proteolytic activities have been implicated in cancer proliferation, invasion, and metastasis; however, little is known about its non-proteolytic and/or intracellular roles. Furthermore, research to date has focused on in vitro cell culture conditions under normoxic conditions, yet cancer exists physiologically under hypoxic conditions. Under physiological hypoxic conditions members of the MMP family have been associated with altered cellular behavior. Thus, there is a need to elucidate MMP-14's roles under both normoxic and hypoxic conditions. This study seeks to: (1) characterize the expression of MMP-14 in two representative pancreatic cancer cell lines, ASPC-1 and CFPac-1, in relation to other cancer associated MMPs; (2) elucidate the impact of hypoxic conditions on MMP-14 expression and/or functionality; (3) monitor the differences at both the gene and protein expression levels.



Delineating the Intracellular and Extracellular Expression of MMP-14 in Pancreatic Cancer Cells Under Hypoxic and Normoxic Culture Conditions

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Abstract (Posters)

Pancreatic cancers are among the most difficult cancers to treat with a median 5-year survival rate of 9%. Disease etiology correlates with the expression of various members of the matrix metalloproteinase (MMP) family of enzymes and at different stages. MMP-14 is a membrane associated proteolytic enzyme affiliated with cancer proliferation, migration, angiogenesis, and collagen turnover, all associated with a malignant profile. These known characteristics of MMP-14 are affiliated with its extracellular expression; however, recent studies have suggested a non-proteolytic intracellular role that has yet to be fully characterized. Additionally, research to date associates the intracellular role for MMP-14 to cellular oxygenation levels; thus, suggesting this enzyme should be studied under physiological levels of oxygen. However, current research trends utilize normoxic culture conditions, not affiliated with normal physiology, as opposed to hypoxic conditions that may be of greater relevance and translatability. Furthermore, pancreatic cancers are well known to have hypoxic niches; these niches can lead to inflammation resulting in angiogenesis and altered MMP expression. This present study uses two human pancreatic cell lines from a primary and metastatic site, BxPC-3 and HPAF-II respectively, to quantitatively delineate the expression of extracellular/intracellular MMP-14 using flow cytometry. Also, the study seeks to assess the impact of hypoxia on the MMP-14 expression pattern in these cell lines and determine how that may contribute to the overall malignancy of pancreatic cancer at both the gene and protein expression levels.



Attention, Working Memory, and Adaptive Functioning in Emerging Young Adults with Psychometrically Defined Schizotypy

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Abstract (Posters)

Schizotypy is a multidimensional construct of personality traits associated with schizophrenia-related disorders. The construct is broken down into positive, negative, and disorganized symptoms. Higher scores of psychometrically defined schizotypy have been correlated with cognitive deficits in attention and working memory. Furthermore, previous research has shown that higher levels of schizotypy are associated with poorer quality of life. The purpose of this research is to investigate the relationship between schizotypy, cognitive deficiencies, and adaptive functioning among emerging young adults ages 18 to 29. Adaptive functioning refers to an individual's ability to navigate the demands of daily life in various areas. Schizotypy is measured through the administration of the Schizotypal Personality Questionnaire (SPQ), and adaptive functioning is measured through the WHO Disability Assessment Schedule 2.0 (WHODAS 2.0). Cognitive abilities are gauged through the completion of online performance tasks. The Continuous Performance Task – Identical Pairs (CPT-IP) is used for attention and a visuospatial n-Back task is used for working memory. This study aims to determine (i) the overall relationship between schizotypy, cognitive ability, and adaptive functioning, (ii) the relationship between attention and working memory, and (iii) the relationship of specific SPQ and WHODAS 2.0 domains with each other and cognition.



High-pressure study of Nd-B system up to 28 GPa

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Abstract (Posters)

High-pressure materials research is a promising interdisciplinary field with broad external applications, such as for energy storage and new protective materials. Studying materials under extreme conditions can lead to the discovery and synthesis of new materials not found at ambient conditions. Elevated pressures and temperatures can cause materials to change their atomic structure, resulting in new unique properties. Using a diamond anvil cell, we can provide static compression on samples and observe alterations in their crystal structure. Laser heating is utilized to facilitate the phase transition.

Rare-Earth borides are of great interest to researchers due to their use in areas like optoelectronics and thermoelectric materials. Different Rare-Earth elements introduce exciting properties such as high neutron absorption, superconductivity, and interesting magnetic behavior. Specifically, borides containing neodymium, such as NdB₆, may hold a low work function. The work function is the lowest energy required to separate an electron from a solid. Materials with a low work function have potential use in items such as electron emitters in electronic devices.

Using X-ray diffraction with a laser-heated diamond anvil cell, we studied the high-pressure behavior of the Nd-B system up to 28 GPa and 2250 K. In addition, Raman spectroscopy was employed to characterize the Nd-B system. Data analysis is ongoing, and results of a new crystal structure will be reported at the conference.



The Rod Visual Pigments of Syngnathidae species and their Role in Evolution

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Abstract (Posters)

The spectral tuning properties in rod (RH1) visual pigments of the gulf pipefish (*Syngnathus scovelli*), greater pipefish (*Syngnathus acus*), dwarf seahorse (*Hippocampus zosterae*), slender seahorse (*Hippocampus comes*), and the lined seahorse (*Hippocampus reidi*) were examined to determine if this specific retinal pigment has adapted to brackish waters of seagrass beds or if they maintained the spectral sensitivities found in open water species. Predicted rhodopsin sequences were obtained from the National Center for Biotechnology Information for each fish and their deduced amino acid sequences were used to identify and compare key spectral tuning positions between each fish species and with cow (Bovine) rhodopsin as control. Out of eighteen critical amino acid positions, the pipefish and seahorses had key changes in relation to the cow at positions 83, 292, and 299 that indicated that there were shifts in absorbance maximum for RH1. To further examine the key changes, amino acid sequences were run through LOMETS to model and compare respective protein structures. These models were examined in Pymol and the distance between the Schiff- base nitrogen of the opsin protein to key residues were measured to further identify changes in RH1 pigments. We propose that the spectral tuning properties of the Rh1 pigments in pipefish and seahorses have changed to adapt to more brackish waters of the habitats they have evolved to live in. In the future we can look at the cone pigments, in the context of color vision, to further examine how visual pigments in pipefish and seahorses have evolved.



Investigation of magnetic-exchange pathways and electronic properties of transition-metal doped 2D-TiS₂

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Abstract (Posters)

2D materials have been of increasing interest since the development of graphene in 2004. They offer promising applications, especially in the fields of sustainability and nanotechnology. In addition, transition metal-dichalcogenides (TMDC's) are a popular group of compounds due to their abundance and interesting properties. In this study, we use density functional theory (DFT) to predict magnetic and electrical properties of 2D titanium disulfide (TiS₂), a common TMDC, as a function of transition-metal dopants and separation between the dopants. Vanadium, chromium, and manganese are the dopants of interest due to how they add magnetism to an otherwise non-magnetic TiS₂ mother compound.



Genetic Variation in Nitrogen Content in Cowpea Seed Measured by Near-Infrared Spectroscopy and Wet Chemistry

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Abstract (Posters)

Cowpea (*Vigna unguiculata*) is a drought-tolerant legume of economic importance in Africa, South America, and the southeastern United States. Functioning as a subsistence crop, cowpea seeds are a rich source of amino acids, carbohydrates, and protein. In the interest of breeding more nutritious cowpea cultivars, quick and cost-effective methods of nutrient analysis are key. The standard wet chemical method of nutrient analysis of grain is typically a time-consuming, destructive process, leading to the loss of valuable seed. Near-Infrared Spectroscopy (NIRS) is a nondestructive method of analysis that uses the reflectance of light from 700 to 2500 nanometers to determine the properties of a sample while retaining its' integrity. It is also a fast process, requiring very little time processing per sample. In this experiment, both whole and ground cowpea seeds were analyzed using NIRS equations and wet chemistry. We found that regardless of the equation used, it was necessary to grind cowpea seeds for accurate data. We also found that using the NIRS-Corn Silage Unfermented equation yielded values closer to the baseline wet chemistry than the NIRS-Legume/Hay equation. Analysis of 110 samples containing 55 accessions, 2 reps each, showed variance in crude protein content ranging from 19.69% to 39.19%, with 20 samples showing >30% crude protein content. This data will be used in the selection of cowpea accessions for breeding lines with higher crude protein content.



The Impacts of Nitrates on Survival and Early Morphological Development in Eastern Oyster Larvae

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Abstract (Posters)

High amounts of nitrogen in ocean environments can be detrimental to aquatic life as it is converted to much more harmful forms like ammonia. Oysters have a major role in combatting this effect, however, 85% of their habitats have been lost globally over the past 100 years. Three experiments were conducted to examine the impacts of nitrate on the development of the Eastern oyster's (*Crassostrea virginica*) larvae. In experiment 1, oyster larvae were placed in containers with concentrations of 0 mg/L, 10 mg/L, 20 mg/L, 30 mg/L, and 50 mg/L of nitrate for 14 days to identify low, medium, and high nitrate concentrations that demonstrate a range of larval stress. This showed a positive correlation between nitrate concentration and larval survival. The impacts of these concentrations on larval growth were observed for differences in shell length, width, and area over fourteen days. I identified differences in growth rates for length, width, and area from days 3-5, but those differences seemed to dwindle after day 6. Nitrates may impact early survival and growth rate, but it is unclear the mechanism that causes these differences so future work aims to test the microbiome of the larval samples on day 5 to determine the variance in *Shewanella* presence between treatments. It is expected that nitrate exposure will be positively related to the presence and development of *Shewanella*, and this work can be used to understand the impact of aquatic changes due to human interactions on marine life.



Disulfiram Metabolites & Sulindac: Two Potential Therapeutics For Alzheimer's Disease

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Abstract (Posters)

Alzheimer's disease is a neurodegenerative disorder that predominantly affects senior citizens causing the eradication of memory and thinking skills. Early signs of Alzheimer's cause damage to the hippocampus and entorhinal cortex. Current FDA-approved medications such as donepezil, rivastigmine, and galantamine can help mitigate the effects of mild Alzheimer's symptoms and regulate neurotransmitters; however, those medications do not completely cure the disease. Furthermore, neurodegenerative diseases are implicated with neuronal over-excitation via glutamate receptors in addition to oxidative stress and calcium overload. Sulindac, a non-steroidal anti-inflammatory medication, contributes to decreasing oxidative stress and induces pro-survival signaling in models of tissue ischemia and neuronal overexcitation. Carbamathione, a glutamate receptor partial antagonist, is protective against excitotoxicity through downregulating ER stress and mitochondrial stress. The current studies address the effects on maintaining neuronal cell viability and examine the mechanisms of carbamathione and sulindac mediated neuroprotection using disease models of neuronal excitotoxicity.



Influence of the polarization direction on the extraction of the deuteron tensor polarized b_1 structure function.

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Abstract (Posters)

Quantum Chromodynamics (QCD), the theory of the strong nuclear force, plays a crucial role in nuclear physics. This force is responsible for the structure of the nucleus, which consists of protons and neutrons. The proton is positively charged, and the neutron is electrically neutral, therefore one might assume the protons would repel one another. The strong nuclear force is much stronger than the electrical forces repelling the protons, and thus binds the nucleus together.

One method for studying the QCD structure of a particle is Deep Inelastic Scattering (DIS). In DIS, a lighter particle is used as a probe, such as an electron, and collides with the target particle, such as a proton or a nucleus. Jefferson Lab (JLab) has an upcoming experiment in which it will measure observables that will help gain insight into the QCD structure of the deuteron, which consists of a proton and neutron.

We present a theoretical study using a theoretical model for the deuteron structure where we investigate the influence of the polarization direction on the extracted structure functions and associated uncertainties. The results can help guide the choices made in the upcoming Jlab experiment.



Access Barriers to Long-term Healthcare for Female Sexual Assault Survivors

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Abstract (Posters)

Background: Approximately one in five women in the United States experience childhood sexual abuse or rape as an adult. Healthcare providers are often not equipped to address the long-term effects of sexual trauma and its impact on health.

Research Question: How can healthcare providers lessen service barriers for sexual assault (SA) survivors?

Method: This qualitative study employed convenience sampling from clinics that offered family medicine, urgent care, & gynecology. Participants included 11 physicians, physician assistants, and nurses. A semi-structured interview guide explored health providers' perspectives and current practice procedures regarding treatment for sexual assault survivors and the barriers they face in treating this population. Data analysis involved a constant comparative method for analyzing the data set.

Results: The findings indicated three key barriers to providing care for female SA survivors: 1) discomfort in discussing the topic of SA, 2) lack of knowledge and training on trauma-informed care, and 3) lack of time spent with each patient.

Discussion: Recommendations for healthcare providers include 1) universal trauma-informed care training to better serve and support sexual assault and other trauma survivors, 2) revision of intake forms to include questions on sexual trauma history, and 3) inclusive services such as spending extra time on procedures, talking gently with the patient, and providing resources for mental healthcare services.

Implications: Sexual assault survivors are less likely to be triggered or retraumatized by trauma-informed healthcare providers. Thus, they do not avoid annual physicals, medical tests, or setting up appointments when not feeling well, thereby enhancing their health outcomes.



Inferring Functional Divergence in the p53 Family by Investigating Evolutionary and Structural Dynamics

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Abstract (Posters)

The p53 protein family comprises a set of functionally diverse transcription factors, with key roles in mediating cellular stress responses and developmental processes. Within vertebrates, the p53 family is encoded by the TP53 gene and its paralogs, TP63 and TP73. As the most frequently mutated gene in human cancers, with functions spanning cell-cycle regulation, an intrinsic understanding of TP53 stands as a cornerstone of clinical cancer research. Here, we utilize a computational approach to gather insights into the evolutionary dynamics and structural properties underlying the p53 family. Through a cross-sectional analysis involving phylogenetics, intrinsic protein disorder, and structural predictions, the interplay between protein sequence and structure across the p53 family is investigated. Our phylogenetic findings remain consistent with gene duplication scenarios at the time of early vertebrates, resulting in the stabilization of p53/p63/p73 paralogs. We further highlight distinct ongoing evolutionary dynamics across each clade, measured by their high evolutionary rates and disorder conservation. Apart from suggesting clinical considerations for protein structure upon TP53 missense mutations, our approach increases resolution of species-specific events in the evolution of the p53 family. In particular, we further trace phylogenetic patterns among retrogene (RTG) copies of p53 encoded in the genome of *Loxodonta africana* (African elephant). By comparatively investigating the evolutionary patterns of these TP53RTGs against the p53 family, a high degree of divergence is illustrated, potentially signaling towards ongoing functional diversification. These observations, together, elucidate impacts of evolutionary distance and structural properties shaping the differentiation of function across the p53 family.



Circulating Non-Exosomal and Exosomal differences in MicroRNA-9 and MicroRNA-181c in association with Canine Congestive Heart Failure secondary to Myxomatous Mitral Valve Degeneration

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Abstract (Posters)

The intent of this study is to explore the differences between circulating non-exosomal and exosomal MicroRNA (miRNA) for dogs with Congestive Heart Failure (CHF) secondary to Myxomatous Mitral Valve Degeneration (MMVD). More specifically this study focuses on miRNA-9 and miRNA-181c, which has been previously studied and associated with CHF. This study analyzed eight client-owned healthy dogs and eight client-owned dogs diagnosed with CHF secondary to MMVD. Blood samples were collected before any CHF treatment took place and were centrifuged to separate the plasma. Afterwards, the miRNeasy Serum/Plasma Advanced kit and the miRCURY Exosome Serum/Plasma kit were then utilized to isolate the non-exosomal and exosomal RNA respectively. After this process, the levels of microRNA found in the samples were estimated. We predict that the miRNA-9 and miRNA-181c would have a statistically significant increase in the dogs with CHF secondary to MMVD compared to the samples from healthy dogs. Additionally, variations are predicted to occur when comparing the circulating non-exosomal and exosomal RNA. With this supplemental information, the study of microRNA can become more standardized. Continued research on microRNA connected to CHF could lead to clinical trials/treatments using miRNA mimics and inhibitors as biomarkers.



Depictions of Athena and their effects on western feminism in the modern day.

Ananda Walker

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Abstract (Posters)

Everyone knows huge swaths of modern day western society have been deeply informed and influenced by Greek and Roman ideas. Everything from politics to architecture has roots in Greco-Roman ideals, in spite of this being a fairly well known fact rarely is thought given to how these ideals may be having an effect on women in the modern day and age. While there are certainly many ways in which this can be seen, I believe art to be one of the clearest. More specifically I believe depictions of Athena, specifically on the attic black-figure neck amphora, largely informed modern day feminist ideals and western ideas surrounding women hood. Within this research I'll be exploring how I believe you can see this throughout pop culture with use of figures such as Wonder Woman and Elle Woods and the public's reactions to said characters as well as showing precedent for the above claims through understanding of both current and previous incarnations of the women's suffrage movements. Through these parallels I believe we can better understand the current world can better understand both individual political events and the world in general through historic precedent.



Effects of microplastics on symbiosis re-establishment in coral model *Aiptasia* post-bleaching event

Anna Beatriz Machado

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Abstract (Posters)

Microplastics are a growing concern to society: over 19 tons of plastic enter the ocean every hour. Microplastics impact marine life, but little is known about how they affect cnidarian-algal symbioses. These associations are foundational to coral reef ecosystems and are increasingly threatened by human drivers, including pollution and climate change. Using a model sea anemone system, we monitored symbiosis establishment between host polyps (H) and microalgal symbionts (S) that had been cultured (+) or not (-) in artificial seawater with a 0.3mg/mL concentration of PVC microplastics for 7 weeks prior to inoculation. Aposymbiotic sea anemone polyps (n = 8 per treatment) were individually exposed for 48 hours to 5×10^5 symbiont cells per mL^{-3} in a full factorial design (H+S+; H+S-; H-S+; H-S-) and sampled at 48 hours, 1 week and 2 weeks post-inoculation to track the progress of symbiosis establishment. Symbiont abundance in each polyp was quantified via two methods: fluorescence microscopy and automated cell counts on a Countess II instrument. Symbiont density was normalized to host protein content via Bradford assays. Our results indicate that exposure to microplastics reduces symbiont colonization rates. Thus, microplastics negatively impact a key ecological process, with implications for coral recovery after heat-induced coral bleaching events.



The Misrepresentation of Political Polarization in Today's Society

Radha Modi, John Anderson
Florida State University, Tallahassee, USA

Abstract (Posters)

My research has been focused on political polarization, first as a broad concept and then its implications in higher education particularly in the classroom. While researching polarization as a broad concept, the goal was to find the established authors and the field and to identify a clear definition of political polarization. The conclusion from the literature review is that, in American society, the amount of political polarization has not increased amongst the general population. The increase in political polarization we have seen in American society has all been concentrated at the top, including elected officials, the media, etc. This idea of a lack of increase in political polarization amongst the general public, compounded with the idea that the elites are responsible for both the increase in polarization and propagating polarization has caused us to reframe how we are researching this topic with regard to higher education. With the knowledge that polarization largely comes from the top down, I started a review of media reporting on two laws passed in Florida that deal with higher education. I reviewed HB7, titled the "Stop WOKE Act", and HB233, "Postsecondary Education". The conclusion is that these two bills seem to be largely inconsequential; there does not seem to be any way to report any infractions to the bill, and any consequences for infractions are unknown or unspecified. Overall, I conclude that polarization is limited to the elite levels government and higher education and has not trickled down to the classroom.



The Prevalence of The Novel Species of *Anaplasma: Candidatus Anaplasma testudines* in the *Gopherus polyphemus* Southern Florida's Population

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Abstract (Posters)

The gopher tortoise is an ecologically important keystone species whose burrows provide shelter for other organisms and increase plant biodiversity. However, gopher tortoises are threatened and protected in Florida as their populations are low due to numerous reasons such as habitat loss, overcrowding on preserves, and various diseases. The objective of this study is to investigate the presence of the newly emerged blood pathogen, *Candidatus Anaplasma Anaplasma* in the Southern Florida population; specifically, the Abacoa Greenway and Florida Atlantic University Boca preserves. This candidate pathogen belongs to the *Anaplasma* genus and *Anaplasmataceae* family, which has been studied in relation to the clinical symptoms of mild to extreme anemia. The species we are interested in studying, *Candidatus Anaplasma testudinis*, has been discovered in both gopher tortoises and other reptiles. We isolated DNA from nucleated gopher tortoise blood and performed PCR reactions using 16S rRNA primers. PCR-positive samples will be purified and submitted for Sanger sequencing and analyzed phylogenetically. These findings will help us characterize the pathogen threats to gopher tortoises in Southern Florida and contribute to the ongoing anemia research in this species.



Research review of 'Genome-wide sequencing and quantification of circulating microRNAs for dogs with congestive heart failure secondary to myxomatous mitral valve degeneration'

Alexander Lam¹, Amy Bohan²

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Abstract (Posters)

Through the usage of genome-wide sequencing, to identify and characterize expression profiles of microRNAs, for dogs that suffer from congestive heart failure secondary to myxomatous mitral valve degeneration.



Muscle memory may be initiated within the structure of the sarcomere

Santiago Gonzalez Quintero

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Abstract (Posters)

Muscle memory, the mechanism that supports the execution of a motor task during retraining, can be found in the cerebellum where commands are being sent to accomplish this motor task. Muscle memory can also be found in the muscle cell itself, where new myonuclei was created during growth at training, not lost while detraining, and supports retraining.

This project intends to demonstrate that muscle memory is initiated at the basic contractile unit, the sarcomere. Connection between the sarcomere and nucleus is established when the proteins necessary for sarcomere function are coded in the myonuclei, also through the sarcoplasmic reticulum that stores calcium, and structural proteins that connect nucleus with actin filaments. Three mechanisms are involved in the creation of new myonuclei: this sarcomere-myonuclei relationship, neuromuscular junction, and satellite cell activation.

When initial training happens nerves send action potentials until it reaches the neuromuscular junction where it will eventually get to the contractile unit, provoking contraction from the sarcomere. Continuous contraction demand produces microtears in muscle fibers. Immune response to this microtears involves interactions between leukocytes and satellite cells. Leukocytes send chemical signals to the satellite cells, leading to specialization of stem cells and activating recovery mechanisms. Microtears are repaired as satellite cells differentiate to augment existing fibers and cover new myonuclei demand.

Throughout detraining muscle fibers shrink but myonuclei are not lost. In retraining muscle memory is evident as regrowth will benefit from previously created myonuclei. Here it is observable that with increased sarcomere demand more myonuclei will be created.



CRISPR Editing in the Retina of Postnatal Mice

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Abstract (Posters)

The study of the function of different proteins in biological systems has been extensively studied through genetic manipulation, specifically through the use of knockouts (KOs) and knockins. However, traditional methods using mice models are time-consuming and resource-intensive. Recent research has shown that it is possible to use CRISPR-CAS9 to genetically modify and create new mice models in relation to the brain, but the Cas9 protein can degrade without the genetic change being observed. Our lab is developing an alternative way to create the same KO using plasmids, which have a higher integration efficiency and degrade much slower in comparison. We plan to study the function of cone-specific proteins by knocking them out in cones, but cones are mature and postmitotic after birth of the mouse, making plasmids unable to enter the nucleus due to the selectivity of the nuclear pore complex. Instead, we will focus on using plasmids to knock out specific proteins in rod precursors, which are still mitotic after birth and are editable. This method, if successful, can significantly enhance the efficiency and effectiveness of researching protein function in the retina, thus leading to an acceleration of discoveries and developments in the field, such as gaining deeper understanding of certain genetic optometrical diseases and creating new therapies and treatments for them.



Modeling the Movements of a Simple Pendulum

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Abstract (Posters)

The simple pendulum consists of the pendulum pivot, string (length), and the bob of the pendulum (mass). The bob hangs from a string which is fixed to the pivot. The length of the pendulum is a rigid string that has an absolute length and does not change. Without any force applied to the pendulum, it rests at its resting position. Once the pendulum is activated by releasing it from a certain angle, it exhibits inertia (Newton's second law of motion which states that an object stays in rest or in motion unless acted upon by a force). Here, we are going to mathematically simulate a simple pendulum model using physics' laws. First, we are going to derive the equation for the position of the pendulum at different times. Then we are going to derive the equations of the period, frequency, and length of the pendulum using the equation for motion of the pendulum. Using these equations, we see that the movement of the pendulum (avoiding air resistance) is solely dependent on the length of the pendulum and has nothing to do with the mass of the pendulum. Then we will use MATLAB to model this result and see an animation of the pendulum's movements. Furthermore, we will experiment with different values for length and mass to visualize this result in MATLAB.



Sounds of a Wonder City

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Abstract (Posters)

The purpose of this project is to demonstrate how the sonic environment of the Bolivian capital city of La Paz is reflected and manifested in music. In order to build a profile of the sound landscape of the city, hundreds of sounds were recorded throughout the city and analyzed for similarities and consistencies or rhythm. Moreover, Professional Bolivian musicians were interviewed regarding the different meanings of sounds in different cultures, as well as their approach to utilizing city sounds to narrate different philosophies through their music. This research will illustrate the emotional value of sounds in the Bolivian culture when used in a piece of music and how the soundscapes of La Paz affect the sonics of Bolivian musicians.



Is It Possible to Breastfeed and Work Full Time? A Critical Review

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Abstract (Posters)

Mothers in the 21st century cover it all, from house chores to full-time jobs and childcare. To make these possible, sacrifices must be made, including suppressing their feelings and needs. In the event of breastfeeding, most of working mothers encounter additional challenges such as medical complications, lacking a support system, and stereotyped perception. Sometimes working mothers would feel intimidated or embarrassed lactating at work, affecting not only their self-esteem but also their job performance. This paper articulates the complicated situations working mothers experience when trying to breastfeed while working full-time through a critical review of relevant literature and practices. The research findings indicate that many aspects of stress ensue the difficulties faced by working mothers who tend to breastfeed at work and these stresses will interfere with their daily life. Additionally, discrepancies can be observed in breastfeeding tendencies since the working mother population isn't impacted equally. Minority groups, low-income, and less-educated mothers are at a greater disadvantage. As a result, it's vital to implement lactating programs in all industries that ensure the underserved population's needs. It is suggested that employers' programs should cover education, support groups, occupational health nurses, and the implementation of technology to reach all mothers in the workplace pre- and post-delivery. An increase in job satisfaction is shown by mothers with access to these accommodations prolonging breastfeeding. The paper presents rich findings that provide valuable implications for policymakers and practitioners who intend to promote breastfeeding among working mothers and happiness and wellness for families with young children.



Obtaining high quality western blots in minimal time through optimized western work flow

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Abstract (Posters)

Western blotting is a prominent molecular biology technique for studying protein expression under various biological conditions. Our objective is to optimize the workflow of western blotting using the newest machinery from Invitrogen and Licor. With the improved protocol, students and research laboratories will be able to maximize their time in the laboratory while running western blots by better comprehending the theory and achieving faster results thanks to the enhanced protocol's shorter run time and easier stages. The optimized workflow involves Invitrogen Mini gel tank to run SDS-PAGE gels; Power blotter XL to transfer proteins from gels to nitrocellulose or PVDF membranes; iBind Flex for incubation with primary and secondary antibodies, and Licor Odyssey XF digital imager for imaging the chemiluminescent blot, which all aid in maximizing efficiency of the western blot process. Our preliminary experiments showed that the power blotter could effectively transfer proteins in 7 minutes rather than 2 hours or overnight transfer, and the iBind, with its unique sequential lateral flow technology, could complete antibody binding and washing in under 3 hours. The Licor imager can image the blot in minutes and analyze protein expression with simple software. We intend to broaden our experiments to include housekeeping gene-encoding proteins as well as intracellular proteins with low copy number. With this improved workflow we were able to cut the required time to produce high-quality western blots from running a gel to imaging the blot from 20 hours to 4 hours using our method.



An Assessment of the Effect of Location on the Health of *Jacaranda mimosifolia* Growing in a Campus Parking Area Versus a Lawn

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Abstract (Posters)

Abstract

I aimed to investigate the impact of environmental conditions on the growth of *Jacaranda mimosifolia* by observing one that is growing in a lawn close to the bay area at the New College of Florida and another one growing in a parking lot on campus. I discuss the problematic and complex concept of tree health, test soil salinity, soil moisture, herbivory, and canopy size, to determine the extent to which locations and their environmental differences play a role in tree growth. My study's results conclude that the measured values for each of the factors mentioned above are not the best predictors in the assessment of growth as there seemed to be no consequential difference in soil quality and herbivory patterns in the two localities. So, what attributes for the difference in larger canopy size for one and exclusive fruit growth in the other? Plausible explanations and improvements for the experiment are discussed.



Identifying the expression profiles of circulating microRNA-1 and microRNA-21 in canines with congestive heart failure

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Abstract (Posters)

Congestive Heart Failure is a common and grave consequence of high blood pressure and coronary artery disease. Triglyceride and a relatively high cholesterol level in the blood are rampant when compared to the percentage of abrupt heart failure. There are no medical treatments that can delay this condition. Consequently, the morbidity and mortality rates related to congestive heart failure are high. Ergo, the analysis of microRNA-1 and microRNA-21 is indispensable to generate results since microRNA-1 is crucial in regulating cardiomyocyte apoptosis whilst microRNA-21 is vital in the developmental process of cardiovascular and pulmonary diseases. A study consisting of a less invasive approach for dogs with congestive heart failure (CHF) was conducted to identify the expression profiles of circulating microRNAs via isolated blood samples. Approximately sixteen dogs were involved in the study. Eight healthy client-owned subjects were compared to eight client-owned others with congestive heart failure secondary to myxomatous mitral valve degeneration (MMVD). Blood samples were collected before administering cardiac medications for the management of CHF. The miRNeasy Serum/Plasma Advanced kit was utilized to isolate the freely circulating miRNAs from serum and plasma samples. Correlation does not equate causation. Thereby, the prediction of the results of miRNA-1 and miRNA-21 would have a higher statistical significance in the canines with CHF compared to the healthy canines. Furthermore, variations are to be expected when further validation is required to confirm the significance of miRNA-1 and miRNA-21. These parameters can contribute to the management of dogs with CHF secondary to MMVD.



Effects of Underlying Iron Metabolism Disorders on Fertility

Gianna Parente

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Abstract (Posters)

Iron metabolism disorders affect more than is superficially noticed. While not thought of immediately, iron metabolism disorders can cause many issues in fertility. This is due to the quality of the reproductive cells and genetics that are affected by iron. Iron metabolism disorders are categorized by high and low levels of iron. High iron levels are called hemochromatosis, which is also known as iron overload, while low levels of iron are called iron deficiencies. This is an important factor for men and women to be aware of when considering reproduction because it effects genetics. In men and women, the genes that are influenced by iron are HFE, TMPRSS6, and TFR2. HFE is expressed when there are high iron levels, while genes TMPRSS6 and TFR2 are expressed when there are low levels of iron. Iron disorders cause issues for male and females, in which the condition is expressed and can also cause issues in the fetus. As a result, this can affect the fetus's genetics or cause frequent miscarriages.

The purpose behind the research of iron metabolism disorders and its effects on fertility, is to bring awareness to the issues that are seen with iron interacting with reproductive cellular health. Iron has many effects and can cause severe conditions if not diagnosed and treated. When educating the public on these effects, it will bring attention to how it causes fertility issues on a genetic scale point. After identifying the issue, there are many ways to maintain a healthy iron level.



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Pollutants Found in the Ocean Can Cause the Health of *Exaiptasia diaphana* to Deteriorate

Lilia Fernandez

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Abstract (Posters)

Despite the positive impact that coral reefs provide to the ecological world, anthropogenic climate change has caused the rapid loss of biodiversity and of reef area around the world. Corals and other cnidarians have an obligate symbiosis with unicellular algae and understanding this relationship and how it will be affected as ocean temperatures rise and nutrients from runoff increase will be relevant for understanding how corals will continue to be affected by climate change as the decades go by. By assessing symbiont density and identity at different concentrations of nitrate, a nutrient found in pollution caused by runoffs, it is expected for the symbionts to decrease in population, simulating a bleaching event. It is also expected for the symbiont species present in the model anemone *Exaiptasia diaphana* that is most resistant to excess nitrate to proliferate within the anemone once the other species have begun to escape. Comprehending the results from this simulation will lead to a better understanding of not only the detrimental effects of climate change but also how to mitigate its effects on the coral and cnidarian community.



Dante as a Weapon in American Politics

Hannah Raisner

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Abstract (Posters)

In the 21st century Dante and his *Inferno* are everywhere. There are countless references to the poet and his work in everything from poetry to film to video games. This influence is often studied by scholars, but one little-researched subject area where Dante appears frequently is American politics. The poet's commentary on ethics and morality attracts many politicians and political commentators. They see his work as a way to find answers, as a manual to read, dictating who is right and who is wrong, who should win and who should not. These figures use the *Inferno* to take jabs at others in the political world, to categorize them as sinners who belong in Dante's Hell. There is a great level of debate regarding whether or not Dante wrote his *Inferno* as the simple guide for judgment political figures appropriate it to be, or as a more complex piece of literature, written by Dante to both critique and better understand the world around him, provoking questions about what is right and wrong, asking the reader to participate in self-reflection. This research investigates whether the use of Dante as a weapon in American politics is a faithful appropriation of the poet's work or a gross simplification, using a wide survey of literature to determine whether Dante Alighieri would approve of his modern political relevance.



High Pressure Studies on $\text{Cu}_2\text{ZnSnSe}_4$

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Abstract (Posters)

High-pressure research has opened an avenue of discovering efficient materials, such as $\text{Cu}_2\text{ZnSnSe}_4$ (CZTE), for renewable energy sources to combat the energy crisis. Solar cells are based on the photovoltaic effect to produce low-cost electricity. They are composed of four major layers: antireflective layer, top junction, absorber, and back junction. Some common materials used in the absorber layer of solar cells are gallium arsenide (GaAs), cadmium telluride (CdTe) and copper indium diselenide (CuInSe_2), but they are found to be toxic and costly during production. However, CZTE is another compound found in the absorber layer of solar cells and its components are earth-abundant and non-toxic. CZTE may prove to be a strong alternative to current commercially available products.

Compression of the existing material can lead to creation of new materials by changing their molecular structure and resulting in new properties not found at ambient conditions. CZTE was compressed up to pressures of ~ 38 GPa using a diamond anvil cell. X-ray diffraction was performed in situ to identify the structure of the compound and the pressure - volume dependence was fitted with the equation of state to identify the bulk modulus of the $\text{Cu}_2\text{ZnSnSe}_4$. Data analysis for X-ray diffraction was performed using CrysAlisPro and Jana2006. There was one phase transition found at ~ 10 GPa. In addition, Raman spectra of CZTE were collected in situ upon compression up to 38 GPa. Data analysis is ongoing, and the results will be presented at the conference.



An Integrative Taxonomic Approach to Species Delimitation within the *Smilax lasseriana* Species Complex

Natalie Heaton

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Abstract (Posters)

Smilax is a taxonomically difficult genus of dioecious vines that exhibits wide intraspecific and interspecific phenotypic variation. Relationships between some *Smilax* collected from across the Guiana Shield remain unclear, and morphological discrepancies among certain specimens identified as *Smilax lasseriana* suggest the existence of previously undescribed species. In order to investigate a putative new species from Suriname, multiple lines of evidence, including morphology, stomatal anatomy, and phylogeny, were considered. Over 80 *Smilax* specimens were examined in total. Traditional linear morphometric data on stem, leaf, and floral characters were collected and analyzed using ANOVA and PCA, while geometric morphometric data were extracted in the form of leaf outlines before also being analyzed using PCA. Stomatal impressions of certain specimens were taken and used to measure characters such as stomatal density and stoma height. Plastome and nuclear data were assembled and used to reconstruct a phylogeny using maximum likelihood. Both traditional and geometric morphometric analyses allowed for the distinction of a putative new species. Although stomatal data could not be reliably used to distinguish this putative species from *S. lasseriana*, this data did distinguish it from others in the complex. Evolutionary relationships between species in the complex, as elucidated through phylogenetic reconstruction, are also discussed here.



The modern world of uncertainty and the psychological impact of it

Kuan ting lu

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Abstract (Posters)

The black swan effect and Murphy's law are both theories that are directed towards uncertainties, uncertainties create a trend of history repeating itself with a hairline fracture of differences. Throughout historical financial crisis that leads to a period of recession, which intern turned into periods of depression from the most recent Covid-19 lockdown over 100 years ago to the great depression. During this dark period of uncertainty, the shadow desires to escape from the harsh reality of the real world come to play, through the natural body chemistry to an external substance. The difference between now and 100 years ago is that the hairline fracture development of technology and social media that comes in the form of a double edge sword. With the developing corrosion between social media and publicly traded pharmaceutical company stocks that specializes in anti-depressants over the last 10 years. It shows that the desire to escape from reality into a utopian world has gotten stronger due to black swan events occurring more often, as well as social expectations not matching up with real-life achievements creating an expectation divide. Life is full of uncertainties at the end of the day, it comes down to how you react to it that matters more than what has happened. During times of economic instability, there is a chance to make good life decisions, make investments, create sustainable wealth, and live a better life.



Scaling Academic Mentorship for Undergraduate Computer Science Students: A Framework for Intelligent Virtual Agent Support

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Abstract (Posters)

This work uses virtual humans to address the absence of scalable academic mentorship for undergraduate computer science students. Mentoring is an effective way to improve the academic performance, reduce drop-out rates, and increase satisfaction of undergraduate students. While some mentoring resources exist, often as mentorship programs, many barriers exist in higher education that reduce the accessibility and implementation of these mentorship programs. We propose the use of intelligent virtual agents (i.e., virtual humans) as an alternative for accessible mentorship, as they have been shown to be effective in educational contexts and for mental health support. Currently, frameworks for determining the content of virtual humans based on students' mentorship needs have not been widely explored. To address this issue, we developed a framework that uses feedback loops and machine learning tools to enable rapid and relevant content generation based on weekly student feedback surveyed in the Fall of 2022. We propose this framework can act as a blueprint for other academic institutions to provide learner-centered mentorship content, leading to more confident and better prepared students in the future.



Use of Induced Pluripotent Stem Cells to Reveal Genetic Mechanisms of Type 1 Diabetes Pathogenesis

Jackie Liu

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Abstract (Posters)

My project is investigating the genetic factors that contribute to type 1 diabetes development. Previous studies have shown that reactive oxygen species (ROS) play a role in cellular damage in type 1 diabetes progression, and also can be produced by cells in stressful conditions. Currently, the methods to detect ROS include using dyes, and I have generated stable cell lines with ROS sensors through lentiviral transduction to detect ROS presence. I am also aiming to create a reliable system to effectively deplete and reconstitute mitochondrial DNA to study different haplotypes and how they may affect type 1 diabetes risk or protection. For this, I have created an mRNA molecule that codes for an enzyme which cleaves the mitochondrial DNA in the cell. I am in the process of testing the mRNA transfection method which would allow the mRNA to be expressed. This method, if successful, will be easier than current methods of mitochondrial DNA depletion which require longer periods of time. The eventual goal is to apply these constructs into pluripotent stem cells to study different genomes in various cell types. The advantage of this method is that relevant cell types can be studied with the genes of interest in them. Additionally, the ROS sensor transduced into cells will change fluorescence that can be detected with flow cytometry. My research will incorporate these new techniques while also revealing insight into type 1 diabetes pathogenesis.



Utilizing Cerium Oxide Nanoparticles for Simultaneous Delivery of miRNAs targeting Angiogenesis and Anti-Inflammation in Diabetic Wounds

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Abstract (Posters)

In this study, we aimed to investigate the potential use of cerium oxide nanoparticles (CNPs) as a treatment for slow wound healing, a prevalent problem caused by the dysregulation of inflammation and angiogenesis in the wound area. The study specifically targeted diabetic wounds, where high reactive oxidative species (ROS) and low oxygen levels impede healing. To address this issue, we conjugated anti-inflammatory and angiogenesis-regulating microRNAs (miRNA-146a and miRNA-23a) onto CNPs using a water-based chemical hydrolysis method. The CNPs served as a nanocarrier for the miRNAs and as an antioxidant to counteract the accumulation of ROS. The conjugation of miRNAs on CNPs was confirmed through UV-vis and fluorescence spectroscopy/microscopy. The samples were then assessed for biocompatibility, cell transfection efficiency, angiogenesis, and inflammation. The results suggested that the dual miRNA decorated CNPs could decrease inflammation, enhance angiogenesis, increase the amount of oxygen by forming new vascularization, and remove ROS at the wound site. This research highlights the potential use of CNPs as a treatment for diabetic wounds, and further studies are needed to evaluate the therapeutic potential of this approach entirely.



Druggable Target Pockets in SARS-CoV-2 Non-Structural Protein 14

Raquel Battifora

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Abstract (Posters)

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a coronavirus strain, which causes Coronavirus Disease 19 (COVID-19). This strain targets pneumocytes and lung macrophages in the tissues within the lower respiratory tract. The proteins in SARS-CoV-2 can mutate and these variants have different levels of druggability. Though research has been done on the subject, there is much to be proposed regarding a broadly neutralizing antiviral for SARS-CoV-2. The aim of this work was to find a testable and druggable non-structural protein (NSP) within the virus, out of NSP14 and NSP9, as well as to find pockets within the protein that would allow for more precise testing. To this end, the proteins within SARS-CoV-2 were visualized, and their conservation was determined with a Multiple Sequence Alignment using Jalview. The evolutionary history of the proteins was found using a phylogenetic tree, which could help predict other variants in the future. It was determined that further investigation should be done on NSP14, due to its higher conservation meaning it is more testable. The pockets within the protein, cavities on the surface or interior of the protein with varying functions, were tested for druggability by determining their conservation, location, amino acids, and post-translational modifications (PTMs). Pockets 7, 10, and 15 were determined to be the ideal locations in NSP14 as they had higher conservation and low levels of PTMs. The results indicate that these pockets within this protein could be used as drug targets for SARS-CoV-2 and its current and future variants.



Stress and Violence in the Emergency Dispatch Field

Ayah Saleh

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Abstract (Posters)

Emergency operators are one of the most important and key factors in emergency services, screening, classifying, and dispatching each call as they see fit. Because of their importance, the performance of these operators is crucial. Existing research on the correlation between violence and stress on job performance focuses primarily on the medical field. This opened a gap in the field for research as there were no scholarly sources on the correlation between stress and violence on the job performance of emergency dispatchers. From the existing research, I concluded that exposure to stress and trauma impacts the mental well-being of emergency operators and dispatchers. This led me to the hypothesis that exposure to stress on the job and the negative impacts on an operator's mental health will slowly affect their job performance, in that their social, psychological, and physical health would be affected. To test my hypothesis, a mixed-methods study including narrative interviews and surveys was employed. I concluded that there is a constant flow of stress and a rather consistent flow of violence for dispatchers which affects the mental health and well-being of emergency dispatchers through vicarious trauma, burnout, compassion fatigue, and desensitization. As a result, the job performance of these operators is negatively affected. The implications of my research on communities are heavy. Many participants mentioned the short-term viability of working as a dispatcher. Paired with shortages across the country, more 911 callers may be placed on hold, inevitably leading to added stress on the workload of dispatchers.



Characterization of a novel jumbo phage and isolation of lysins for potential agricultural applications

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Abstract (Posters)

Phage 2D was isolated from soil in Fort Pierce, Florida, as a potential biocontrol agent for citrus greening disease caused by the gram-negative bacterium *Candidatus Liberibacter asiaticus* (CLas). The host for phage isolation was *Sinorhizobium meliloti*, a gram-negative, nitrogen-fixing bacterium, as it is closely related to CLas but easily cultured in the lab. DNA sequencing reveals 2D to be a jumbo phage with a genome of approximately 469 kbp. The largest phages isolated to date are Bacillus phage G at 497 kbp, Agrobacterium phage Atu_ph07 at 490 kbp, Salicola phage SCTP-2 at 440 kbp, and Xanthomonas phage XacN1 at 384 kbp. *Agrobacterium tumefaciens*, the host of phage Atu_ph07, is closely related to CLas and *S. meliloti*, and BLASTp results show a close relationship between 2D and Atu_ph07. 2D contains a terminase large subunit (ORF 404) with high BLASTp results to Atu_ph07 (80.8% query coverage and 43.4% identity) and other jumbo phages. The 2D genome also contains 57 tRNA-like sequences, similar to XacN1 with 56 tRNA genes. Primers were created for a lysozyme-like protein (ORF 90), a holin (ORF 201), and a lysin (ORF 374). These genes were successfully isolated from 2D by PCR, cloned into TOPO vectors using the Invitrogen TOPO TA Cloning Kit, and transformed into TOP10 *Escherichia coli* cells. Blue-white colony screening was used to select and culture transformed cells, and PCR was used to verify successful transformation of cells. Future work will screen these lysins for use as therapeutics against agricultural pathogens.

The Golden Oil of Life: An analysis on the effects of a daily dietary integration of extra-virgin olive oil on the reduction of cognitive frailty symptoms in cognitive frailty-positive patients.

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Abstract (Posters)

Cognitive frailty is known to be a clinically-detectable syndrome that is the precursor to neurodegenerative mechanisms; in particular, Alzheimer's Disease (AD). The rising problem of AD is a rising problem for the country, as AD is the fifth leading cause of death for all American adults aged 65 and older. Unfortunately, AD has yet to be detected as reversible; however, its preconditioning step is 100% reversible, making it a heightened priority for research. In particular, there have been significant strides in the promise of integrating extra-virgin olive oil in the daily diets of those with clinically-detected cognitive frailty, which have been proven in many cases to greatly reduce, and even eradicate in the long-term, cognitive frailty. A study was conducted to hypothesize if clinically diagnosed cognitive-frailty-positive patients adhere to a dietary intake of 40-50 g/day of extra-virgin olive oil, then they should experience reduced behavioral symptoms of cognitive frailty in accordance with a lower post-experimental score on the Clinical Dementia Rating (CDR) interview. The experimental duration is 6 months. The independent variable is time; specifically, the duration of extra-virgin olive oil dietary adherence measured by the number of months (0 months vs. 3 months vs. 6 months). The dependent variable is the score on the the CDR interview. To keep the study single-blinded, the non-olive oil alternative will be vegetable oil. Participants will take a pre- and post-assessment using the CDR interview to monitor the effectiveness of dietary extra-virgin olive oil adherence in reducing behavioral cognitive frailty symptoms.



Higher Education Interventions for Preparing Undergraduate Students to Thrive in the Data Economy

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Abstract (Posters)

Data is now recognized as “a factor of production” to produce goods and services. The Coronavirus Disease 2019 (COVID-19) pandemic has accelerated the need for higher education interventions that effectively prepare students for success in the data economy workforce. The Data Economy Workforce is composed of people who collect, store, manage and analyze data as their primary activity, or as a relevant part of their activities. The Transdisciplinary Data Scholars Development Program at Bethune-Cookman University in Florida has designed a collection of curricular, co-curricular and experiential learning interventions with the overall goal of preparing students to thrive in the data economy. During the session, we will share designs of these higher education interventions including metacognition-promoting learning transactions, data economy teacher education, and mentored experiential learning of data investigations. Participants will have opportunities to identify and explore potential areas of collaboration for transforming STEM higher education.



Quantifying Uncertainty in Ensemble Deep Learning

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Abstract (Posters)

Neural networks are an emerging topic in the data science industry due to their high versatility and efficiency with large data sets. The purpose of this modern machine learning technique is to recognize relationships and patterns in vast amounts of data that would not be explored otherwise. Past research has utilized machine learning on experimental data in the material sciences and chemistry field to predict properties of metal oxides. Neural networks can determine underlying optical properties in complex images of metal oxides and capture essential features which are unrecognizable by observation. However, neural networks are often referred to as a “black box algorithm” due to the underlying process during the training of the model. The explanation for a prediction is unable to be traced, therefore poses a concern on how robust and reliable the prediction model actually is. Building ensemble neural networks allows for the analysis of the error bars of the prediction model. The project’s objective is to determine the comparative differences between the predictive ability of each individual neural network versus the ensemble neural network. Additionally, the paper explores how to use the ensemble model as a method of uncertainty quantification. Overall, ensemble neural networks outperform singular networks and demonstrate areas of uncertainty and robustness in the model.



Awareness of Autism in Black and Brown Communities

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Abstract (Posters)

Autism Spectrum Disorder (ASD) affects a multitude of races and ethnicities as its impact varies from person to person. ASD is typically diagnosed around the age of two to three years old since signs and symptoms of Autism become clinically apparent at that time. Increased reporting of Autism in local communities has surged because of better diagnostic tools and criteria as well as public awareness. However, even with these advancements, the African American community suffers a delayed diagnosis of ASD. This issue poses problems for both the parents and children with Autism and has broader implications for the South Florida community; opportunities are limited for developmental services by a delayed diagnosis. This project is an ongoing Honors thesis and a thorough literature review was conducted to identify this issue in South Florida. While the research presented useful information at the state and regional level, it was not specific to the local south Florida communities. Based on this lack of information critical to the problem, a survey instrument was utilized to collect and analyze the data. Initial analysis reveals two specific themes: lack of identifiable local resources and a lack of understanding of Autism. The results of this study will be disseminated to community partners in the following communities using an infographic to be shared with the at-risk population. The project identified criteria that caused a delayed diagnosis of autism, understood current community resources, and is developing an intervention to showcase a pathway for diagnosis before and after.



Identification of Lysine Acetylation in Matrin3

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Abstract (Posters)

Matrin3 is a highly conserved nuclear matrix protein capable of DNA/RNA-binding. Mutations in the gene coding for this protein, MATR3, were recently determined causal to the fatal neurodegenerative disorder familial amyotrophic lateral sclerosis. While Matrin3 lacks the prion-like domains of other prevalent ALS-associated RNA-binding proteins, the largely unstructured and highly disordered protein contains long intrinsically disordered regions (IDR). Most documented post-translational modifications (PTM) in Matrin3 have occurred in its IDRs. Lysine acetylation is a highly conserved PTM, and its localization in Matrin3 is unknown.

Plasmid cloning was utilized to allow observation of distinctive protein expression according to separately identified regions of Matrin3. After initial primer design, three regions of interest were isolated from FLAG-Matrin3 donor plasmids using polymerase chain reaction (PCR) and digestion with NotI and XhoI restriction enzymes. The regions of interest were then ligated separately into pcDNATM3.1(+) mammalian expression vectors, and transformed using Stb13 *E. coli* strains. Finally, mammalian cell transfection, immunoprecipitation, and West blotting techniques were implemented to examine protein expression. While the 293T cells turned out to be a poor system to explore Matrin-3 lysine acetylation, the unique constructs were preserved for further studies. This project ultimately facilitated further investigation into a relatively unexplored PTM, particularly with regards to a novel, lesser-known non-histone target of acetylation. Research on the lysine acetylation of this protein may also contribute to understandings on the pathogenesis of other diseases.



Convexity of Four-Maximal Neural Codes

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Abstract (Posters)

A central challenge facing neuroscientists is deciphering neural code and understanding the relationship between stimuli and neural activity. A motivating example comes from hippocampal place cells observed in rats, which fire when the animal is in specific regions (place fields) of its environment. This firing helps the brain determine the animal's position. Interestingly, place fields are experimentally observed to be almost convex. To mathematically represent the stimuli-neural activity relationship, we use combinatorial neural codes, which record neural activity as a family of sets called codewords. Convex neural codes are those realizable by a family of convex open sets in Euclidean space. As such, convex codes represent a model of place cells and place fields. We desire simple convexity criteria because detecting convexity in arbitrary codes is an NP-hard problem. Giusti and Itskov identified local obstructions to convexity and Johnston, Shiu, and Spinner showed that these obstructions characterize convexity for codes with at most 3 maximal codewords. Lienkaemper, Shiu, and Woodstock gave an example showing that this is not the case for codes with 4 maximal codewords. In this work, we further examine 4-maximal neural codes. Using combinatorial, geometric, and topological methods, we show that 4-maximal codes corresponding to certain simplicial complexes are convex if and only if they do not have local obstructions. We also give a hypothesis for characterizing the remaining 4-maximal codes and describe interesting results supporting this hypothesis.



Predicting Flight Time Using Machine Learning Methods

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Abstract (Posters)

Partnering with OneSky Flight, this project aims to develop a flight time predictor using various machine learning methods. Six months of flight data was provided by OneSky Flight; it included attributes such as origin, destination, aircraft type, departure time, and arrival time. The two primary methods tested were neural networks and decision trees. Each method was tested with varying architectures and data structures to determine accuracy. The resulting analyses of the architectures found the XGBoost decision tree to be the highest performing model. Using the results of the architectures, an ensemble model can be developed that incorporates the use of both neural networks and decision trees to further increase the accuracy of the predictor.



Exploring Bibliotherapy and Creating Family Literacy Bags in Response to Community Violence

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Abstract (Posters)

This thesis sought to aid children in coping with community violence. As violent crimes terrorize communities near and far, children are hearing about them. Children might learn about this violence on the news or by overhearing adults' discussions. Regardless, this thesis sought to help students navigate a world that may be anxiety filled. This thesis includes an exploration of bibliotherapy and discussions of the use of books in a therapeutic manner to delve deeper into its profound effects. The topics of this thesis surround social-emotional learning, which is also investigated and explained. The benefits of combining bibliotherapy and social-emotional learning are evident in the findings of this thesis which identified helpful books. By watching read-alouds, analyzing their content, and choosing books that aligned with the goal of this thesis, nine books were selected for inclusion. Bitmoji Book Bags were created for each of the nine books. These Bitmoji creations contain links to book talks, read-alouds, discussion prompts, activities, and more for students and their parents. The format of these Bitmoji Book Bags is digital, so that the links can be easily exchanged with parents, community members, and educators as a resource for when community violence occurs.



"Designing User-Friendly and Engaging SharePoint Sites: Utilizing Communication Strategies and User-Centered Design"

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Abstract (Posters)

The development of a communication platform such as a SharePoint site involves several key steps that require a deep understanding of communication strategies and the psychology behind user engagement. In today's fast-paced digital environment, having a SharePoint site that is both user-friendly and engaging is crucial to the success of any organization. In this project, we utilized a user-centered design approach to create different pages in the SharePoint site in order to avoid overwhelming users with information. This was achieved by breaking down the information into manageable sections, making it easier for users to access and understand. Additionally, we utilized different applications from the Microsoft Office Suite, such as Bookings and Forms, to make the SharePoint site more effective. This not only allowed for better collaboration and information sharing among partners, but also made it easier for users to interact with the site and complete tasks. Furthermore, in this project, we also had to take into account the psychology behind user engagement, making sure that the site was both user-friendly and engaging. This involved considering the needs and preferences of users and designing the site with their behaviors, motivations, and emotions in mind. Overall, this project highlights the importance of effective communication strategies and the psychology behind user engagement in the development of SharePoint sites. By utilizing different applications and focusing on user-centered design, we were able to create a SharePoint site that is both effective and engaging, promoting collaboration and information sharing among partners.



The effects of increased temperature on the survival and growth of turtlegrass (*Thalassia testudinum*) seedlings

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Abstract (Posters)

Seagrass ecosystems provide food and shelter for a diverse group of marine organisms as well as acting as a carbon sink and providing coastal protection. Increasing ocean temperatures due to global warming pose a risk to these essential plants. We investigated the effects of temperature on growth and survival of *Thalassia testudinum* seedlings. *Thalassia testudinum* is the climax species of seagrass in Florida and its fruits and seeds wash up on shorelines, allowing for non-destructive collection. We collected seagrass fruits and seeds by hand along the shoreline of Key Biscayne, Florida between July 25 and August 10, 2022. The seeds were equally distributed among eight aquaria maintained on a 12:12 hour light/dark cycle. Four aquaria had a water temperature of 28°C, typical of current south Florida summer temperatures, and four were at 30°C, the predicted end-of-century water temperature. We measured seedling survival and leaf length every two weeks. Leaf length increased in both temperature treatments for the first 12 weeks, then plateaued. There was no consistent difference in leaf length between the temperature treatments. Seedling survival rates were high (>85%) for the first 12 weeks, and there was no difference in survival rates between the temperature treatments. Our results suggest that *Thalassia testudinum* seedlings may not be negatively affected by predicted increases in coastal water temperatures.



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Evaluating the Effectiveness of Hallyu as a Form of Public Diplomacy

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Abstract (Posters)

This research argues Hallyu as a form of public diplomacy through South Korea's funding, its influence on the South Korean economy, the perception of South Korea around the world. By discussing examples of Hallyu's nation branding through cultural exchanges, I hope to demonstrate the different financial and legislative methods used by the South Korean government in order to ensure an effective exchange within each interaction.





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