

Fall 11-30-2022

## Fall 2022 Student Scholar Symposium Abstract Volume

Chapman University Center for Undergraduate Excellence

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# STUDENT SCHOLAR SYMPOSIUM

FALL SESSION

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**November 30, 2022**

## ABSTRACT VOLUME



# Message from the Director

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Greetings and welcome to the Fall 2022 Chapman University Student Scholar Symposium!

Student Scholar Symposium which is held once each semester celebrates the remarkable scholarship and creativity conducted by Chapman undergraduate students. Our student presenters reflect the diversity of academic and creative disciplines thriving within the Chapman community. The Symposium allows them multiple ways to showcase their research and creative projects.

Please take some time to stop by and wander through the vast array of student poster presentations or attend the oral discussions to discover the kind of work our students are engaged in here at Chapman University. Student Scholar Symposium is education in action, a true example that Chapman students are pursuing anything imaginable.

Student Scholar Symposium is sponsored by the Center for Undergraduate Excellence, which is the first stop and the central hub for students to learn about and engage in undergraduate research and creativity activity; and to discover the wide range of prestigious external scholarships available.

Our symposium would not have been possible without the extraordinary effort by the CUE staff, Lisa Kendrick, Operations Manager, and Mary Custodio, Administrative Assistant, who have designed, developed, and organized the event. A special thanks to both of them!

Thanks to all the student presenters, their faculty mentors, our faculty moderators, and staff volunteers.

Enjoy the Symposium!

Dr. Julye Bidmead

Director of the Center for Undergraduate Excellence at Chapman University

# Acknowledgments

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The Center for Undergraduate Excellence gratefully acknowledge the following individuals and program for their support:

Shinnyo Fellow – Rabia Asif  
Student Scholar Ambassadors

## **Oral Presentation Moderators:**

Dr. Julye Bidmead  
Dr. Jocelyn Buckner  
Dr. Nasim Estakhri  
Dr. Martina Nieswandt  
Dr. Jan Osborn  
Kathy Thibault  
Dr. John Thrasher

# Schedule of Events

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## **POSTER BK404**

Session 1: 10:00-11:30AM  
Session 2: 12:30PM-2:00PM  
Session 3: 3:00-4:30PM

## **ORAL AF 209 A, B, C**

Session 1: 11:30-12:30PM  
Session 2: 2:00-3:00PM  
Session 3: 4:30-5:30PM

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## **Art**

### **1. Desert X; The Ethics and Expectations of Audience Response**

**Presenter(s):** Sloan Watson

**Advisor(s):** Micol Hebron

Desert X is a site-specific art exhibition held in the Palm Springs and Coachella Valley region of California every other year. This paper will address audience response towards the exhibitions, as well as the ethics and expectations surrounding both the art and land. This topic is largely inspired by the vandalization of Richard Prince's 2017 exhibition "Third Place", which led to the exhibition being shut down to the public, as well as the disappearance of the "ShyBot" by Norma Jeane in 2017, which is believed to be the result of theft. Despite the fact that neither of these artists were overly concerned regarding these incidents, it raises questions in regards to how the audience is intended or not intended to react to the artworks involved in this large-scale exhibition, as well as how or why they should or should not act in a certain manner. This idea is central to Desert X, not only because it is an exhibition which is designed to be open to the public, but also because it is an exhibition held on Native land. This is also accompanied by the attraction of tourists and the overall impact on residents and the environment of the Coachella Valley region.

## **Biochemistry and Molecular Biology**

### **2. Field Cancerization in Human Breast Tissue**

**Presenter(s):** Cody Paresa

**Advisor(s):** Dr. Marco Bisoffi

Breast field cancerization denotes the presence of molecular aberrations in structurally normal cells residing in histologically normal tissues adjacent to mammary tumors. While the list of factors that characterize field cancerization is growing, its molecular etiology remains largely unknown. We hypothesize that extracellular vesicles, especially exosomes released from cancerous cells in the tumor, mediate field cancerization by priming non-cancerous cells in the adjacent tissues by conveying enhanced pro-proliferative and pro-survival capabilities. We are adapting an antibody (EpCAM), by use of proteome profiler, to assess and treat a main biomarker involved in tumor development. Western blotting will be used for functional analysis of the EpCAM antibody and biomarker diminishment. Initial observations will be made by use exosomes, derived from human cancerous epithelial MCF-7 and MDA-MB-453 cells, and EpCAM antibodies to treat non-cancerous MCF10A cells. Our studies help us understand the development of mammary field cancerization which has clinical implications for cancer recurrence after breast conservation therapy (lumpectomy).

#### **Plain Speak Summary**

Our studies address the role of exosomes released by breast cancer cells in inducing a pro-tumorigenic effect in cells adjacent to the cancer (field cancerization) using EpCAM antibodies and western blotting. The molecular understanding of field cancerization could be an important predictor of tumor recurrence after breast conservation therapy (lumpectomy).

**3. Analyzing Interactions of Calmodulin with Viral HIV-1 Matrix Protein**

**Presenter(s):** Andrea Sandoval

**Advisor(s):** Dr. Jerry LaRue

Human immunodeficiency virus (HIV) attacks the immune system and if left untreated, could cause acquired immunodeficiency syndrome (AIDS). The HIV matrix protein (HIV-MA) is involved in replication and regulation of the HIV virus. Calmodulin (CaM), a calcium-binding protein found in all eukaryotes, has a potential role in the viral replication of HIV-MA which plays a key role in the replication of HIV. In order to investigate the interactions between calmodulin and the HIV-MA, a series of titrations with CaM are performed using circular dichroism. Circular dichroism (CD) uses circularly polarized light to observe the secondary structure of a molecule. The circularly polarized light is broken up into left and right components. When the molecule contains a chiral center, the left and right components are absorbed to different extents, and the differential absorption is measured with CD. Through a series of titrations, the chemical environment is changed in small increments so the molecule will experience conformational changes. As the conformation changes, CD is used to measure the ellipticity which provides a better understanding of the secondary structure that is a result of these chemical interactions. Since CaM plays a potential role in the viral replication of HIV-MA, CD is used to investigate the protein-protein interactions and conformational changes.

**4. Predicting Steroid-Free Remission of Pediatric IBD from Whole Slide Imaging Using Computer Vision**

**Presenter(s):** Blake Calvo

**Advisor(s):** Dr. John Miklavcic

Complex clinical presentations, uncertain etiologies, and triggers, coupled with substantial emotional and financial strains, make IBD-related illnesses a top priority for improved healthcare solutions. Targeted treatment of Ulcerative Colitis and Crohn's Disease requires a comprehensive diagnosis involving invasive biopsies and labor from multiple specialists practitioners, coupled with often dubious timelines for diagnosis and aid. Creating improved prognostic techniques that improve patient quality of care and remission is critical to establishing a renewed framework for the pediatric treatment of Ulcerative Colitis and Crohn's Disease; treatment of Ulcerative Colitis and Crohn's disease burdens families financially. Current treatment models implement antibiotics, 5-aminosalicylate, biological agents, corticosteroids, and immunomodulators, all of which exact an extensive toll on pediatric patients. Despite drastic improvements in the collective understanding of disease typology, risk factors, and treatment, prevailing treatment tactics are reactionary. Computational techniques have been sparsely implemented in pediatrics; their implementation with direction and oversight, supervised by clinical specialists, would improve patient outcomes. Moreover, applying streamlined image analysis of tissue samples collected from sites of interest within the gastrointestinal system liberates prognostic congestion, decreasing the time between diagnosis and treatment. This study implemented patch-level CNNs and stacking trained with the assistance of a clinical pathologist and gastroenterologist through framework design and image annotation.



**5. Purification of K<sub>Ca</sub>2.2 Channels in Complex with Calmodulin**

**Presenter(s):** Grace Yang

**Advisor(s):** Dr. Miao Zhang

Spinocerebellar ataxias (SCAs) are genetic neurodegenerative disorders without treatment options available. The SCAs are caused by inherited gene mutations, especially by polyglutamine (polyQ) repeat expansion in the affected genes. The cerebellar Purkinje cells are affected in many types of ataxias. Cerebellar K<sub>Ca</sub>2.2 channels have been proposed as a drug target for SCAs. In order to facilitate structure-aided drug design, we would like to determine the structure of K<sub>Ca</sub>2.2 in complex with small molecule modulators. My role in this project is to express and purify the K<sub>Ca</sub>2.2 channel protein. We expressed K<sub>Ca</sub>2.2 channels in HEK293 cells and purified the K<sub>Ca</sub>2.2 channel protein in complex with its accessory protein calmodulin. Briefly, K<sub>Ca</sub>2.2 was tagged with Strep-II and expressed as a complex with CaM in HEK293S GnTI<sup>-</sup> cells using a BacMam method. Crude membranes were prepared from the cells and were then subjected to solubilization. The solubilized protein complex was purified using Strep-Tactin XT resin, followed by size exclusion chromatography. The prepared protein sample has been mixed with small molecule modulators and is currently subject to structural studies.

## **Biological Sciences**

**6. Biomechanics of Atlantic Hagfish Burrowing**

**Presenter(s):** Joshua Lee

**Advisor(s):** Dr. Douglas Fudge

Atlantic Hagfish (*Myxine Limosa*) are eel-shaped benthic/epibenthic marine animals that are known to burrow but the mechanism by which they burrow is unknown. Martini (1998) observed and described hagfish burrowing into sediment by aggressively thrashing their tail. After one quarter of their body length is submerged, they suddenly stop thrashing, yet still are able to burrow their whole body into the mud. To study Atlantic hagfish burrowing, we used a custom burrowing chamber that allowed us to observe burrowing movements as the hagfish moved through a transparent gelatin substrate that approximates the material properties of marine mud. We report detailed observations of hagfish burrowing as well as morphometric data from 25 different burrows. We had two objectives in our research. First, we wanted to observe and describe the mechanics of each phase of burrowing. Our second objective was to quantify the morphology and time measurements of the burrow. Overall, we found that on average, Hagfish burrow in a U shape burrow, and take an average of about 7 min 22 seconds to burrow. Finally, we found that Hagfish consistently burrow in a two-phase process; where the first phase is dominated by tail thrash movements, and the second phase is dominated by anterior movement near the head.

**7. Biomechanics an Analysis of Hagfish Eggs**

**Presenter(s):** Caroline Gallagher

**Advisor(s):** Dr. Douglas Fudge

Hagfish eggs use a unique structure to keep all of the eggs attached together. This structure, called the anchor filament, is an extension off of the main egg capsule. The anchor filaments extend from the two endpoints of the large oval egg, and attach to other anchor filaments of the surrounding eggs forming a clutch or grouping of eggs. In this project, a Micro-CT scan was analyzed to further study the biomechanical attributes of hagfish eggs. A 3D model was produced from these scans using the software 3D Slicer. During the 3D modeling each individual anchor filament was measured, and the structures and patterns of the anchor filaments were recorded. Future plans for this research include analyzing different species of hagfish eggs for comparative analysis. In the future we will also 3D print the 3D model of the hagfish egg for further investigation.

**8. Vesicle Hydration and Swelling**

**Presenter(s):** Jess Furman

**Advisor(s):** Dr. Dakota Piorkowski, Andrew Lowe

Analyzing the speed at which hagfish vesicles undergo hydration. Aiming to comprehend the process of hydration and swelling, and the interaction between time and area of this process. Hagfish slime is integral as defensive and evolutionary mechanism, which utilize vesicles to release this biomaterial. Vesicles play a crucial role in the slime release process and I aim to understand the relationship between hydration and swelling of these vesicles. Analyzing vesicles when in contact with ionized water, to better understand this process. Results aim to advance knowledge between the function of a vesicle and the production of slime.

## **Chemistry**

**9. Effect of Anions on the Adsorptive Properties of Iron Oxyhydroxide Nanoparticles**

**Presenter(s):** Sebastian Vera

**Advisor(s):** Dr. Christopher Kim

California's history of mining has created hazards that can affect human health as well as ecological systems. For example, mine waste may contain heavy metal components which are known to be carcinogenic. As a result, new methods must be developed to remediate the environment surrounding these mines to prevent human exposure. Iron oxyhydroxide nanoparticles and their aggregates are a potential solution to this problem as they are known to serve as effective sorbents of metals. The goal of this project is to build upon previous work done by former lab member Emma Kocik '23 who studied how changes in geochemical conditions, such as salinity, can affect the sorptive properties of the iron oxyhydroxide nanoparticles. Previous work primarily consisted of adding artificial seawater to the aggregated nanoparticles to study the effect of the changing salinity. In this current study, iron nanoparticles and their aggregates were exposed to different anions that are present in seawater, such as chloride and sulfate, at varying concentrations to determine which has the greatest effect on sorption.

Based on previous experiments, it is suspected that the presence of these anions influences the sorbing interface between the metals present in the solution and the iron nanoparticles as well as possibly influencing the solution complexes that are formed.

**10. Methanol Decomposition and Oxidation on Platinum Surfaces: Investigating Properties of the Catalytic Process Using X-Ray Photoelectron Spectroscopy**

**Presenter(s):** Ethan Truong, Kevin Alvarado Jimenez, Quy Loi, Sarah Lelea

**Advisor(s):** Dr. Jerry LaRue

From the enzymes in our body to the production of ammonia in the Haber process, catalysts are present in everyday life. These catalysts facilitate and speed up reactions through the lowering of activation energies. One highly essential catalyst is platinum as it is widely used in industrial and research settings. Despite its popularity and usefulness, questions remain as to the specific processes behind the catalytic mechanisms. This project aims to investigate these unknowns using the decomposition and oxidation of methanol on a variety of platinum surfaces. Specifically, x-ray photoelectron spectroscopy (XPS) data obtained from experiments run at the SLAC National Laboratory will be analyzed. XPS utilizes the photoelectric effect by measuring the kinetic energy of electrons emitted from a material after irradiating it with electromagnetic radiation. XPS spectra contains characteristic peaks for certain chemical species making it a powerful tool in the study of surface chemistry. Once these XPS peaks are fitted, we will be able to identify the chemical species present in these experiments as they progress. Doing so will provide great insight into the fundamental properties of catalytic platinum surfaces such as site intermolecular interactions, site specificity, and selective bond breaking/formation. In conjunction with this project, the group is simultaneously running their own investigative study of methanol decomposition and oxidation under ultra-high vacuum conditions. By carrying out this research to better understand catalytic surfaces, the group hopes to aid in the development of more efficient catalysts.

**11. Metal Ion-Counterion Effects on Lewis-Acid Mediated Sulfur-Fluoride Exchange**

**Presenter(s):** Leah Zahn

**Advisor(s):** Dr. O. Maduka Ogba

Lewis acidic salts of earth-abundant metals have recently gained attention as economically and environmentally advantageous alternatives to transition metal catalysts in chemical reactions. However, little is known about how altering the metal ion or the counterion of the Lewis acidic salt affects the nature of the salt-substrate binding and interaction modes during the activation process. We use a recent report on metal-mediated sulfur(VI) fluoride exchange (SuFEx) as a case study. In this report, calcium salts with bistriflimide counterions outperformed those with triflate and fluoride, and calcium outperformed magnesium, lithium, sodium, and potassium, thus revealing a clear ion-pair effect on SuFEx reactivity. In this work, density functional theory methods were used to uncover differences in the structural, energetic, and electronic properties of the SuFEx transition states mediated by the calcium salts. The data gathered from our study provided key insights into the origins of the counterion effects and resulted in a new hypothesis for understanding reactivity differences across the Lewis acidic salts.

## **Communication Sciences and Disorders**

### **12. Symbolic Object Use and Language Development in Deaf and Hearing Infants**

**Presenter(s):** Katherine Nguyen, Matthew Kim

**Advisor(s):** Dr. Maryam Fagan

Research evidence supports the idea that auditory information and communication are crucial for the typical development of language, cognition, and behavior early in life. Therefore, delays in the production of oral language are often observed in children with profound hearing loss. Children who are deaf can access auditory information through cochlear implants, which leads to gains in speech production and language development. For infants with profound hearing loss, hearing experience begins after they receive cochlear implants. Early use of cochlear implantations can prevent further delays in language development and vocabulary acquisition. The impact of cochlear implants on psychological factors such as symbolic object use, however, is not well understood. Symbolic use of objects is the demonstration of the purpose of an object prior to word use – for instance, putting a toy phone to their ear or pretending to drink out of a cup. It is recognized that symbolic object use is closely tied to vocabulary development and language acquisition. Vocabulary comprehension is the ability to understand the meaning of words. Vocabulary production is the naming of objects, people, and actions. Vocabulary development can be measured with the MacArthur-Bates Communicative Development Inventories (CDI), which allow comparisons of vocabulary size for hearing infants and infants with cochlear implants using hearing age, or duration of hearing experience. Our research project evaluates vocabulary size and symbolic object use in hearing infants and infants with cochlear implants ages 8-30 months, based on hearing experience.

## **Communication Studies**

### **13. Perceptions of Transgender Representation in Visual Media**

**Presenter(s):** Bella Briskorn, Griffin Runnels, Brandon Habecker, Sean Longley

**Advisor(s):** Dr. Rebecca Forster

Television and streaming shows often depict false and negative stereotypes of trans individuals. Transgender people's lives are very different from what is portrayed in visual media. Thus, transgender people are more aware than cisgender people of the negative tropes and stereotypes within these representations in visual media. Cisgender people may find identifying with positive portrayals of trans individuals more difficult than trans people. This study will examine the perceived effects of both negative and positive transgender representations in visual media. It is hypothesized that transgender people will be more likely to report harmful representations in visual media than cisgender people, and that cisgender people will be less accurate in reporting positive transgender portrayals in visual media. This research is important because it examines how misrepresentations of the trans community may go unseen by cisgender individuals. Our first hypothesis is that cisgender people will be less accurate in perceiving negative transgender tropes in visual media than trans people will. Our second hypothesis is that cisgender people will be less accurate in perceiving positive portrayals as beneficial to the transgender community than trans people will. Participants will be asked to watch a 2-minute video clip from a film or

show, depicting what could be seen as either a negative transgender stereotype tropes or positive representations. At the conclusion of the clip, they will be asked to complete a survey on their identification of these transgender portrayals and if they find them harmful or positive.

## **Computer Science**

### **14. Designing Haptic Interfaces to Uncover Gestural Patterns in Children**

**Presenter(s):** Yuki Chen, Kayla Anderson, Audrey Bichelmeir

**Advisor(s):** Dr. Franceli L. Cibrian

Children with sensory processing differences such as Autism Spectrum Disorder (ASD) may have different gestural patterns compared to their neurotypical peers. However, the evaluation of sensory differences is complicated and subjective, especially when it's related to the tactile sense. Haptic interfaces (i.e., tools that transmit information through touch) allow changing vibrotactile patterns to stimulate children's tactile senses, affecting how children interact with the interface. Therefore, haptic interfaces can be used to collect data on how users interact with them and uncover their gestural patterns. However, it is unclear how to design active haptic interfaces vibration using touch (e.g., mobile phone), wearables (e.g., smartwatch), or ultrasonic (e.g., Stratos) to support the data collection of gesture interaction. As the first step in this work, we proposed the design of Feel and Touch, a haptic game that could be developed for different haptic interfaces, such as mobile, wearable, and ultrasonic. In future work, we proposed to develop the game in the three interfaces and evaluate their usefulness and effectiveness in collecting gestural data, especially for children with ASD. We would like to thank: Ivonne Monarca and Monica Tentori from CICESE Research center.

### **15. Radar Signal Analysis & Student Attentiveness**

**Presenter(s):** Daniel Dinh, Robert Alexander III, Samuel Bernsen, Andrew Wells, Ethan Slade

**Advisor(s):** Dr. Maryam Etezadbrojerdi

The proposed project is to use portable FMCW (Frequency-Modulated Continuous Wave) Radar to detect and track student attentiveness in classrooms. Radar systems work by sending out repeating and rapid energy or waves to an object, and when these waves are reflected to a receiver, it outputs information about the object. The goal of the proposed project is to determine and propose a FMCW radar system that could be used in a classroom environment to record students' attentiveness. The idea behind the project is to be able to record the overall percentage of students in a class who are actively paying attention to the instructor, however traditional CCTV cameras cannot be used due to privacy reasons. As a result, the radar system would be used not to record students but to track their face and head movement and compare it to the overall collective. The primary goal is to first deem if a similar system would be possible to instead track multiple targets, in this instance students, and how viable this system would be. Once we have determined whether this system is viable, our secondary goal is to make a classroom application by either using the FMCW system as is or by making some minor alterations to make it viable. The goal of the proposed project is to have a functioning FMCW radar system that could be implemented inside a classroom setting.

**16. Neuroimaging Image Classification and Forecasting Diagnosis for Alzheimer's Disease using Statistical Modeling and Machine Learning**

**Presenter(s):** Liora Mayats Alpay, Ehsan Yaghmaei

**Advisor(s):** Dr. Cyril Rakovski

Brain destruction of memory is an essential topic in medical research and neuroscience. This work investigates the predictive power of 300 gene variants concerning late-onset Alzheimer's Disease. Aggregating findings selected the genes from the dozens of the most comprehensive genome-wide association studies. The genetic data were obtained from Alzheimer's Disease Neuroimaging Initiative (ADNI) database. We carried out a battery of machine learning and statistical methods such as Random Forest, LASSO, Ridge, Elastic Net, and logistic regression combined with hyperparameter and architecture tuning to find the optimal model that predicts late-onset Alzheimer's Disease. By combining Statistical modeling, we analyzed the clinical medical data of patients and estimated the relationship between variables. Our work promises future research to investigate the different Neuro - brain destructive functions of memory in the Neuroscience field.

## **Dance**

**17. The Effects of Environment Change on Dance**

**Presenter(s):** Adrienne Paulu

**Advisor(s):** Wilson Mendieta

Dance is an extremely versatile artform with many different styles, rhythms, intricacies, sequences, patterns and pathways. Dance can be used as a way of social interaction, self expression, entertainment, or just personal fulfillment. As performers, it is sometimes easy to get complacent and comfortable within the environment and community we have built for ourselves. While this can be a good thing socially, how does this complacency affect our creativity as artists? Is it positive? Negative? Does it matter? These are questions answered from a personal perspective by completing this research project. In this project, dance was not only considered a form of entertainment and fun, but was also analyzed through a critical and research driven lens. I analyzed how a change in environment influences a dancer's training, movement, and performance qualities as a student. For this project, I attended a month-long professional-level summer dance intensive in NYC called Steps on Broadway. This included taking numerous classes a day in all styles of dance including ballet, jazz, hip hop, and ballroom. I also received vocal coaching and acting lessons while experiencing living in the heart of Manhattan and absorbing all the cultural differences there. As a high school student, I decided to pursue dance at the collegiate level after I graduated and moved from my home environment and dance training that I was used to. This switch from the Pacific Northwest to dancing in LA was a huge shift not only physically and mentally, but also stylistically as well from a dance perspective. Now as a dance student studying dance from numerous different perspectives, it is important to understand how your training environment helps shape you as a performer. Through the course of this month spent living in NYC and experiencing dance and culture from all different angles, I analyzed the differences socially, culturally, and personally between the West coast styles of dance in LA to the East coast style of NYC.

**18. Character Development in Contemporary Dance: Exploring How Elements of Musical Theater Can Enhance the Performative Range of Contemporary Dance**

**Presenter(s):** Katie Cleek

**Advisor(s):** Julianne O'Brien Pedersen

Musical theater dance is often depicted as the only genre of dance to investigate characterization at a deep level. However, through studying contemporary dance and musical theater simultaneously, it is evident there is more dancers can extract to craft this heightened performance experience within contemporary dance. This creative research project was crafted to explore the following question: How can elements of musical theater be used to enhance the authentic performance quality, emotionally and physically, of contemporary dance? The research included attending a musical theater intensive in New York City and then applying information gathered when attending a contemporary dance intensive in Los Angeles. The research was conducted through the use of personal reflection and collecting peers' evaluations of their own relationship to characterization. The elements that were most prominent to enhance performance were answering the questions of "who, what, when and where." Who is the dancer talking to? What is their objective? When is this story? Where is it taking place? etc. All of these questions that the dancers are considering offer room for clear choices within improvisation and how their tone of movement is unique to them within the realms of the choreography. The most successful moments when implementing these principles into contemporary dance were found when translating information from the imaginative level to the physical level. Some examples of this include imagining gum on the bottom of the foot as it is brushed onto the floor, to provide the resisted, stretchy quality of the movement. Another example was for the dancer to utilize this technique within eye focus. Are the eyes penetrating forward to a person right in front of them, or at a distance? Within this creative research of musical theater dance, the opportunity for experimentation to craft a heightened experience for contemporary dancers is infinite.

## **Environmental Science and Policy**

**19. Preliminary Results: Effect of Fermentable Carbon Substrates of Various Sizes and Concentrations on Anaerobic Carbon Cycling in a Peatland Soil**

**Presenter(s):** Jocelyn Valdivia

**Advisor(s):** Dr. Jason Keller, Dr. Cassandra Zalman

Peatlands are natural carbon sinks that cover less than 3% of the earth's terrestrial land but store about one-third of the terrestrial soil carbon. Peatlands also contribute to climate change by emitting greenhouse gasses (GHGs) such as methane and carbon dioxide due to anaerobic microbial decomposition. It is therefore important to study the microbial decomposition that produces these GHGs. This project explores microbial fermentation through the addition of glucose and varying sizes of dextran (a glucose polymer) to peatland soils. In past studies, 1% solutions of these substrates were fermented by soil microbes; however, only about 3% of the added carbon was recovered as GHGs or acetate. The maximum recovery was unexpectedly from larger dextran molecules, which should decompose slower,



emphasizing the need for further work exploring anaerobic carbon cycling in peatland soils. As a follow-up project, glucose and dextran concentrations of 1%, 0.1%, 0.01%, 0.001% were added to peat from a Minnesota bog and anaerobically incubated for six weeks. GHG production, 13C-CO<sub>2</sub> and 13C-CH<sub>4</sub>, as well as acetate and dissolved organic carbon (DOC) concentrations will be measured every two weeks. These measurements will allow us to quantify the recovery of fermentable carbon sources at a range of concentrations and across a range of dextran mass distributions. Taken together, this work will provide important mechanistic insights into anaerobic microbial carbon cycling and GHG production in globally important peatland ecosystems.

## **Food Science**

### **20. Labeling Compliance, Species Authentication, and Short-Weighting of Frozen Shrimp Sold in Grocery Stores in Southern California**

**Presenter(s):** Alexia Campbell, McKenna Rivers, Chris Lee, Pragati Kapoor

**Advisor(s):** Dr. Rosalee Hellberg

Seafood is susceptible to various types of fraud, including species substitution, mislabeling country of origin and production method, and short-weighting, typically for economic gain. Although shrimp is the most consumed seafood product in the United States, there is a lack of research into the extent of short-weighting and mislabeling of frozen shrimp in the marketplace. This project investigates the prevalence of species mislabeling, Country of Origin Labeling (COOL) non-compliance, and short-weighting violations among frozen shrimp sold in grocery stores in Southern California. In the United States, COOL regulations require certain local retailers to label fresh and frozen shellfish with the country of origin and production method (wild or farm-raised). COOL compliance was determined based solely on observing the presence of the production method and country of origin on the packaging and labeling at the purchase site of the frozen shrimp products. Using official methods by the Association of Analytical Collaboration (AOAC) International, the frozen shellfish products were deglazed, and the net weight and percent glaze were calculated to quantify the prevalence of short-weighting. DNA barcoding of the cytochrome c oxidase subunit I (COI) mitochondrial gene was performed on the deglazed shrimp, and the determined sequences were analyzed against the Barcode of Life Data (BOLD) system to identify the shrimp species. These results were compared to acceptable market names in the FDA Seafood List to determine species substitution. The results of this study will help determine if there is a need for greater scrutiny in labeling regulations for shrimp sold in the United States.



## **Music**

### **21. Cultural Appropriation and Popular Music**

**Presenter(s):** Caroline Ganos

**Advisor(s):** Dr. Jessica Sternfeld

In the 100+ years of what could be considered modern popular music in the U.S., Black musicians have been both underrepresented and underappreciated for their contributions to the evolution of the style. The music industry continuously does not give credit to the deserving musicians: this can be attributed to a host of different problems including systemic racism and a profits-first focus. There have long been patterns of white musicians coming out on top, in that they are credited for and profit off of trends and ideas that were originally created in the Black community. While these problems can be traced back to people like Elvis Presley, Bing Crosby, and their predecessors from decades before, they can still be found in music of the last ten to twenty years. But how do we identify cultural appropriation, and how can we prevent it from happening? This paper, while unable to give complete answers to such a grey topic, examines these questions by looking at both historical precedents that have set the stage and current examples that wrestle with issues of appropriation. By analyzing the voting patterns at the Grammy Awards, the musical elements of and social conversation surrounding Ariana Grande's "7 rings," and the style categorization of Lil Nas X's "Old Town Road," patterns of appropriation and brushing Black musicians to the side become more recognizable. We then become more equipped to consider who is or is not being credited with unique contributions to popular music.

## **Peace Studies**

### **22. Mental Health in the Military**

**Presenter(s):** Caroline Strauch

**Advisor(s):** Dr. Lisa Leitz

How does mental health affect veterans? Mental Health is extremely important, more Americans struggle with mental health than ever before. This paper predicts an intense relationship between post-traumatic stress in military and military women rather than military men. Post-traumatic stress is a mental health issue that has been commonly linked to veterans. Some veterans demonstrate a clear correlation between the traumatic war experiences they have been through and the way their brain responds later. Men and women show their mental struggle differently. For veterans this is no different, especially because men and women have different experiences in the military. This paper will examine academic work that compares post-traumatic stress in 1) veterans versus civilians and 2) men and women. Post-traumatic stress is brought on by traumatic events that can linger causing symptoms like flashbacks, nightmares, and negative thoughts that interfere with everyday life. Post-traumatic stress disorder is just one example of how people can struggle with mental health. Data surrounding mental health such as suicide and domestic violence will also be examined to better understand the relationship between post-traumatic stress in military men and women. A survey performed by the American Journal of Preventive Medicine

that compared traumatic events of military veterans by gender will be examined within this paper. This paper expects to find a higher correlation of post-traumatic stress disorder in female veterans, because of systematic bias against female military.

**23. Steering Away from Stereotypical Identity**

**Presenter(s):** Sophie Imondi

**Advisor(s):** Dr. Lisa Leitz

Over the recent decades, our society has begun to steer away from the stereotypical fashion of identity. In other words, men acting/presenting masculine, and women acting/presenting feminine. Individuals who have chosen to steer away from mainstream identification experience discrimination on many levels including physical harm. The research will be highlighting individuals who have served in the United States military and their experiences of gender discrimination as well as LGBTQ+ discrimination in order to fully understand societal repercussions when individuals decide to step away from what is considered normal. When analyzing many pieces of published literature we come to the conclusion that individuals that fall within this community tend to be restricted and undermined which causes societal harms such as mental health issues, physical harm, as well as sexual and domestic abuse. To reaffirm these conclusions, data from military forums as well as public statements made by officials show that the military environments do not create a safe space for these individuals nor apply effective prevention practices for all military personnel. This research exposes generational discrimination that continues to exist in the present day. Although the culture of our societies has begun and continues to shift; the military sphere continues to harm and deter individuals who steer away from stereotypical identities.

## **Political Science**

**24. The Influence of Religion on Immigration Public Opinion**

**Presenter(s):** Olga Alvertos

**Advisor(s):** Dr. John Compton

This study explores the ways in which the religious beliefs of individuals influence their opinion on immigration and immigration related policy. While seemingly separate topics, the two are interwoven through variables such as party affiliation, education level, and age. Previous studies show a clear correlation between frequent attendance of religious services and positive views on immigration and related policies. This topic has yet to be explored in depth and with reference to frequency of religious attendance. Using ANES data, my goal with this research is to determine if a strong attachment to religion affects public opinion of immigration policy and immigrants themselves. Understanding the connection between the two will provide more substantial understanding as to why some immigration policies receive negative public opinion while others thrive. Identifying the source of public immigration opinions is beneficial to the understanding and improvement of the immigration system in the United States.

**25. Political Party Preference Regarding Trust in the U.S. Election System**

**Presenter(s):** Cole Cooper

**Advisor(s):** Dr. Ann Gordon

American citizens should have confidence and trust in the U.S. election system. The freedom to vote is essential to the democratic process, as citizens have the right to choose the leaders who represent them and support their interests. In this research, I evaluated voters' political party preferences to determine how likely voters are to agree with the statement that we need new voting laws because there is too much voter fraud. Additionally, I evaluated voters' political party preferences regarding how likely voters are to believe that Joseph Biden was the legitimate winner of the 2020 U.S. presidential election. Using the Chapman Survey of American Fears, a nationally representative sample, I have observed a strong correlation between an individual's political party preference and their beliefs about the legitimacy of the 2020 elections. While using the same survey, I also observed a strong correlation between an individual's political party preference and their belief that we need new voting laws because there is too much voter fraud. Furthermore, I have found that there is no strong correlation between independent voters when comparing their beliefs of the legitimacy of the 2020 election and their beliefs when asking if we need new voting laws. By analyzing the relationship between political party preference and the party's beliefs on voter fraud, the nation will be able to visualize the polarization amongst voters and how the polarization only further contributes to a sense of distrust and confidence in the U.S. election system.

**26. Social Media Effects on Fear of Terrorism**

**Presenter(s):** Cameron Pastore

**Advisor(s):** Dr. Ann Gordon

In the past few decades, social media has constantly been upgraded to comply with users' needs. Social media has become a prevalent tool in today's society as many use it to share their thoughts and gain a glimpse into other people's lives, but a lot of people also use social media as a means to obtain news about what is going on in the world and in their communities. In this article, I examine the influence that social media has on people's fear of a potential terrorist attack on their homeland. The data for this research was obtained through The Chapman University Survey on American Fears (CSAF), conducted in 2020/2021. The information I use takes into consideration what news sources people pay attention to, what outlets people get their news from, and how often they obtain news from social media. The results showed that the more that people got their information from social media, the more likely they were more afraid of a terrorist attack happening. Although social media is a growing convenience for people with busy schedules, it does allow people to see more about what is happening around the world. This is both good and bad as people are less censored to events outside of their country but it does create this growing fear that these events and attacks may personally affect them.

**27. Us vs. Them: How Nationalism Creates Fear Within the United States**

**Presenter(s):** Emily Kinney

**Advisor(s):** Dr. Ann Gordon

Nationalism, or a heavy identification with one's state resulting in pride, can be useful in bringing people together around shared ideas and creating a sense of community; this pride, however, can come from a place of naivety and as a result from limited understanding and tolerance of different cultures. Xenophobia often hides below the surface of nationalism, and this paper aims to explore what the fear of various groups indicates about levels of nationalism across respondents' political backgrounds, media consumption, and other factors. Using the American National Election Survey and the Chapman Fear Survey, representative national samples of US adults, I expect to find that a fear of immigrants will indicate the highest sense of national pride, as the prevalence of the "Replacement Theory" has caused people to become more rooted in their American identity while working to exclude those who come from a different cultural background. I also expect to find that a fear of certain terrorist groups over others will reflect changes in media consumption and political party, along with how proud people feel to be an American. Many factors are causing nationalism to spike in the United States, and understanding these causes will allow the nation to promote openness to other nationalities in areas where this understanding is most needed and reduce the growing ignorance towards other cultures while improving acceptance.

**28. If It Bleeds, It Leads**

**How Violent News Consumption Affects Your Fear of Crime**

**Presenter(s):** Kiana Favela

**Advisor(s):** Dr. Ann Gordon

A famous phrase in newsrooms is "If it bleeds, it leads." The term suggests that newsrooms are more likely to start their show with violent stories about death, crimes, accidents, or other dark stories because viewers are more likely to stay and watch. In this paper, I examine the extent to which news consumption affects a person's fear of crime. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, I examined questions relating to a person's fear of crime (mugging, murder, shootings, gang violence, and kidnappings), and I compared them to how a person gets their news (e.g., local news, national news, social media, newspapers, etc.). Using multiple regression analyses, I found that social media was the most significant variable that affected a person's fear of crime in five of the six hypotheses tested. Additionally, Fox News was a statistically significant variable for just ⅓ of the variables tested, while CNN was significant 100% of the time. Local News was not a statistically significant variable for any hypotheses tested in this paper. News and journalism are essential aspects of our society, and it is crucial for news producers to know how their show affects the people in their neighborhoods.

**29. Group Dynamics, Polarization, and Trumpism: What Led to January 6th**

**Presenter(s):** Avery Davidson

**Advisor(s):** Dr. Ann Gordon

How did thousands of American citizens come to believe in conspiracies and lies about the 2020 election so fervently that they launched an attack on our nation's capitol on January 6th, 2021? In this paper I examine the extent to which demographic and social factors contributed to the decision of certain Americans to condone the events that occurred on January 6th. Relying on both the Chapman Survey of American Fears, a representative national sample of U.S adults, and the American National Election Study, I find a strong relationship between factors like media consumption, group dynamics and polarization, party identification and Trumpism, and approval of what occurred on January 6th. The attempted coup that occurred on January 6th was no spontaneous act. In this paper I examine what led so many people to buy into the lies of widespread voter fraud in the 2020 presidential election that led to a violent attack on our very nation's capitol- and consider the far-reaching aftermath of this event and its implications for the very soul of our democracy.

**30. The Impact of Ideology on Attitudes Towards Federal Spending**

**Presenter(s):** Ariel Gries

**Advisor(s):** Dr. Ann Gordon

In this paper, I will examine how partisanship and ideological factors impact the public's opinions about our nation's federal budget. I will analyze how one's party identification, opinions on income inequality, equal opportunity, and trust in experts affects our opinions of our federal budget. Using the 2020 American National Election Survey, a representative national sample of over 15,700 U.S. eligible voters, I will examine how partisanship and one's ideology impact one's opinion on the allocation of the federal budget toward tightening border security, welfare programs, aiding the poor, and protecting the environment. Among the interesting findings, it is predicted that Republicans are more likely to want an increase in federal spending toward tightening border security and decrease federal expenditure on welfare programs, aid to the poor, and protecting the environment. Similarly, it is predicted that people who are in favor of the government trying to reduce the difference in incomes between the richest and poorest households are more likely to want a decrease in federal spending toward tightening border security and increase federal spending toward welfare programs, aid to the poor, and protecting the environment. It is also predicted that someone who agrees with doing whatever is necessary to ensure equal opportunities is more likely also to want a decrease in federal spending toward tightening border security and increase federal spending toward welfare programs, aid to the poor, and protecting the environment. Lastly, we predict similar results when people identify as trusting experts more than trusting ordinary people in terms of public policy. These findings will help understand the partisanship and ideological differences that divide our country's opinion of how we choose to allocate our resources. Being able to take into account public opinion would allow for more perspective in terms of government responsiveness and provide more insight into what drives public opinion and then crossover understanding when Congress votes to approve the legislation.

**31. QAnon Deconstructed: Faith & Lies**

**Presenter(s):** Samuel Andrus

**Advisor(s):** Dr. Ann Gordon

All prior categorizations of conspiracy theories fall short when applied to the system of belief known as QAnon. This paper first examines the previous literature that laid down a basis for understanding the nature of conspiracies and isolates aspects of the QAnon canon to delineate and test the predictors of belief. The data for this research were obtained from the 2020 wave of the Chapman Survey of American Fears (CSAF) conducted by the Earl Babbie Research Center at Chapman University. Layered crosstabulation tests and multiple linear regression results find that conspiratorial thinking outweighs partisanship when predicting QAnon belief. Strikingly, despite QAnon being tied to former President Donald Trump and crosstabulation results revealing a greater likelihood for Trump voters to believe in QAnon, the divide between Republican and Democrat voters was not very large, and all variables relating strictly to political orientation were statistically insignificant. This implies that QAnon is not a partisan conspiracy theory but rather an entirely new breed of hybrid conspiracy based around Donald Trump. The second part of my paper uses open-source intelligence methods to code and analyze content selected from ten alternative media messaging hubs via the platform Telegram, each of which ranges from 80,000 to over 200,000 active users. These promulgations of the QAnon conspiracy are synthesized in order to isolate specific elements of the belief system so as to better understand precisely what makes up the conspiracy and how it may relate to other aspects of contemporary political polarization.

**32. Fears of Violent Crimes**

**Presenter(s):** Jasmine Lopez

**Advisor(s):** Dr. Ann Gordon

Roughly about 90% of adult rape victims are women and about one out of every six American women has been a victim of completed or attempted rape. This paper goes into depth about the correlation between the fear of sexual assault by a stranger and gender identity. While critically assessing the difference in percentages, we can infer a hypothesis that one gender may fear a sexual assault by a stranger more than the other gender. This analysis will operationalize the theory of gender fear caused by internal sources of experience or external sources, such as the media. In this research, I will include the findings of the Survey of American Fears. I will be answering the following research questions: If there is a correlation between a certain gender and the fear of sexual assault by a stranger, what creates this fear? Not only will I be asserting the benefits of doing this research but I will further analyze who exactly this fear may be affecting most. I will be using data that is from the present time and dating back to a survey from 2016. This will help finalize the internal and external factors of the impact of fears of sexual assault by a stranger. From these interesting findings, one can note that fear could also derive from sexual assault by an intimate partner or someone they already know, not just strangers.

Keywords: fear, sexual assault, gender identity, survey, data

**33. The Origin of Why People Fear Such Unlikely Events**

**Presenter(s):** Maxwell Zucker

**Advisor(s):** Dr. Ann Gordon

The question my research has set out to answer is what specifically leads to one person fearing an event or occurrence while another person might consider that event outrageously unlikely and subsequently have no fear at all? First, it is important to define what an “unlikely” event might be: when I speak of fearing the unlikely, I am referring to events that could be categorized as paranormal, such as ghosts, as well as events rooted in conspiracy theory, such as Q’Anon. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults and their corresponding demographics and fears, I was able to outline my research to better understand what characteristics in any given respondent led to their fears of the unlikely, and why those specific characteristics play a role to begin with. What I discovered throughout the course of my preliminary research was that the combination of a respondent's cultural identity and background in tandem with any biases they might have play a very significant role in determining their susceptibility to fearing the unlikely. An example of this that comes up throughout my research is when looking at a respondent’s religion; given that religion is rooted in beliefs of supernatural concepts such as an afterlife or higher beings, it would be fair to hypothesize that a more religious person is going to fear unlikely events, especially paranormal ones, more so than someone who isn’t religious at all. The same can be said when looking at other cultural identifiers, like race or ethnic background, both of which contribute to a person's cultural identity and thus play a role in determining their fears. One might assume that another person's unrealistic fear might be rooted in a lack of intelligence, but I found that these fears were evenly distributed amongst all levels of education. Instead, I was able to conclude that a unique set of characteristics that come as a result of a person’s individual background have the most significant impact on their level of fears regarding unlikely events or occurrences.

**34. Climate Change Perceptions and Personal Experiences**

**Presenter(s):** Kimberly Gomez

**Advisor(s):** Dr. Ann Gordon

In the United States, individuals have different perceptions of climate change and how urgent they feel climate change is. In this paper, I expect to find a relationship between how individuals feel about climate change, ethnicity, and having children. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, provides data on facts about Americans, the fears they have, and how strongly they feel about the fears. The data from the 2022 Fear survey will provide information as to how individuals feel about climate change and information about the individuals such as ethnicity and children. I expect to find that people with children and minorities care more about climate change and its importance. Although there are more factors that can contribute to the way a person feels about climate change, the paper will focus on the contributing factors of ethnicity and children. Climate change is increasing and the paper will argue that children can be the answer to getting older generations on board with helping to fight it.



**35. Biopolitics and Belief: The Impacts of Religious Attitudes on Reproductive Rights in the U.S.**

**Presenter(s):** Katlyn Barbaccia

**Advisor(s):** Dr. Ann Gordon

On June 24, 2022, the U.S. Supreme Court ruled to overturn *Roe v. Wade* (1973)—a groundbreaking case that legalized the right to have an abortion—which signified a deep rift in the nation between the opinions of its lawmakers and citizens in the wake of a widening partisan gap. Biopower, according to Foucault, can be defined as the governing of bodies wherein citizens are stripped of bodily autonomy and are closely regulated by the nation-state. Manifested in political consequences, this can be defined as biopolitics, or when the nation-state's ideas are made into a reality in the political realm. Religion in particular is often employed by the conservative right as justification of the U.S.'s use of biopolitics to mass control reproductive health. The research seeks to understand the implications of biopolitical warfare on women's health through asking: (1) Why and how does religion seek to control reproductive health?, (2) How has religion influenced biopolitics and how does it continue to influence the political realm today?, and (3) In what ways has increased party polarization in addition to religious ideology contributed to the gap in public opinion on reproductive rights? Using data from the American National Election Studies 2020 Questionnaire, the research aims to establish how and why the religious right uses its political power for personal gain, and the ways in which both party identification and religious beliefs jointly influence abortion opinions. Overall findings suggest that increased party polarization has created an inaccurate representation of the right in positions of political power, which has further enabled the religious right to use anti-abortion legislation to control constituents. These findings contribute to present understandings of the biopolitical role that religion and party identification play in determining national reproductive health outcomes.

**36. Political Participation**

**Presenter(s):** Miriam Elfahdi

**Advisor(s):** Dr. Ann Gordon

Participation in political and social matters is a core part of democracy. The manner in which people participate varies vastly and can have different outcomes. In this essay I will examine the relationship between respondents' age, income, gender, race, and education level and the way they participate politically. Using reliable data from the American National Election Studies, I will examine the previously listed independent variables to various questions on political participation from the 2020 version of the survey. Among the findings, I find a mild relationship between age and attendance in protests/rallies. These findings point to the importance of analyzing non-conventional forms of participation that are less in the forefront of the conversation around political participation. Other activities outlined in the ANES 2020 survey include; attending meetings to talk about social concerns, persuading people to vote in one way or another, and posting a message online about a political concern. These forms, and others not listed, are all impactful and are what maintain a democracy. It is therefore important to understand who is able to participate and how. Looking at various demographics and patterns of political participation can allow us to further understand the accessibility of democracy and whose voices become the loudest. This will allow us to think more critically about the function of our democracy and its efficiency in representation.



**37. How Partisanship Can Affect Fears and Denials about Climate Change**

**Presenter(s):** Sophia Salstrom

**Advisor(s):** Dr. Ann Gordon

The conversion of climate change is popping up more frequently than ever before. It is being widely debated by international, state, and local governments but most significantly, it is being discussed in a domestic setting. Domestic discussion is where public opinion begins to take form. Public opinion about climate change in the United States can be divergent and extreme. The goal of this research is to highlight the differences in political opinions about climate change and derive the meaning for these disparities. Throughout this research, I plan to parse the relationship between an individual's party identification and their level of concern regarding climate change. It will also examine the relationship between an individual's party identification in correlation to their level of trust in the United States government. The findings may suggest that party identification is correlated to fear of climate change as well as overall trust in government. This research will also examine how fear of exacerbating weather developments is creating less doubt and more advocates for climate change action. The data for this research was collected from the Chapman Survey of American Fears as well as the American National Election survey, both representative samples of the United States. In my results, I hope to find significant correlations between party identification and individual level of fear regarding climate change. I also hope to find an interaction between mass media sources and the manipulation of public opinion. This influence may be a direct route to fears surrounding climate change. This research hopes to distinguish these differences and parse the overall relationship between public opinion and fear of climate change.

## **World Languages and Cultures**

**38. Long Live the Revolution: Magical Realism as Activism in the Art and Literature of Latin American Leftists.**

**Presenter(s):** Marie Shear

**Advisor(s):** Dr. Laura Loustau

Political dissensions between hyper-capitalist and socialist states plagued the 20th century, with leftist revolutions occurring throughout Europe, Latin America, and Asia, provoking intense nationalism and xenophobia in right-wing countries. In response, a wave of western political propaganda swept aggressor, conservative nations, instilling a deep fear of progressivism and leftist theology into the general population. This rhetoric created a dangerous social climate that put communist and socialist activists at the forefront of political persecution. To avoid prison, torture, or death, authors and artists adopted magical realism to criticize fascism and corruption in their countries and globally safely. Magical realism is characterized by reality interfused with elements of folklore, exaggeration, irony, hyperrealism, and representations of alienation. The genre is typically associated with Latin American literature and holds a lengthy history of anti-colonial resistance, focusing on the convergence of indigenous and modern cultures. To understand how magical realism was utilized as activism through literature and art, this work investigates three specific cases, a novel by Colombian writer Gabriel García Márquez and two paintings by Mexican painter Frida Kahlo, that support the genre's engagement with

leftist theology. These artists incorporate magical elements into their realist stories to retell cultural trauma but also redefine the boundaries of political activism.

**39. The Integration of Literary Elements in Modern Day Spanish Language Advertising: An Investigational Essay**

**Presenter(s):** Carter Kane

**Advisor(s):** Dr. Laura Loustau

The primer authority in the advertising world in Spain is named Luis Bassat. He is the founder and president of the most profitable advertising agency in the history of the country, Ogilvy España. Bassat wrote the "Red Book of Advertising," a guide and summary of what he has learned in the industry in a career that has spanned more than 47 years. In addition to many ideas and theories, Bassat lists five pieces of principle advice to current-day advertisement makers, clearly stating the keys to achieving success in this discipline. This investigation will use those pieces of guidance as a rubric to analyze examples of Spanish language publicity released in the last five years. Bassat's five advertising laws will be explored with different Spanish-language publicity campaigns that integrate elements of literature from famous authors to the symbol of a book itself. The link between literature and success in the advertising world will become evident through comparative methods and insightful analysis. In addition, the author of the investigation, Carter Kane, is a student studying advertising at Chapman University and will offer his insight into why this topic is important and relevant.

**40. Proposal of a Universal Plan for Bilingual Services in Medicine**

**Presenter(s):** Andrea Sandoval

**Advisor(s):** Dr. Laura Loustau

Communication between a doctor and their patient is essential to ensuring that the patient remains informed about their health. Having that level of transparency creates more impactful interacciones during a doctor visit. If the patient is involved in conversations about their health, they will be able to better implement the recommendations of their doctor. By simply informing the patient, they will forget, but if they are involved, they will learn. In health care, language barriers can limit the level of understanding and prevent essential discussions from being fully understood. This project will provide one approach to breaking language barriers with the proposal of a universal system for bilingual services that identify and eradicate the disparities, provide the appropriate resources, and maintain patient satisfaction in order to create more accessible healthcare. This will be analyzed by looking at past trends in language barriers. Initially, the hospitales must identify the needs of their patients and determine which languages their patients primarily speak. Then, they need to hire employees that have the appropriate skills to fulfill the needs of the patients. The use of translators, pay incentives, and incorporating language courses in the medical school curriculum so doctors can directly communicate with patients, are necessary resources, as previous studies have suggested. With these requirements met, the hospitals need to utilize their resources and maintain a more efficient system. In this project, comparative initiatives from other countries will contribute to finding the most viable techniques to incorporate into the universal language plan for medicine that is being proposed.

## Room A

Moderator: Dr. John Thrasher

### Art

11:30-11:45 am

#### **The Lifecycle of Art**

**Presenter(s):** Berkana McDowell

**Advisor(s):** Micol Hebron

With anthropogenic climate change and pollution wreaking havoc on the environment, there is a necessity to reevaluate a multitude of activities and procedures that seem unchangeable in human society. Throughout history, natural environments have played an integral role in the development of art including its subject matter, connotative meaning, and materials used in its creation. In a modern exhibition of art, like Desert X, the health of the desert environment is a prime motive in the establishment of the exhibition, along with providing social commentaries on 21st-century issues. This has prompted the organization to put the protection of the natural environment at the forefront of its missions and legacy. However, there are many environmental risks involved in allowing international artists to have free reign in creating art for the biennial art show, namely in the materials the artists choose to use, and what happens to the materials post-exhibition. Some artists have received praise while others have received criticism for their commitment to the environmentally-oriented mission of the organization, displaying the necessity to explore the impacts of waste, protocols in place, and lifecycles of projects all within the Desert X exhibition. Moreover, the controversy highlights the dichotomy of creating art for social awareness, while simultaneously contributing to the most significant worldwide social issue, climate change. This controversy can be analyzed to identify how the environmental concerns of art materials can be addressed and eradicated in the Desert X art show.

11:45-12:00 pm

#### **Investigating the Decolonization of Fine Arts Museums in Southern California**

**Presenter(s):** Aliza Shiah

**Advisor(s):** Micol Hebron

My oral presentation will cover the key topics I have explored through my research funded by this grant. With this grant, I have conducted research into the current state of museum efforts to decolonize the 'Fine Arts Museum' as an institution. More specifically, I have done scholarly research on the colonial history of museums from their early beginnings to present day while also visiting well-known fine arts museums within Southern California, documenting my experience. As I compile all of this information together, I will be looking at the collection as a whole and current exhibitions in order to assess whether

each museum is actively challenging the favoritism of white, Western, male, and heteronormative artists in order to facilitate productive conversation in our changing world. The museums have visited with the money received for this grant are:

The Los Angeles County Museum of Art

The Getty Center

The Museum of Contemporary Art (Los Angeles)

Orange County Museum of Art

San Diego Museum of Art

For this oral presentation, I will first summarize the library-based, theoretical research I have done to lay the groundwork that will help people understand the history museums are coming from. Then, I will detail my experiences inside the walls of each museum, viewing the art and exhibitions through a critical lens. The final part of my presentation will be combining the initial research on the museums and their past and present diversity and inclusion initiatives with my first-hand experience in each institution. I will examine whether the experiences each museum offers lives up to their current practices in decolonizing the fine arts institution. I hope to provide critical information while also remaining optimistic about how far the Art World has come and where it needs to go next.

#### **12:00-12:15pm**

##### **Desert X:**

##### **How a Small Idea Became as Vast as a Desert**

**Presenter(s):** Olivia Brewin

**Advisor(s):** Lia Halloran

For this paper, I want to do research on Desert X as a business and nonprofit organization. Nonprofits are defined as a charitable organization with purposes to fund and support individuals and other organizations. Desert X is a biennial show that happens every other year in the Coachella Valley and rotates the next year in Saudi Arabia. International business is not always simple as domestic, especially with business that involves making land art as modes of expression. Much of art is censored in Saudi Arabia, so this area of business intrigues me to do further research on how the transactional relationship came to be. Within the goals of this paper, I want to interview founder Susan Davis and possibly the leading directors on the Desert X team. Questions to be asked while researching this paper are: what makes Desert X different from an established organization? What were the strategic business choices being made? What kind of donors contribute to Desert X? How are the showing artists supported in their exhibition? How were connections made with international business relations in Saudi Arabia? Were there any obstacles in achieving this?

## Room B

Moderator: Dr. Martina Nieswandt

### **Integrated Educational Studies**

11:30-11:45 am

**Avoiding Shame: Filipino American's Motivations for Higher Education**

**Presenter(s):** Myra Dayrit

**Advisor(s):** Dr. Stephany Cuevas

Filipinos are often referred to as the “forgotten Asians” or “Latinos of Asia” due to the centuries of colonization in the Philippines. This deficit discourse often minimizes the experiences of Filipino Americans, especially in higher education settings. Filipinos typically are lumped into the greater myth of the Asian model minority, allowing for little research specific to Filipino Americans' experiences. The Filipino American experiences differ from those of other Asian Americans due to their complex history with the United States. Thus, the lack of research in this underrepresented population, especially in higher education, is significant because access to a college degree is vital to social mobility in America. This research study aims to further our understanding of Filipino American motives in their aspirations for higher education. The literature shows that Filipino families emphasize the importance of dependency and a sense of obligation. Filipino American children are told they are ungrateful or shameful if this responsibility is left disappointed. Therefore in aspirations for higher education, Filipino Americans are more likely to go to school due to family commitments. Other researchers have noted that attending college was less about the “college experience” and more about receiving a job to fulfill a familial obligation. Through the use of systematic literature methodology, this study pushes for better serving Filipino Americans and their aspirations for higher education.

### **Peace Studies**

11:45-12:00 pm

**Jail, Bail, and Pretrial Policies: The Politics of Modern Bail Reform Efforts in the Fight Against Mass Incarceration**

**Presenter(s):** Anika Manuel

**Advisor(s):** Dr. Hilmi Ulas

Although current activists and change-makers have rallied together to tackle the notorious system of mass incarceration within the United States, one critical pillar of this system has been often overlooked: the practice of commercial bail in pretrial policies. These policies directly impact jail population and growth,

and the discriminatory practice of bail has resulted in an increase of people being held in pretrial detention simply due to their lack of means to pay their bail amount. The existing literature agrees that unjust pretrial policies must be addressed in any future efforts to change the system of mass incarceration. Yet, efforts to transform pretrial services and bail have been unsuccessful thus far, even within liberal state legislatures initiating the reform efforts. What has made this pretrial practice so resistant to change even though there is increasing attention to its faults? To address this gap, this paper seeks to answer one key question: what are the underlying dynamics surrounding unsuccessful commercial bail reform efforts in liberal state legislatures today? Gathering data from legislation, news articles, official voter guides, policy reports, news articles, court cases, nonprofit mission statements, policy updates, budget reports, and more, this paper utilizes a comparative case study of California and New York and will explore various political, economic, and socio-cultural factors that have contributed to the persistence of the bail industry. In this, it aims to build a more nuanced framework through which to understand the issue of commercial bail, as well as shed light on the current dynamics surrounding criminal justice reform in modern-day society.

## **Religious Studies**

**12:00-12:15pm**

### **Disability and the Western Christian Church: An Evolving Theology**

**Presenter(s):** Cambria Acheson

**Advisor(s):** Dr. Kirk Sandvig

Historically, Western society has struggled to embrace the disability community appropriately and affirmingly, sustaining the infiltration of ableist ideologies in many realms of life. My research seeks to question and address the existence of ableist attitudes in religious spaces and ideologies, specifically centering my scope on Western Christianity for a more focused approach. I have shaped my research around a series of initial questions: Does an outdated, ableist historical perspective remain intertwined into mainstream churches and Biblical interpretations, even as the religion evolves? How have Western Christian theology and behaviors addressed the sociohistorical othering of people with disabilities, and how might contemporary disability studies benefit this religious context? My research investigates ideologies from the historical context of the Bible to the modern present, guided by several key texts from scholars of religious and disability studies. I research how stigma lingers in the Church of Western Christianity, manifesting subtly in ableist interpretations of scripture and treatment of people with disabilities. Furthermore, I contend that this stigma demands contemporary shifts in its interpretation of Biblical healing and disability experience, best guided by voices within the disability community and the evolving frontier of disability theology. Building on my research and experience with family members in the disability community, I contribute a practical framework for improvement of attitude, acceptance, and accommodations in the Church, asserting the mission of inclusion and accommodation as an immediate opportunity for the Church to widen its embrace ideologically and practically.

## **Psychology**

12:15-12:30pm

**The Role of Nonverbal Behavior in our Perceptions of Potential Collaborators.**

**Presenter(s):** CJ Tadros, Laine Misaka, Kayla Queen, Avery Paez, Katrina Lee, Sophia Wallace

**Advisor(s):** Dr. Tara Gruenewald

Research in the field of person perception and organizational studies suggests that our non-verbal behaviors, such as hand gestures, can affect how others perceive us in workplace environments. Much of this research has focused on how hand gestures can affect our perceptions of leaders, including observers' perceptions of confidence, persuasion, and composure (Newman et al., 2016; Talley & Temple, 2015). However, much of our work occurs in a collaborative peer context. The aim of the present study is to examine if specific hand gestures found to positively or negatively influence perceptions of leadership ability would similarly influence how individuals viewed a potential collaboration target. Specifically, we are examining whether the use of positive (open, collaborative), negative (closed, crossed), and absent (no movement) hand gestures during speaking affects how individuals view a target who is a potential candidate for a work position that requires collaboration and teamwork. We are currently employing a between-subjects experiment in which participants are randomly assigned to view a speaker target who displays positive, negative, or absent hand gestures while being interviewed for a collaborative employment position. Observers are also asked to interview for the same position before viewing and rating the other potential job applicant. Observers' perceptions of the other job applicant are being assessed through subjective ratings (e.g., speaker's warmth, agreeableness, approachability and observers' desire to collaborate with the target) and objective indicators (observers' facial expressions of emotion). Our use of an automated facial emotion coding system, FaceReader, is an important methodological innovation to capture more objective reactions of observers when viewing a potential collaboration target. Results are predicted to show a higher level of interest in collaborating with, and more favorable ratings of and emotional reactions towards, speakers that use positive hand gestures, followed by the negative condition, then the absent gesture condition.

## Room C

Moderator: Dr. Jocelyn Buckner

### Theatre

11:30-11:45 am

**Live From New York It's Hollywood!: Examining the Trend of Screen-to-Stage Adaptations**

**Presenter(s):** Teddy Pagee

**Advisor(s):** Dr. Jocelyn Buckner

Over the past decade, Broadway has seen an increasing number of screen-to-stage adaptations. Waitress, Mean Girls, Frozen, Beetlejuice, and Moulin Rouge are just a few examples. While screen-to-stage adaptations are not a new concept exclusive to the last ten years, there has definitely been a higher demand for producing such shows. Why are we seeing this increase in screen-to-stage adaptations and why are people interested in seeing these adaptations on stage? In this paper, I will be closely examining three adapted screen-to-stage musicals that have been produced in the past ten years to find what makes these adaptations successful, concerning commercial and artistic success. These musicals were chosen with consideration for differences in cinematic style and tone, as well as their stage debut year on Broadway. The selected adaptations are Mean Girls, Beetlejuice, and Finding Neverland. I will also be exploring the concept of adapturgy—a term coined by Jane Barnette used to describe the dramaturgical process for adaptations—in addition to discovering the correlation between the choice of film stories to retell, and the stamp on pop culture these films have left. By seeking the answer to what makes screen-to-stage adaptations successful, I hope to better understand why the theatre industry continues down this trend.

11:45-12:00 pm

**Where Women Dominate: A Look Into Why and How the Stage Management Industry is Predominantly Female**

**Presenter(s):** Emma Accacian

**Advisor(s):** Dr. Jocelyn Buckner

In order to analyze the reasons behind the female dominance in the stage management industry, we must look at the ways in which more 'feminine' managerial styles are being developed, utilized, and embraced internationally across industries and how those styles cater to the role of a stage manager. As the rate of women employed in senior management positions continues to rise, 25% to 31% in the last five years, research comparing the management and leadership styles of men and women has expanded as well (Gourtsilidou). Some qualities that are commonly used across research to describe a more 'feminine'



interaction style include “facilitative, supportive feedback, conciliatory,... collaborative,... [and] person/process-oriented,” where as ‘masculine’ interaction styles are “competitive, aggressive interruptions, confrontational,... autonomous,... [and] task/ outcome-oriented,” (Ladegaard). I will use this research, intandem with my own through conducting interviews, to prove why women in the stage management industry deserve to be paid at least an equal rate to their male counterparts, due to their innate skills plus the additional barriers women face in society as a whole. Keeping in mind that various factors that shape and contribute to an individual’s management and leadership style, the existence and presence of non-binary individuals in these spaces also disproves the sole reliance on gender as a primary factor of an individual’s actions. It intrigues me that the theatre world is still largely dominated by men, yet the stage management industry itself is the exception. In my study, I will focus my research to examine how ‘feminine’ management styles are best suited for the role of a stage manager in an attempt to explain and expand on why it is one of the few industries where women outnumber men.

**12:00-12:15pm**

**“Why this post now?": Dramaturging Political Events and Social Media Content**

**Presenter(s):** Kennedy Kemmerer

**Advisor(s):** Dr. Jocelyn Buckner

Political events have always been influenced by the media, but social media has provided a much stronger influence than the typical newspaper or radio. Users of social media accounts (Instagram, Twitter, Facebook, TikTok, etc.) have the opportunity to share whatever they want, to whoever they want, whenever they want. While social media has given immense opportunity for artists and creators alike, it has also given way for creators to participate in uninformed performance, whether intended or not, with their content. My question is: are social media consumers considering whether content, specifically political content, is actually true or are they accepting it at face value? Political events are being exacerbated by the influence of uninformed performance. From broadcasted political debates, twitter feuds, and family dinners, “controversial” political topics are causing tears in the fabric which has held this nation together. Social media is, moment to moment, shaping the political agenda and contributing to a society filled with emotionally driven misinformation. I am proposing the application of a dramaturgical perspective for consumers when approaching political social media. Dramaturgy is the theatrical study of how theater text or work contributes to the world we live in and how we can analyze theatre to give integrity to the authenticity of the story. I am curious if using a dramaturgical lens in social media consumption will help promote analysis of information, furthering informed performance, and providing a space for compromise. In my project I will be using my skills as a theatre artist to dramaturgically analyze political events which were clearly influenced by social media, in preparation for theatrical creation. I hope that my project simply showcases how using a dramaturgical mindset can help media users successfully navigate informed and uninformed political content while also giving creators an example of how to devise informed performance.

**12:15-12:30pm**

**The Future of Representation & Diversity in Audio Dramas**

**Presenter(s):** Lindsay Newland

**Advisor(s):** Dr. Jocelyn Buckner

This thesis explores the diverse nature of narrative podcasts or audio dramas in terms of sexuality, race, and gender, why this medium is conducive for this, and how it has both succeeded and failed in this endeavor. I will use narrative podcasts and audio dramas interchangeably to refer to fictional audio-only narrative stories. This thesis will compare the diversity of six relatively popular narrative podcasts to relatively popular stories produced in other mediums all created in the last ten years. Those are the television shows *What We Do in the Shadows*, *Merlin*, and *Strange Things* and the plays *She Kills Monster*, *Hamilton*, and *Fairview*. Audience reaction will also be taken into account in terms of diversity. In what ways are these projects celebrated for their story, character, and casting choices? In what ways are they criticized for the same? How have these reactions changed over time? The creatives' reactions and actions taken after receiving praise and criticism will also be explored. In addition, this thesis will examine how the medium of narrative podcasts' only auditory nature and easier gateway to entry impacts story, character, and casting choices, as well as sexuality, race, and gender. I will accomplish this by looking at least one season of six different narrative podcasts and published reactions to them, including *Welcome to Nightvale*, *The Penumbra Podcast*, *The Magnus Archives*, *The Two Princess*, *Alice is Dead*, and *The Adventure Zone*. These findings and explorations will help highlight the benefits of narrative podcasts as a medium, why they have been a historically diverse medium, and where this medium can and should go in the future. This paper will also show how high concept stories are made attainable without visuals and diverse stories are encouraged by the lack of executives and gatekeeping required in other mediums.

**12:30-12:45pm**

**If You Love Me For Me: An Analysis of Queer-Coding in the Children's Film "Barbie as the Princess and the Pauper"**

**Presenter(s):** Sam Evans

**Advisor(s):** Dr. Jocelyn Buckner

Children's television and movies typically exclude queer characters from scripts, and efforts to show queer relationships and identities are met with discouraging backlash from homophobic and transphobic conservatives. However, many queer people know that they are queer, or at least that they do not fit into cisgender and heterosexual norms, from a young age. Many adults reflect on their "gay awakenings" brought about by specific "queer-coded" characters and interactions from the media they consumed as a child. I claim that "Barbie as the Princess and the Pauper," a 2004 musical animated feature film that is based on the Mark Twain novel and is beloved among Barbie movie enthusiasts, is a prime example of queer-coding in children's media. I will demonstrate my argument through a queer reading of the titular "pauper," Erika, as a transgender woman; the relationship between the "princess," Anneliese, and her

royal tutor, Julian, as an allegory of sapphic desires in a heteronormative society; and the friendship between Erika and Anneliese as an example of solidarity between a transgender woman and a lesbian cisgender woman in queerness, femininity, and womanhood. I will also use this queer reading to propose a hypothetical stage adaptation that thoroughly develops and represents the queer identities within this film. Finally, I will reflect on how productions of published musicals can incorporate queer stories where none explicitly exist. Revealing queer-coded themes in children's media and expanding upon them into fully-realized queer narratives is imperative to including, supporting, and protecting the lives of queer youth. By popularizing and increasing the amount of queer children's stories in mainstream media, society can further the normalization and liberation of queer identities.

## **Art**

1. **A Wishing Well for a Water Well: An exploration of water-related issues in Desert X**

**Presenter(s):** Chelsea Farinaro

**Advisor(s):** Micol Hebron

At the intersection of art and landscape, you will find yourself in the heart of the Coachella Valley at Desert X. Being the first free, publicly accessible, and cross-cultural event in the Palm Springs region, Desert X is a biennial exhibition that highlights large-scale installations and its site-specificity to the desert landscape. Founder and President Susan Davis explains that the show started in Palm Springs because that is where she resides. She wanted to invite a particular audience to view the show: one that is willing to make that trek across the desert. A majority of the residents of Palm Springs are older, more than likely retired, and have a great interest in purchasing art. Inviting these citizens allows for a forced retrospect for pieces concerning social issues because these wealthier residents may be unaware of the bigger issues at hand as they are not being directly affected. There is a variety of topics covered across these pieces including water-related issues. The lack of accessibility to clean water is known as the Water Crisis. Not being able to have safe drinking water is becoming more and more prevalent as our global climate continues to spiral. As water is a crucial resource for life on earth, hinders the physical health and livelihood of communities with lacking water access. In exploring the effects of the Water Crisis and art in Desert X that comments on those effects, I aim to analyze the similarities and polarities between the different communities that struggle to gain access to clean water from countries in Africa such as Ghana to The United States, specifically the Coachella Valley where Desert X is held biennially.

## **Biochemistry and Molecular Biology**

2. **A Tight Squeeze: Resistive Pulse Analysis of Microgel Translocation Through Nanopores**

**Presenter(s):** Elif Narbay, Anne Marie Santich

**Advisor(s):** Dr. Andrew Lyon

Microgels are micron-sized polymer networks applicable to drug delivery, microreactors, and even the fabrication of artificial muscle. In our group, microgels for application as artificial platelets are of particular interest given their potential for clinical application in trauma settings. Ultra-low crosslinked poly(N-isopropylacrylamide) microgels, also known as ULC microgels, are the softest of the colloids as they are ultimately composed of >99% water due to their low degree of cross-linking, with network connectivity arising only from rare chain transfer reactions during synthesis. As artificial platelets, this softness permits significant spreading within a fibrin clot. Furthermore, microgel softness is a critical parameter in dictating fate in vivo. Thus, the ability to make precise measurements of microgel modulus is important in understanding their behaviors in regenerative medicine applications. We present the measurement of microgel translocation through nanopores via tunable resistive pulse sensing (TRPS) as a new method for measuring colloidal mechanics. Previously we have used porous membranes, glass nanopores, and most recently, elastomeric pores in similar studies. Here we present the results of the first controlled TRPS

studies of ULC translocation as a function of microgel/pore size ratio. Detailed analysis of TRPS permits insight into the translocation mechanism with respect to "draining" and "non-draining" behavior. Future studies will aim at a quantitative description of TRPS data in terms of microgel viscoelasticity.

**3. Evaluating the role of UHRF1/VIM differential gene expression in pomegranate juice extract and caffeine-treated metastatic pancreatic cancer cells via qRT-PCR analysis and Western blot**

**Presenter(s):** Angelina Sorensen

**Advisor(s):** Dr. Melissa Rowland-Goldsmith, Marco Bisoffi

Pancreatic cancer is one of the most difficult cancers to detect in early stages due to its asymptomatic nature. If there were established differential genetic components to distinguish between stages of pancreatic cancer, it may enable earlier detection of the primary tumor, promoting earlier intervention and improved survival rates. In order to analyze differential gene expression, variations in a cell's transcriptome must first be analyzed since mRNA transcripts often correspond to overall expression of a particular gene. RNA sequencing (RNA-seq) is a technique that uses highly automated sequencing methods to provide insight into a cell's transcriptome by quantifying mRNA transcript readouts. Earlier in this experiment, differential gene expression of the UHRF1 gene was studied in human COLO 357 cells derived from metastasis of pancreatic cancer. RNA-seq analysis was conducted in COLO 357 cells following treatment with a mixture of 75 ug/mL pomegranate extract (PE) and 1.27 mg/mL caffeine and in untreated COLO 357 cells. The result of the original RNA-seq analysis of differential UHRF1 expression was that following the PE/caffeine treatment, UHRF1 expression was downregulated by a factor of 6.53-fold. Evaluation of this proposed downregulation by qRT-PCR analysis revealed that metastatic COLO 357 expression of UHRF1 decreases following combined treatment of PE and caffeine. Following these experiments, VIM arose as an additional gene of interest. Currently, qRT-PCR analysis is being done to analyze differential UHRF1 expression alongside VIM expression in the treated COLO cells. After the differential expression of these genes is described in terms of mRNA levels, the experiment will continue to investigate the expression of these two genes concurrently at the protein level by conducting a Western blot.

## **Biological Sciences**

**4. The Neurogenomic Effects of Rapid Changes to the Social Environment**

**Presenter(s):** Madeleine Chang

**Advisor(s):** Dr. Patricia Lopes

The social environment impacts the physiology of humans as well as animals, leading to important health implications. How social stimuli are processed and the speed at which they change gene expression within the brain is not fully understood, though. In this study, male zebra finches (*Taeniopygia guttata*), who were previously housed with a mate, were subjected to one of four social environments to examine how rapid changes to the social environment impact brain transcriptomic responses. After two and a half hours the brains were collected and RNA from the three regions of interest - the hypothalamus, bed nucleus of the stria terminalis (BNST), and nucleus taeniae – was extracted. These regions were studied as they all

play an important role in the brain's social decision-making and reward systems. The BSNT had the largest number of genes differentially expressed in response to rapid changes in the social environment. The BNST may have experienced the greatest impact as it serves as a link between the social behavior network and mesolimbic reward system: the two brain networks involved in behavioral decision-making. Further analyses of the most significant differentially expressed genes are ongoing and will be further discussed in the presentation.

**5. The Effect of Chronic Stress on Gene Expression in the Hippocampus**

**Presenter(s):** Delilah Schuerman

**Advisor(s):** Dr. Patricia Lopes

When organisms are exposed to stressors for a prolonged period, the body can enter a state of chronic stress, with detrimental consequences. One of the physiological responses to stress consists of increased production of glucocorticoids. The hippocampus is densely concentrated with glucocorticoid receptors and is highly susceptible to stress. In this study, male and female Japanese quail were chronically (6 weeks) exposed to the main avian glucocorticoid (corticosterone), in order to examine sex differences in the effects of chronic exposure to this hormone on transcriptomic responses in the hippocampus. After six weeks of continuous corticosterone exposure, brains were collected and hippocampal RNA was extracted and sequenced. There were 113 differentially expressed genes identified in females and 64 in males, with only 5 genes overlapping between the sexes. The results indicate that chronic exposure to corticosterone leads to a larger number of differentially expressed genes in females than in males. Genes differentially expressed in females suggest a restructuring of the hippocampus and a disruption of memory formation ability. Analyses of the most significant differentially expressed genes are ongoing and will be discussed during the presentation.

## **Business**

**6. Data Analytics for Marketing and Accounting in Horse Auctions**

**Presenter(s):** Khushi Patel

**Advisor(s):** Dr. Cristina Nistor

This research project focuses on using data analysis methods with accounting, finance and marketing applications in a new empirical setting. I aim to uncover new empirical knowledge as well as create and maintain a novel dataset to be used for further research in future projects. I used several sources of data to design a dataset structure for 10 years of a large US based industry. My main focus is the Texas area for Thoroughbred Horse Industry auctions. My project includes a detailed analysis of price changes over time as well as a snapshot of the Covid disruption for this industry.

## **Chemistry**

### **7. Counterion Effects in Calcium-Mediated Sulfur-Fluorine Exchange**

**Presenter(s):** Michael Bertagna

**Advisor(s):** Dr. Maduka Ogba

Calcium ions, bound to weakly coordinating anions (e.g., bistriflimide or triflate ions), have gained significant utility within the last two decades as catalysts for facilitating challenging chemical reactions. This is particularly exciting because calcium, unlike the transition metals typically used as catalysts, is cheap, abundant, and non-toxic. Despite these obvious advantages, calcium catalysis is in its infancy - little is known about the mode in which calcium salts activate substrates in chemical reactions. Recent experimental work has shown that calcium bistriflimide salts activate sulfur(VI) fluorides in a sulfur(VI)-fluorine exchange (SuFEx) toward nitrogen-containing sulfur(VI) compounds of medicinal relevance. A closer look at the experimental data show that switching the anion from bistriflimide to triflate results in dramatic yield losses, indicating that the counterion plays a crucial role in facilitating the chemical process, beyond being weakly coordinating. In this work, density functional theory methods were used to compute and compare the SuFEx mechanism mediated by calcium triflate to that mediated by calcium bistriflimide. Structural, energetic, and electronic insights from computations that explain the origins of the counterion-induced reactivity differences between calcium bistriflimide and calcium triflate will be presented.

## **Communication Sciences and Disorders**

### **8. Applying a Filter Reduces Local Interface Within the Neurodiverse Population**

**Presenter(s):** Kevan Parang

**Advisor(s):** Dr. LouAnne Boyd

Persons on the Neurodiverse spectrum may have trouble with local interference while trying to understand sensory items, like within vision. Local Interference is when the brain processes local details before getting the “larger picture” or Global Interference. We used an Eye Link Eye tracker to the eyes of 7 participants (N=7). We applied a paradigm for the eye tracker to follow, consisting of 400 images, including filtered and unfiltered versions. We concluded that the filter helps focus and reduce interference and helps all types of groups in semantic and nonsemantic contexts understand an image's global context. A survey was conducted, and 4/7 participants used keywords that included the words “increasing focus,” “highlighting a part of the image,” or “shifting attention to a part of the image.” We concluded that there is an 86.475% increase in the chances that a fixation will last at a longer duration is in a hotspot for a filtered image.

## **Communication Studies**

9. **"I Wish Someone Told Me It Would Be Draining in Every Way": Messages that Family Caregivers Wished They Received Before Taking on the Role**

**Presenter(s):** Sawyer Kelly

**Advisor(s):** Dr. Hannah Ball

This study explores messages that family caregivers of older adult parents wished they had received in preparation to take on this caregiving role. With approximately 53 million Americans currently providing informal care to a loved one (NAC/AARP, 2020), this role is a common one. Yet, most family caregivers report receiving no formal training (Cambia Health Solutions, 2020) as well as dissatisfaction with available informational and emotional support (Wang et al., 2018) – all of which contribute to lessened perceptions of preparedness. In turn, lack of preparedness negatively impacts the caregivers' and their care recipients' physical and psychological health (Araújo et al., 2015). Given that absent messages (i.e., messages that individuals desire but did not receive that can be used to guide identity and behavior) can impart equally powerful behavioral and self-conceptual effects as the presence of guiding messages (Rubinsky & Cooke-Jackson, 2021), we explored absent messages about the family caregiving role. Current family caregivers of an older adult parent 60 years of age or older (N = 193) were recruited via purposive sampling using a Qualtrics panel. Participants completed an open-ended survey question about what conversation, dialogue, or information they would have liked to receive about being a family caregiver but did not (i.e., absent message). Responses were analyzed using Tracy's (2019) iterative analysis, resulting in five major themes for caregivers' desired messages about family caregiving: (a) practical information for performing caregiving tasks, (b) practical information for self-care, support, and managing stress, (c) patience and positivity, (d) negative effects of the family caregiver role, and (e) difficulty of being a family caregiver. Additionally, some participants indicated they did not desire additional dialogue prior to taking on the caregiving role (i.e., "no message"). Results yield constructive messages that may aid in caregiver socialization and increasing perceptions of preparedness.

10. **Romantic Media Effects on Women**

**Presenter(s):** Jane O'Connor, Ella Kodjababian, Grace Orlando, Eva Simpao, Jessie Carroll

**Advisor(s):** Dr. Rebecca Forster

This study examines the effects of watching romantic narratives via reality television and fictional films. Specifically, we are focusing on the effects that these media outlets have on women's desire for their own relationship as well as their level of sadness after exposure to an onscreen relationship. The importance of this study contributes to the understanding of women's perspectives of relationships and how different types of media forms will lead to different types of perceptions. Our study aims to demonstrate that exposure to onscreen romantic relationships can lead the viewer to see what they are missing in their own life. For this study, we have two hypotheses to test. The first hypothesis states that women are more likely to feel a desire for a real life relationship after exposure to a media depiction of a romantic relationship in a fictional romantic narrative than in a nonfictional romantic narrative (reality television). The second hypothesis states that women are more likely to feel sadness after exposure to a media depiction of a romantic relationship in a fictional romantic narrative than in a nonfictional romantic



narrative (reality television). For the methodology of the study, the participants (college aged women) will be split into three groups, exposing them to either a movie clip, reality television clip, or no clip at all. After viewing a video clip of a marriage proposal (or not), participants will complete a short survey measuring levels of sadness, desire for a real life relationship, and relationship satisfaction.

**11. Romantic Parasocial Relationships: Seeing Celebrities' Partners as Rivals**

**Presenter(s):** Megan Forrester, Dara Baren, Bella Maher, Michelle Ramos, Jade Buchanan-Moh

**Advisor(s):** Dr. Rebecca Forster

A celebrity crush, also described as a parasocial romantic relationship (PSRR), is a one-sided romantic relationship where a media user has strong feelings for a celebrity or someone in the media while the celebrity is completely unaware of the other's existence. But, when someone's celebrity crush becomes romantically involved with someone else in real life, that romantic partner is described as the parasocial rival. Thus, the goal of this study is to determine whether being exposed to someone's celebrity crush and their rival negatively affects perception and feelings toward their celebrity crush and parasocial rival. We hypothesize that exposure to one's celebrity crush being in a romantic relationship evokes negative feelings toward the parasocial rival. We also hypothesize that exposure to one's celebrity crush being in a romantic relationship negatively affects perception and feelings toward the celebrity crush. Data will be gathered via an online experiment. The research begins with randomly assigning participants to a number of conditions regarding their feelings towards their PSRR. The two conditions consist of being exposed to a fake tabloid of a celebrity romantic relationship or not being exposed at all, which will measure whether people's feelings toward their celebrity crush and their new romantic partner will change.

## **Computer Science**

**12. Utilizing Inverse Design to Create Plasmonic Waveguide Devices**

**Presenter(s):** Michael Efseaff, Kyle Wynne

**Advisor(s):** Dr. Mark Harrison

In modern communications networks, data is transmitted over long distances using optical fibers. At nodes in the network, the data is converted to an electrical signal to be processed, and then converted back into an optical signal to be sent over fiber optics. This process results in higher power consumption and adds to transmission time. However, by processing the data optically, we can begin to alleviate these issues and surpass systems that rely on electronics. One promising approach for this is plasmonic devices. Plasmonic waveguide devices have smaller footprints than silicon photonics for more compact photonic integrated circuits, although they typically suffer from having higher loss than silicon photonic devices. Inverse design software can be used to optimize the plasmonic device topology to maximize the device throughput, mitigating the inherent loss of plasmonics. Additionally, inverse design tools can help us make plasmonic devices with an even smaller footprint and higher efficiency than conventionally designed plasmonic devices. Recently, commercial inverse design tools have become available for popular photonic simulation software suites. Using these commercial inverse design tools with a compatible plasmonic architecture, we create compact, efficient, and manufacturable devices such as grating couplers, y-

splitters, and waveguide crossings. We compare the inverse-designed devices to conventional devices in order to characterize the performance of the commercial inverse design tool. We found the inverse-designed grating coupler, y-splitter, and waveguide crossing all had a smaller insertion losses and much smaller overall footprints, with about a 50-60% area reduction for all the devices. Therefore, we have demonstrated that inverse-designed plasmonic devices are smaller and more efficient than conventionally designed devices.

## **Environmental Science and Policy**

### **13. Towards a Metabolomic Approach for Understanding Organic Electron Acceptors in Northern Peatland Soils**

**Presenter(s):** Alex Joseph

**Advisor(s):** Dr. Jason Keller, Dr. Cassandra Zalman

Peatlands serve as key regulators of the climate by acting as both carbon dioxide sinks and methane sources at the global scale. A mechanistic understanding of microbial carbon cycling in peatlands, which mediates both carbon storage and greenhouse gas emissions, is needed to understand peatland-climate feedbacks. There is mounting evidence that microbes in peatlands utilize organic compounds as electron acceptors to drive their respiration (analogous to our use of oxygen in our own metabolism), but the specific organic compounds utilized in this process are not well understood. In the current project, we used a metabolomic approach to identify organic compounds that likely serve as organic electron acceptors in peatland soils. Specifically, Fourier transform ion cyclotron mass spectrometry (FTICR-MS) identified approximately 30,000 organic compounds in the metabolomes of 3 peatland soils. These metabolomes included compounds that have been produced, consumed, and transformed by microbial activity in the soils. From these metabolomes, we identified a subset of compounds that putatively act as electron acceptors over the course of a 50-day anaerobic laboratory incubation. We then differentiated non-reversible electron acceptors by tracking which of these compounds remained following a 50-day aerobic laboratory incubation (the compounds which do not are likely reversible electron acceptors that can be re-oxidized). This approach raises the intriguing possibility of being able to identify the chemical structures of organic electron acceptors for the first time, with important consequences for understanding carbon cycling in globally important ecosystems.

### **14. Preliminary Exploration of Differences in Peatland Soil Chemical Composition Through Infrared Spectroscopy**

**Presenter(s):** Camila Loyola

**Advisor(s):** Dr. Jason Keller, Dr. Cassandra Zalman

Peatlands store a significant amount of carbon. Microbes found in peatland soils decompose this carbon, leading to the production of carbon dioxide and methane. These greenhouse gasses are released into the atmosphere contributing to ongoing climate change. The amount of carbon dioxide and methane produced by soil microbes varies dramatically in different peatlands, and these differences could be related to the chemical composition of soil. Different functional groups (e.g., carbohydrates, acids, and aliphatics) likely influence the chemical reactivity of soils, and infrared (IR) spectroscopy has been used

previously to identify functional groups in soils. In the current project, we are using IR spectroscopy to explore potential changes in soil chemistry in peat samples from Alaska that were incubated for 50 days under anaerobic conditions and a subsequent 70 days under aerobic conditions. Samples included soils from a long-term water-table manipulation project and a second peatland with high rates of methane production. We are modifying a previously published R-script to identify spectral peaks and ratios known to correspond to functional groups and reactivity in wetland soils. Preliminary results suggest that this approach can capture changes in soil chemistry through time and help identify the functional groups being used by soil microbes in peatland ecosystems.

**15. Exploration of Microbial Organic Matter Reduction in Permafrost Natural Peatland Soils**

**Presenter(s):** Kainani Tacazon

**Advisor(s):** Dr. Jason Keller, Dr. Cassandra Zalman

Peatlands are carbon rich ecosystems, covering only 3 percent of Earth's land surface but storing more than one-third of the world's terrestrial soil carbon. Through a series of biogeochemical processes, that carbon is released into the atmosphere as methane, a potent greenhouse gas. Previous research indicates that organic matter within peatlands can be utilized as a terminal electron acceptor (TEA), reducing the production of methane. We have previously demonstrated that a commercially available peat substrate can be used to track the use of organic TEAs and greenhouse gas production under field conditions. In the current project, we explore if natural peat soils can be utilized in a similar manner, specifically in both intact and advanced permafrost sites in Alaska. Under controlled laboratory conditions, we measured the production of carbon dioxide and methane with a gas chromatograph alongside the reduction of organic TEAs through an electron shuttling assay in both peat soils. These results will be compared to measurements made on the same peat soils incubated under field conditions in Alaska. Our preliminary laboratory results suggest that organic TEAs are utilized in both peat soils, with methane production occurring only after these TEAs had been reduced. Further, field-based measurements suggest that this approach can describe ecosystem-scale differences in water-table level on microbial processes, raising the intriguing possibility that this approach can be used to explore how changes in permafrost thaw impact carbon biogeochemistry.

## **Food Science**

**16. Disinfection of Escherichia coli using the Contamination Sanitization Inspection and Disinfection (CSI-D) System**

**Presenter(s):** Vanessa Alarcon, Jennifer McCoy Sanders

**Advisor(s):** Dr. Rosalee Hellberg

Introduction: Escherichia coli is a major cause of gastrointestinal disease globally. The Contamination Sanitization Inspection and Disinfection (CSI-D) system is a new handheld fluorescence-based imaging device designed to disinfect food contact surfaces using ultraviolet-C (UVC) illumination. Previous research has shown the effectiveness of CSI-D in disinfecting surfaces contaminated with other microorganisms; however, there is a lack of research on the efficacy of the CSI-D system with E. coli.

**Objective:** The goal of this study was to determine the optimal parameters for disinfection of *E. coli* using the CSI-D system. **Methods:** Generic *E. coli* was grown on MacConkey agar at 37°C for 18-24 h and was then transferred to selective media for confirmation (i.e., MacConkey agar with Sorbitol, Simmons Citrate agar, and L-agar). An isolated colony was transferred from the selective media to Luria Bertoni broth (LB) for incubation, followed by dilution ( $10^{-5}$  and  $10^{-6}$ ) and spread plating on L-agar (Lennox LB Broth base with 1.5% agar). The plates were exposed to either high or low intensity UVC for 1 s, 3 s, or 5 s. Exposed and control plates were incubated at room temperature for 2-3 h, then for 18-20 h at 37°C. The resulting colonies were counted and compared to control plates. **Results:** The average of the 3 trials showed that exposure times of 3 s and 5 s at either intensity resulted in effective and consistent destruction of *E. coli*. The minimum reduction at 3 s and 5 s exposure for both intensities was between 96.2% and 99.2%, with a maximum of 100%. The shorter exposure time of 1 s showed inconsistent results at both dilutions and both intensities with a survival rate that ranged from 47.1% to 81.3%. **Conclusion:** The results of this study show that exposure to UVC for a minimum of 3 s is required to achieve consistent disinfection of 96-100% for generic *E. coli*. Further testing will be conducted on additional foodborne bacteria, including *Salmonella enterica* and *Listeria monocytogenes*.

**17. Optimization of DNA-based methods for the detection of canned tuna species**

**Presenter(s):** Aubrey Emmi, Biola Fatusin

**Advisor(s):** Dr. Rosalee Hellberg

Tuna sales contribute an estimated US \$40 million to the global economy. Tuna is especially susceptible to food fraud due to its high demand, quick rate of production, and wide range of price points. Species substitution occurs when a cheaper species is purposefully misclassified as a more expensive species. Animal species can be identified using DNA barcoding, which is a sequencing-based technique, and species substitution can be discovered using this method. Different tuna species can be distinguished using DNA barcoding of the mitochondrial control region (CR). The DNA is degraded during the canning process, making it difficult to distinguish between species of tuna in canned food. A short fragment of CR, known as the CR DNA mini-barcode, has demonstrated some effectiveness with canned tuna species identification. In a previous study, CR DNA mini-barcoding was unsuccessful in several products, likely due to factors such as DNA fragmentation and PCR inhibitors present in canned tuna. Additional research is required to improve the identification of species in canned tuna. In this study, we plan to compare four different DNA extraction methods for use with canned tuna products (Qiagen DNeasy Blood and Tissue Kit, Qiagen DNeasy Bloody and Tissue Kit + PowerClean Pro Cleanup Kit, Qiagen DNeasy Mericon Food Kit, MP Biomedicals Fastprep-24 + Macherey-Nagel Nucleospin Tissue Kit) and carry out PCR and DNA sequencing to determine which extraction method results in optimal species identification. The Qiagen DNeasy Mericon Food Kit is predicted to work the best because it is made for DNA extractions of highly processed foods.

## **Health Sciences and Kinesiology**

### **18. Effects of Transcranial Direct Current Stimulation on Working Memory in Adults with Post-Acute COVID-19 Syndrome**

**Presenter(s):** Isaac Min

**Advisor(s):** Dr. Aaron Schurger

Since its detection in December 2019, coronavirus disease 2019 (COVID-19), the viral disease caused by the SARS-CoV-2 novel coronavirus, has had prominent effects on human health and mortality. Studies in previous infections of SARS-CoV and MERS-CoV have found evidence of persistent symptoms in recovered patients, such as lethargy and shortness of breath. Similar residual symptoms have also been seen in recovered COVID-19 patients beyond four weeks of the initial onset of symptoms — collectively termed post-acute COVID-19 syndrome (PACS). These symptoms include deficits in working memory. Preliminary studies done in the United States and Europe have shown a significant portion of recovered individuals suffer from PACS. Thus, there is a need to understand the neurophysiological effects of PACS better and develop a systemic approach to treating its symptoms. Transcranial direct current stimulation (tDCS), a non-invasive transcranial electrical stimulation method, has been recently investigated as a possible non-pharmacological intervention in various neuropsychiatric disorders. The most appealing aspects of the intervention have been its safety, portability, and at-home application. tDCS regulates neuronal transmembrane potentials towards depolarization or hyperpolarization via weak electrical currents, resulting in changes in the resting membrane potential and transmembrane proteins. This project aims to investigate the effect of tDCS on working memory in individuals with PACS and its potential for clinical applications. Participants are asked to undergo eight 20-minute tDCS stimulation periods over four sessions. Each participant is tasked with the 2-back task before and after each stimulation period. Parameters related to working memory, such as response time, are recorded for data analysis. We anticipate that the results from this project will help us better understand PACS and enable us to propose new approaches to treating residual symptoms.

## **Peace Studies**

### **19. Conflict-Related Sexual Violence in ISIS-Controlled Iraq and During the Rwandan Genocide**

**Presenter(s):** Emma Drake

**Advisor(s):** Dr. Lisa Leitz

TRIGGER WARNING: discussion of sexual violence. Conflict-related sexual violence (CRSV) is a substantial global issue. Women who are or have been under ISIS control who have experienced any form of sexual violence share this trauma with thousands of women who experienced the Rwandan genocide. I will focus on the experience of sexual violence by women living in ISIS-controlled areas and those who experienced the Rwandan genocide. But how does sexual violence against women during ISIS control and sexual violence against women who experienced the Rwandan genocide compare and contrast in its use as a war tactic? This research qualitatively and quantitatively examines the differences and similarities comparing academic sources and datasets to analyze their accuracy. The similarities in these cases are 1) they were

targeted intersectionally through gender, religion, and ethnicity, and 2) rape was used as an intentional strategy in the conflict. One major difference is the source of rhetoric leading to the assaults: religious extremism versus postcolonialism. They also differ in the length of time during which the assaults happened: ISIS' sex slavery trade has existed for years and continues to do so, while the Rwandan genocide was concentrated into a few months. Conflict-related sexual violence speaks to a greater issue: the need to deconstruct misogynistic perceptions of women within society.

**20. How has the Rise and Fall of the Islamic Republic of Afghanistan Affected Women Soldiers?**

**Presenter(s):** Alexa Jamison

**Advisor(s):** Dr. Lisa Leitz

Over the past centuries, women worldwide have achieved more equal opportunities than ever before. Unfortunately, this is not the case for all women, especially in Afghanistan, which has held the title of a country with the least women's rights for many years. Over the past two decades, Afghan women's rights have risen and fallen. In this time frame, women were given new career opportunities, such as military positions, then ushered out of these positions. The question the paper poses is how has the rise of the Islamic Republic of Afghanistan affected women soldiers. The research process involved analyzing military sexual assault data, interviews of Afghan women soldiers, congress reports, and reviewing the book "Support for Gender Equality: Lessons from the U.S. experience in Afghanistan" by the Special Inspector General for Afghanistan Reconstruction. Through this analysis, the rise of the Islamic Republic of Afghanistan resulted in more rights for women, such as opportunities in Afghanistan's security forces. However, the dominant culture's perspective of gender in Afghanistan led to harassment, resistance from communities, and discrimination from male colleagues. Following the fall of the Islamic Republic of Afghanistan, Afghan women in security forces were not only removed from the defense forces but targeted for torture and murder. Based on the evidence, the expected results are Afghan women soldiers' acceptance is affected by the ruling regime in Afghanistan.

**21. Uncovering Sexual Exploitation and Abuse in UN Missions Perpetrated by Peacekeepers**

**Presenter(s):** Mia Johnson

**Advisor(s):** Dr. Lisa Leitz

Sexual exploitation and abuse (SEA) is an 'endemic problem' in peacekeeping missions that persists today despite policies and preventive measures set forth by the UN. In many case studies, large-scale accounts and allegations of SEA by peacekeepers during UN peacekeeping missions become a source of mistrust between local populations and peacekeepers. This mistrust then hinders the advancement of gender equality locally and perpetuates patriarchal structures within the host country, said peacekeeping missions are said to promote. I will be exploring and evaluating such atrocities committed by UN peacekeeping missions in Bosnia, Liberia, and Haiti and the implications they have had on local women and girls. Some of the issues that will be addressed include behaviors by peacekeepers that foster illicit sex industries, such as transactional sex between peacekeepers and local women and human trafficking. Additionally, I will discuss what has been termed 'peace babies,' in particular the Petit MINUSTAH in Haiti, a sizable group recognized by the local population as the children of male peacekeepers in the MINUSTAH mission and local women. Relationships of this nature (between peacekeepers and locals) always include

clear power dynamics that are perpetuated by militarized and hegemonic masculinities. My research and reading, supported by UN-kept data, will bring to light the gross human rights violations of sexual exploitation and abuse against women perpetrated by peacekeepers. I will demonstrate how these crimes undermine the progression of gender equality that these very missions are supposed to promote and challenge the legitimacy of peacekeeping missions as a whole.

## **Physical Therapy**

### **22. Identifying Voice-based Digital Biomarkers of Parkinson's Disease**

**Presenter(s):** Madison Gill, Rachelle Beshay

**Advisor(s):** Dr. Rahul Soangra, Michael Shiraishi,

Introduction: Parkinson's disease is a neurological disorder leading to tremors, abnormal gait and balance, and muscle rigidity due to loss of function in parts of the brain. Traditionally, Parkinson's disease is identified by the motor symptoms as seen in a patient's gait and motor skills, but irregular speech patterns (hypokinetic dysarthria) is one of the first non-motor symptoms which could potentially help as a digital biomarker of the onset of disease. Objective: This ongoing study aims to use Mel Frequency Centum Coefficients (MFCC) to diagnose Parkinson's in the early stages by identifying hypokinetic dysarthria. MFCC's process speech recognition patterns and produce a frequency scale that software can use to identify differences between subjects. This was initially performed using healthy male and female subjects, in which MFCC's successfully identified the gender of the individual speaking. Using this background work, we can apply similar processes to identify Parkinson's disease in early stages. Symptom identification using machine learning can increase the patient's lifespan through early detection and early therapies. Methods: The participants were asked to perform various vocal tests and normal speaking to obtain the vocal range frequencies of each test to isolate MFCC's to identify Parkinson's disease-related digital biomarkers in voice patterns. Conclusion: Parkinson's disease is most commonly identified when the patient develops abnormal gait patterns or muscle rigidity, however, vocal detection could prevent the extent of these symptoms by diagnosing the patient early on. Our study will increase knowledge on digital biomarkers which are significantly different among people who do and do not have Parkinson's disease and thus can be quantified easily from speech frequencies and phonetics.

## **Political Science**

### **23. The Facade of Progression of Women and Women's Rights in American Politics**

**Presenter(s):** Karsyn Aoki

**Advisor(s):** Dr. Ann Gordon

The passing and ratification of the Nineteenth Amendment spiked women's involvement and interest in politics. For about 70 years there was a clear upward trend in creating equity in society for women but as we see a retreat from progress within the last few decades, for example in areas of bodily autonomy, it's important to find why this change has occurred. Within this article I research the shift in public opinion on women and their perceived place in society as well as the current role women are playing in the



political world, both in elections and as representatives to try and help explain these changes. Many of the theoretical frameworks I am utilizing have interdisciplinary uses and therefore am adapting their application and definitions to specifically tailor to women in political discussions. Looking through lenses of gender washing, gender bias, and the glass cliff theory as well as surveying the past movements in American politics helps narrow research on what motivates this trend of suppression. Analyzing data from multiple sets of the American National Election Survey (ANES) gives insight into vast demographic variables of respondents and gives the opportunity to analyze perception of women, along with narrowing how trends of women voters and representatives have shifted. Among the interesting findings include the evidence of negative public opinion towards women's movements and advocacy. Between 2016 and 2020 dislike towards feminist ideals spiked from 27.7% to over 40%. Though the perception of feminism has changed overtime and publicly is seen as a more radical movement, at its core it is still the advocacy for equality between the sexes, a simple concept. The implications of this research can be used to help mobilize voters and pinpoint target issues within women's rights discussions in order to return to progressing equality movements and stop the backwards trend.

#### **24. Influence of Racial Identity on Tolerance and Multiculturalism**

**Presenter(s):** Cassidy Tran

**Advisor(s):** Dr. Ann Gordon

Research has shown that the increased intolerance in our currently polarized society has not only affected intrapersonal relationships, but it has also contributed to the extreme state of political polarization in America today. In a polarized America, the growing lack of tolerance regarding opinions, races, religions, and political ideologies alike has shaped public opinion amongst the American electorate. While a number of societal, individual, and political factors contribute to the absence of tolerance in American society, this paper will examine how individual racial identity influences tolerance among individuals. Additionally, this paper also examines how understandings and tolerance of multiculturalism vary amongst majority and minority racial groups. Relying on data analysis from the ANES 2020 Survey and the 2021 Chapman University Survey of American Fears (CSAF), both representative national samples of U.S. adults, I find that the stronger an individual identifies with their racial identity, the more tolerant they will be of other opinions, races, religions, and political ideologies differing from their own. There are variations in levels of tolerance regarding different beliefs amongst certain racial groups. Additionally, I find that minority racial groups (including Hispanics, African Americans, and Asians) are more tolerant and understanding of ideas of multiculturalism than whites. By considering racial identity and the personal importance of race to the identities of the American electorate, we will be better equipped to understand how to increase levels of tolerance and solidarity amongst Americans to create a unified America.

#### **25. The Influence of Social and Political Identities on Fear of Mass Shootings**

**Presenter(s):** Stephanie Yanas

**Advisor(s):** Dr. Ann Gordon

Throughout the years and across the United States, the fear of mass shootings has become one of the fastest-growing fears. Whether interacting with the surge of media after a mass shooting, hearing the stories of survivors and victims, or participating in an active shooter drill to prepare for the worst,



Americans are consciously and unconsciously feeding into their fear of mass shootings. To further support the public, it is vital to understand the factors in this unique relationship between backgrounds, identities, and an individual's fear of mass shootings. Using the Chapman Survey of American Fears, I examine the relationship between an individual's fear of mass shootings and demographic variables such as education level, age, political party affiliation, and media consumption. Among the different tests, a regression was utilized, including voting choices in the 2020 election and gender identity as independent variables, and fear of being a victim of a random mass shooting as the dependent variable. Among the interesting results, the biggest impact on fear of being a victim of a random mass shooting was when a participant identified as male and when a participant voted for Donald Trump in the past 2020 election. With the chilling consistency with which mass shootings continue to transpire in the United States, these findings are a validating reminder of the consequences gun violence inflicts upon the general public.

**26. Social Media News and Victimization: Examining the Fear of Violent Crime**

**Presenter(s):** Isa Alarcon

**Advisor(s):** Dr. Ann Gordon

The matter of safety has been a prevalent concern in our society as crime-related news floods our technological devices and TV screens. Past research has established a strong relationship between local television news and the public's fear of crime. However, in the past ten years, new forms of news media have gained popularity, compared to traditional newspapers and television news. In this paper, I will examine the correlation between receiving information from social media and people's fear of violent crime, specifically being a victim of such crime. Using the data collected by the Chapman Survey of American Fears, a representative national sample of U.S. adults, I expect to find that people who engage in social media are more likely to be afraid of violent crime. When applying cultivation theory and agenda-setting theory, it is hypothesized that the media can alter the viewer's perception of reality, causing them to shift their attention. Therefore, it is essential to understand the public opinion on fear as crime rates remain high and media influence grows. It is only a matter of time before our safety is called into question.

**27. See, Hear, Breathe No Evil: How Race Contributes to Climate Fears in the United States**

**Presenter(s):** Katie Oftelie

**Advisor(s):** Dr. Ann Gordon

In the last fifty years, the issue of climate change due to unsustainable consumption of resources as well as exponentially rising levels of carbon emissions has gone from a whisper in the footnotes of science articles to one of the loudest, most prominent discussions of domestic and international policy making. From these discussions came the debate over environmental justice, which is the term that describes the ignoring of environmental issues that affect specific marginalized groups. Since the precedent of international promises to reduce carbon emissions and introduce a more environmentally viable way of life was set in Kyoto nearly 25 years ago, the United States has made great strides in its effort toward environmental sustainability. However, like most stories of generational progress in the United States, it would seem that progress looks very different from citizen to citizen, and from community to community. With the help of the Chapman Survey of American fears, a representative national survey of U.S. adults, I have found conclusive evidence that white adults are less likely to be afraid of climate change affecting

where they live than non-white adults. Therefore, race and environmental injustice is a definite role in the fear of climate change in the United States. If we continue to allow marginalized groups to fall through the cracks of the climate fight, true environmental justice will never be achieved.

**28. The Levels and Discrepancies of America's Fear of Terrorism**

**Presenter(s):** Kate Lindfors

**Advisor(s):** Dr. Ann Gordon

Within the United States, individuals exhibit a lack of accurate information regarding terrorism and the threat it may pose to Americans. This not only creates inflated perceptions of the actual risk that terrorism may pose to each individual American but a misunderstanding of the potential sources of terrorist threats in the US and the impact they could have on the country. In this paper, I will examine the misunderstanding of contemporary terrorism that is possessed by the general American public, particularly in relation to the inflated fear of Islamic terrorism and the disregard for Right-wing terrorist acts. In order to examine this topic, I will use the Chapman University Survey on American Fears. I expect to find that political and public discourse within the United States has discouraged many Americans from considering terrorist threats that do not stem from an easily distinguishable and alienable group of people or an international source. I also expect that different levels of education and a varied reliance on news sources may play a role in the accuracy of Americans' perspectives and understandings of contemporary terrorism. The widespread absence of accurate knowledge surrounding terrorism poses a threat to the United States because it alienates and endangers Islamic populations domestically and abroad and puts Americans at risk of acts of terrorism stemming from groups of people that have been disregarded as potential threats.

**29. January 6th and Where to Place the Blame: An Analysis on the Relation Between Media Consumption and the Belief that Donald Trump is at Fault for the Uprising**

**Presenter(s):** Aliyah Ramirez

**Advisor(s):** Dr. Ann Gordon

The distrust in the United States government manifested itself on January 6th, 2021 as everyone who was not trying to break into the nation's capitol was watching the events unfold on media outlets such as CNN, NBC, and Fox News, and although the footage was all the same, the coverage and rhetoric used by one's choice of media shaped their view on who was to blame for that fateful day in United States history. In this paper I examine the relationship between how often one watches Fox News and their agreement with the belief that former president Donald J. Trump is to blame for the events on January 6th, 2021. Using the Chapman University "Survey of American Fears" I will have access to data acquired on a national scale directly linked to Fox News and January 6th. I expect to find that the more often one watches Fox News, the less likely it is that they believe Donald Trump is to blame for the events that occurred at the nation's capitol. Media outlets play a large role in the quick dissemination of political news, allowing for anyone to know what is happening politically; however biased media keeps consumers in dangerous echo chambers, which has, and will continue to have, a detrimental impact on the political landscape of the United States.

**30. Factors Relating to the Fear of Climate Change and Global Warming**

**Presenter(s):** Nivea Madhan

**Advisor(s):** Dr. Ann Gordon

Climate change and global warming have become critical issues within American society in recent decades due to increasingly evident weather and climate phenomena. This can be observed in unprecedented sea level rises, drastic temperature increases, and severe droughts in various regions across the United States and the world. In this paper, I evaluate the extent to which socioeconomic status - which includes education, income and region - determines one's fear of climate change and global warming. Prior literature has studied the linkage primarily between the bias of a higher education to the higher understanding of climate change, whereas, this study assesses the level of fear individual's have on climate change and global warming, as established by their experience with various weather phenomena. Using the Survey of American Fears Wave 7, a national representative survey of 1,035 adults across the United States, I expect to find that individuals with a lower socioeconomic status will be more fearful of climate change and global warming as they experience greater ramifications of severe weather conditions. As climate crises escalate, this research criticizes and calls attention to the disproportional distribution of the consequences of climate change and global warming; those who carry a greater contribution to the issue do not bear the brunt of the fallout.

**31. Media, Distrust of Government, and Fear of Terrorism in the United States**

**Presenter(s):** Lauren Rowe

**Advisor(s):** Dr. Ann Gordon

The United States is experiencing a growing threat from domestic terrorism, though there is a relative lack of understanding of this threat by the public, and there is a need to understand how public perceptions of risk have been shaped around the fear of terrorism. This paper explores the impact of various forms of media usage and intake on individual perceptions of terrorism, as well as the ways in which public governmental distrust and party identification relate to the fear of terrorism. Using the results obtained by the Chapman University Survey of American Fears in which data was gathered from a nationally representative sample of adults, these concepts are explored in terms of the specific types of terrorism one fears, whether it be domestic terrorism within the United States or international terrorism connected to distinct foreign governments or groups of other nations. Among the interesting findings, I find that party identification does not play a role in concern and fear about terrorism. However, party identification plays a role in influencing who is perceived to be a terrorist threat in the United States. Additionally, out of all forms of news media the American public consumes, social media has the biggest impact on fear of terrorism. Finally, I find that there is a significant positive correlation between public distrust of the government and the fear of terrorism. The United States government has devoted institutions, such as the FBI and the Department of Homeland Security, to preventing future terrorist attacks. These bureaus advocate strongly for antiterrorism laws in the pursuit of lessening terrorism fears, in this way it is important to assess the factors attributing to the degree of public fear over terrorism.

**32. Envisioning and Unifying a Sovereign Hawai'i**

**Presenter(s):** Kawaiola Kapuni

**Advisor(s):** Dr. Lisa Leitz

This abstract represents the framework for my research, Envisioning and Unifying a Sovereign Hawai'i, which has yet to be fully developed. Hawai'i has faced over a century-long battle to regain its rightful status as a sovereign nation. With the arrival of missionaries and Anglo-Saxon capitalists that catalyzed the illegal overthrow of The Kingdom of Hawai'i in 1893, all the way to Statehood in 1959, Hawai'i has been in constant subjugation from The United States. Between 1893 and 1959, Native Hawaiians were subject to ethnic cleansing, cultural erasure, and political and socioeconomic oppression that made resistance nearly impossible. Although there were instances of civil resistance during this time, The Sovereignty Movement wouldn't formally take place until 1960, precisely one year after Statehood. This study aims to analyze the conditions and dynamics of The Sovereignty Movement in Hawai'i in order to understand what variables have inhibited Hawai'i from becoming a sovereign nation from 1960 to the present day. The participants of this study are divided into two groups: Native Hawaiians and residents of Hawai'i who are not ancestrally Native Hawaiian. Both populations will include those who orchestrated, participated, or are current participants of The Sovereignty Movement in Hawai'i. The Methodology of this study will be interview based, where I will conduct interviews with both Native Hawaiians and residents of Hawai'i who orchestrated, participated, or are current participants of The Sovereignty Movement in Hawai'i. Overall, this study aims to analyze the conditions and dynamics of The Sovereignty Movement in Hawai'i to understand what variables have inhibited Hawai'i from becoming a sovereign nation from 1960 to the present day.

**33. The Radical Right-Wing Extremists Ideology Opposing The African-American Movement in the United States.**

**Presenter(s):** Nicole Nkwonta

**Advisor(s):** Dr. Ann Gordon

While scholars have used alternative definitions of right-wing extremists, they are often based on violence and racial discrimination. Transnational threats are becoming more prevalent as far-right ideology and violence gain momentum. This paper will examine the fear supporters of the Black Lives Matter movement share for right-wing extremists and the effect that it has had on the group. Following the deadly attacks across the United States, right-wing extremists have created a storm of fear among supporters of African American-related movements. It continues to exert a great deal of influence over the politics of western society and is becoming a powerful force in many parts of it. Based on this paper's focus, I expect to find a connection between the reasons why African American supporters view right extremists as a threat. What ideologies or messages do they espouse that are considered detrimental to the supporters of the movement? It is more common for right-wing movements to be known for their opposition than for what they support. Their focus is primarily on race/ethnicity and/or that they promote violence as a primary tactic or goal. Black individuals across the United States are faced with those that openly and virulently embrace racism and discrimination and will continually be faced with it as long as the right-wing ideology persists.

## **Psychology**

### **34. Avoidance Coping Strategies Predict Anxiety and Depression During the COVID-19 Pandemic**

**Presenter(s):** Natalia Miranda, Jolie Binstock

**Advisor(s):** Dr. Julia Boehm, Brooke Jenkins, Brooke Jenkins

Observational studies conducted during the COVID-19 pandemic have indicated that avoidance and emotion-focused coping, in response to the societal changes that occurred, contributed to symptoms of depression and anxiety. However, longitudinal results have been mixed. The present study hypothesized that usage of avoidance and emotion-focused coping strategies at the beginning of the pandemic would be associated with higher levels of anxiety and depression eight months later. Furthermore, it was hypothesized that emotion-focused coping strategies at the beginning of the pandemic would continue to predict higher levels of anxiety and depression eight months later when controlling for avoidance tendencies. The 174 participants in this study attended Chapman University at the start of the pandemic; the majority were women (84%) and past the first year of their program (55%). The Brief COPE Scale (BCS) was utilized in combination with the Generalized Anxiety Disorder Scale (GAD-7) and the Center for Epidemiological Studies Depression Scale (CESD) to assess predictors and outcomes. Results from regression analyses showed support for the first hypothesis indicating that avoidance coping predicted higher levels of anxiety and depression, while emotion-focused coping predicted more anxiety but was not associated with depression. The second hypothesis was not supported; however, avoidance coping strategies predicted depression and anxiety when controlling for emotion-focused coping. Including covariates (i.e., sex, age, program year) provided additional evidence that avoidance coping strategies predicted future symptoms of depression and anxiety more consistently than emotion-focused coping strategies. Taken together, these results highlight the possible consequences when individuals choose to adopt certain strategies over others in response to stressful stimuli. Important limitations were the correlational nature of the study, the dropout rate of the participants, and the overwhelming majority of female participants.

### **35. Exploring the Relationship between Self-Control and Self-Affirmation on Food Choice**

**Presenter(s):** Tanshi Mohan, Kimi Uenaka, Bijou Allard

**Advisor(s):** Dr. Julia Boehm

Self-control is the ability to inhibit impulses and delay gratification for a larger reward at a later time (Gillebaart, 2018). Research suggests that people who reported higher levels of self-control were more likely to make healthier food choices on a food-choice task (Salmon et al., 2014). Self-affirmation is when an individual affirms their self-worth by reflecting on their values when experiencing an event that negatively impacts their self-view (Cascio et al., 2015). Self-affirming during these threatening situations is associated with decreasing stress and increasing well-being, and may encourage people to be more susceptible to change their behavior (Cascio et al., 2015). Our study aimed to explore the association between self-control, self-affirmation, and food choice in the laboratory. We hypothesized that self-control would be positively associated with healthy food choice in the experiment. Furthermore, we hypothesized that self-control would have a moderating effect on self-affirmation and food-choice outcomes. Data came from 148 participants from Southern California who were ages 25 and older. Self-

control was measured using the Brief Self-Control Scale. Food choice was measured by whether or not participants chose healthy or unhealthy snacks during the study. Participants were randomly assigned to a self-affirmation condition or a control condition. Logistic regressions and their corresponding coefficients were used to analyze our hypotheses. No associations were found between self-control and food choice. Additionally, self-control did not have a moderating effect on self-affirmation and food choice. These analyses demonstrate the need for further research into self-control and positive health behaviors.

**36. Impostor Syndrome Fails to Predict College Academic Performance, But Does Predict Feelings of Career Preparedness**

**Presenter(s):** Stephanie Yanes

**Advisor(s):** Dr. David Frederick

Throughout the years and across the United States, the fear of mass shootings has become one of the fastest-growing fears. Whether interacting with the surge of media after a mass shooting, hearing the stories of survivors and victims, or participating in an active shooter drill to prepare for the worst, Americans are consciously and unconsciously feeding into their fear of mass shootings. To further support the public, it is vital to understand the factors in this unique relationship between backgrounds, identities, and an individual's fear of mass shootings. Using the Chapman Survey of American Fears, I examine the relationship between an individual's fear of mass shootings and demographic variables such as education level, age, political party affiliation, and media consumption. Among the different tests, a regression was utilized, including voting choices in the 2020 election and gender identity as independent variables, and fear of being a victim of a random mass shooting as the dependent variable. Among the interesting results, the biggest impact on fear of being a victim of a random mass shooting was when a participant identified as male and when a participant voted for Donald Trump in the past 2020 election. With the chilling consistency with which mass shootings continue to transpire in the United States, these findings are a validating reminder of the consequences gun violence inflicts upon the general public.

**37. Emotion Variability, Cortisol, and Physical Health: The Moderating Role of Mean Emotion**

**Presenter(s):** Helen Lee

**Advisor(s):** Dr. Brooke Jenkins, John Hunter, John Hunter

A large body of research has suggested that mean levels of emotions are associated with our mental and physical health. However, emotions are dynamic in nature, constantly changing over time. This tendency of emotion to fluctuate across time is commonly referred to as emotion variability. Therefore, only examining mean emotion levels, which is done in most previous research, may not fully explain how emotion relates to health. Building on this limitation, the present studies investigated the relationships between emotion variability and cortisol levels, and physical health, while also considering how mean levels of emotion might play a role as a moderator. In Study 1, 118 participants completed questionnaires assessing their emotions four times a day for five consecutive days and provided saliva samples to measure daily cortisol output. The results indicated that mean positive emotion as well as stress context significantly moderated the association between positive emotion variability and cortisol levels, such that,

at high stress and high mean positive emotion, positive emotion variability was negatively associated with cortisol ( $b = -2.26$ ,  $t = -4.30$ ,  $p < .001$ ). For Study 2, the data from the Midlife in the United States (MIDUS) study were analyzed, in which 2,022 participants reported their daily emotions for eight days and self-rated their physical health. It was found that when participants had low mean negative emotion paired with high emotion variability, they were more likely to report worse health (simple slope effect:  $b = 0.27$ ,  $SE = 0.13$ ,  $p = 0.04$ ). These findings revealed that emotion variability interacts with mean emotion to predict both cortisol levels and self-reported physical health. Therefore, both variability and mean levels of emotion should be considered in order to understand the association between emotion and health-relevant outcomes.

## **World Languages and Cultures**

### **38. The Human Consequences of the US-Mexico Border: Testimonial Literature of Gloria Anzaldúa and Valeria Luiselli**

**Presenter(s):** Grace Hodgetts

**Advisor(s):** Dr. Laura Loustau

The discussion surrounding the US-Mexico Border has remained a central issue in American politics throughout recent decades, with anti-immigrant attitudes being more prevalent than ever. The increasing support for border militarization and immigration restrictions exemplifies an American public that lacks an accurate understanding of the implications of militarizing the US-Mexico border. Testimonial literature about the border will center the discussion of this essay, and it can be categorized as any writing that illustrates one or more of the negative consequences of the US-Mexico border. The majority of the border's effects are negative, and its impact is not felt by one country or community alone. This essay will explore two examples of testimonial border literature that discuss the border's effects on two groups of people: US citizens of Latino descent and Latino migrants and immigrants. First we will examine Gloria Anzaldúa's book, *Borderlands/La Frontera: The New Mestiza* (1987), and her discussion of the border and its effects on Latinos— more specifically Mexican-Americans— living within the United States. Then we will compare the themes and techniques employed in Anzaldúa's writing to those in Valeria Luiselli's book, *Los Niños Perdidos: Un ensayo en cuarenta preguntas* (2017). In her essay, Luiselli describes what she learned while volunteering as a translator for an immigration law firm in 2015. Drawing from her interviews with unaccompanied minors who had crossed the border and were seeking asylum in the US, Luiselli depicts the emotional, cultural, and legal repercussions of the current immigration and border-control policies. To conclude, we will examine the ways in which the various problems caused by the border's history and militarization could potentially be resolved.



## Room A

Moderator: Dr. Julye Bidmead

### Art

2:00-2:15 pm

**Desert X: Branding a New Kind of Art Viewership**

**Presenter(s):** Kennedy Cardenas

**Advisor(s):** Micol Hebron

When prompted to consider where fine art is primarily housed and where people can go to view it, the first thing to come to mind will most likely be a museum or gallery. Though this is often true for much of the fine art in the world, in recent years Desert X has pushed the boundaries of where art can be located. Desert X is a project which began in 2017 by the Desert Biennial Foundation in order to uplift site-specific work by international artists, with that site specifically being the desert. A great deal of the work included in Desert X exists to prompt discussion surrounding the conditions of desert locations. Over a dozen artists are invited from various sectors of the globe to present works on site throughout the Palm Springs/Coachella Valley area. With much of the artwork presented surrounding indigenous land rights, the environment, and other social and political issues, the structure of this project becomes much more complicated. Though this work repeatedly draws attention to important societal issues, the branding, marketing, education, and public programming used to expand Desert X may or may not be on par with those messages. The goal of this research is to explore that intersection between the message of Desert X and its branding and marketing efforts. Every year this exhibition grows significantly, therefore the branding and marketing efforts must grow and evolve with it. Is it possible for this project to grow exponentially while staying true to its vision?

### Peace Studies

2:15-2:30 pm

**Women's Integration into the Military**

**Presenter(s):** Audrey Mays

**Advisor(s):** Dr. Lisa Leitz

I'm researching women's integration into the military and the adjustment process over time. I chose to make this my area of research because I looked into it in high school, but didn't get to uncover as much as I wanted to. I thought this would be a good topic to research when it comes to relevance within our class because of the gender in war aspect that we talk about. My research relates to the subject matter because we've been looking at stereotypes, equality, violence, peace and much more that one can find in both class and women's integration into the military. I've been looking at online surveys, articles found in



the library, and google searches from reliable sources like The New York Times and CNN for research. I expected to find examples of lack of respect, differences between men and women within the military, and scandalous behavior. I have found many cases of woman saying how hard it is for them to get respect in their line of work, different treatment between men and woman in the military and several cases involving sexual harassment. Over all, my research provides the necessary information I need to compose my essay and I'm happy with the information I have and will continue to collect.

**2:30-2:45 pm**

**Women in Fascist Regimes: Roles and Treatment in WWII**

**Presenter(s):** Halia Reingold

**Advisor(s):** Dr. Lisa Leitz

When considering fascist regimes, scholars agree that they are often based on the principle that one group of people is considered fundamentally superior to all others, usually on the basis of racial superiority and 'blood purity'. Nazi Germany idolized the idea of an "Aryan race", where those deserving of power were those with desirable German characteristics. It's usually assumed that in these regimes women are still considered inferior to men even if categorized as the superior racial group. Hitler and Mussolini both made many statements regarding the position of women, all filled with sexist ideology. However, some scholars have argued that women's roles in these regimes were actually empowering and that their role in society was actually lifted during these times. Even though women's main responsibility was that of reproducing, each of the Axis powers in World War II can be seen to have shown increased respect and care for women through their pronatalist mentalities. Many feminists and scholars have argued, however, that this is still an extension of sexist oppression, and can be proven due to the fact there were still few to no women in positions of power. However, in Germany, Italy, and Japan, there is evidence of Women's fascist organizations that greatly supported their country's regimes and elevated some women's social standings, and in Japan, there are examples of women receiving positions of power within the fascist male-dominated organizations due to their importance in these women's organizations. There's also the example of Leni Riefenstahl, who held considerable respect and authority in the Nazi party as a leading filmmaker of Nazi propaganda. Analyzing these various examples of women in empowering vs disempowering positions in fascist regimes ultimately results in a conclusion based on one's definition of feminism and female empowerment, and an analysis of basic fascist principle.

## Room B

Moderator: Kathy Thibault

### Theatre

2:00-2:15 pm

**Under New Direction: Using Theatre to Combat the Climate Crisis**

**Presenter(s):** Brian Kirsch

**Advisor(s):** Dr. Jocelyn Buckner

The Earth is growing unsuitable for human society as we know it at an unprecedented rate. Among the latest in a set of increasingly grim statistics, the atmosphere's carbon dioxide concentration is now a staggering 150% of its value for most of human history (Stein). This has triggered global warming on track to meet or exceed 1.5 degrees Celsius, which comes with extreme and irreversible changes to the planet (Jackson). However, this information fails to both command its merited attention and spark the urgent action needed to preserve our way of life. Less than half of American voters consider climate change to be a "very important" voting issue and less than a tenth consider it to be the most important one (YouGov America). The incongruence between climate change's danger and society's concern is stark and concerning. In this paper, I analyze the content and techniques that political, scientific, and news sources employ to deliver information about climate change. I explore how these elements contribute to the failure of these media to mobilize society against the severe threat posed by climate change. Theatre, as an institution and as a set of storytelling tools, has the potential to resolve this failure to present environmental information effectively. Theatre is, fundamentally, an art form that compels its audiences and causes action. By breaking down the audiences' walls against being affected; creating an emotional connection, intimacy, and complicity; and encouraging audience participation; theatre can call its audiences to action. I argue that the emotive force that theatre builds from these techniques can be employed--and present methods for their use--to truly convince society to care enough about the Earth to keep it from burning.

2:15-2:30 pm

**If It Merely Lasts a Second: A Concert Cabaret of Broadway's Musical Flops**

**Presenter(s):** Michael Miller

**Advisor(s):** Dr. Jocelyn Buckner

In 2021, I undertook a project where I listened to every single musical produced on Broadway since 1950. That was two musicals a day, for a total of roughly 750 shows (the actual number of musicals that fit these constraints is slightly higher, but unfortunately some of those were completely lost to time, and were unable to be consumed in any form). With such a huge library of musicals, it's no wonder some of them get lost to time, but it is curious thinking about why certain shows stay in the public consciousness and

are seen as important pieces in the Broadway canon, while others - no matter the brilliance - get overlooked and forgotten. I want to shine a light on some of these lesser known shows. Some have something to say about current society, or provide a fantastic audition song, or just have funny anecdotes attached to them. Listening to so many shows in succession - and in chronological order, no less - clued me in to wider trends, the topics and messages that seemed to be resonating with people - or, at least, the shows that producers thought were worth producing, and the shows that composers and playwrights thought were worth creating. It's interesting to speculate on why they failed, or became obscured - perhaps it was because the producers ran out of money, or the show was ahead of its time, too behind in the times, patently offensive, marketed incorrectly, simply too long and dull. By the creation of a concert cabaret, I'd like to illuminate all of the various aspects of why a show flops, the behind-the-curtain secrets, and discuss some of Broadway's best, worst, and weirdest hidden treasures.

**2:30-2:45 pm**

**The Mystery Forest Project: Bringing Immersive Entertainment to Chapman**

**Presenter(s):** Blake Huntley, Kaelin Tester

**Advisor(s):** Dr. Jocelyn Buckner, Kristin Campbell

I joined Chapman University's technical theatre program with the promise of an experience that taught beyond the theatrical box: immersing lessons and projects into the site-specific and broader entertainment industry. After the passing of Technical Theatre Professor Don Guy, I began a mission to carry his affinity for live and immersive entertainment. I wanted to preserve his impact within the Chapman community by bringing particular magic and mystery to the common pathways of the Chapman campus. Combining a passion for the storytelling of theme parks, escape rooms, immersive art installations, and the proving ground of a Chapman University theatre community, my creative collaborator, Kaelin Tester, and I began formulating an immersive and interactive theatre project. The Mystery Forest Project aimed to leverage creative opportunities within the Chapman University community for creating a theatrical narrative outside the box. Sparked by an affinity for immersive and engaging storytelling, the project seeks to blend a fresh narrative of an unseen fairy world with modes of both physical and technological elements. By pairing a student-written text and design team with a found space that serves conducive to site-specific development, the project intended to provide an outlet to the themed and immersive entertainment population on campus. As a student-developed, designed, and performed production, the project is a testament to the potential for further explorations into immersive entertainment expressions on the Chapman campus. With proximity to so many live entertainment avenues within the Orange County, CA area alone, we hope to see a recurring development of work that tests the boundaries of combining original narrative with immersive practices as the Chapman student community redefines artistic expression in its surroundings.

2:45-3:00 pm

**A Maiden Voyage: From iPhone Note To Pirate Musical**

**Presenter(s):** Feras Halabi

**Advisor(s):** Dr. Jocelyn Buckner, Jenny Jacobs

After surviving a pandemic that stunted my creativity, I challenged myself to create a project that could reflect the growth of my personal artistry, settling on writing a musical. After fifty ideas, I settled on creating a show about pirates with the premise: “What if a woman snuck on board a pirate ship hiding as a man, but at the same time the Captain was also a woman in disguise?” My imagination set sail as I found myself discovering new ideas and thematic elements that elevated my show from a fun side project to a culmination of my collegiate artistry titled *The Crooked Star*. By committing to this project, I wanted to learn about both my own creative process and the collaborative process. Beginning with idea generation and supplemental research on pirate lore and language, I discovered unique aspects of pirate culture that proved useful. Additionally, I went on a music deep dive, finding sea shanties to be the perfect medium to tell my story for their musical qualities and emphasis on storytelling. Moving to script writing, I utilized a book on American musical structures and input from my independent study professor, Dr. Jenny Jacobs, to create an outline for my composition. I defined key anchor points and found a narrative path between them. Once writing was completed, I engaged in collaboration by editing with my professor, collecting students for a first reading, working with composers on arrangements, and getting a team together to produce it. With a final result well on its way, I am excited to watch the process from beginning to end, from iPhone note to pirate musical.

## Room C

Moderator: Dr. Jan Osborn

**2:00-2:15 pm**

**Degree or Not Degree: Reframing Modern BA Theatre Education**

**Presenter(s):** Theo Wood

**Advisor(s):** Dr. Jocelyn Buckner

While theatre is a subjective art form that has existed and evolved since before history's common era, today academia has evolved alongside it with the hope of teaching this subjective art. This requires a specific balance between subjectivity and curriculum used across many modern American universities commonly split between Bachelor of Fine Arts (BFA) and Bachelor of Arts (BA) degrees which determines the form students' curricula take. But at non-conservatory universities, the differences between these degrees are minimal, so it's essential to evaluate how these curricula affect their students. BFA degrees are more specific, so the curriculum-required content should be enough to enter a life in that field, but BA degrees are more broad, meaning they accommodate more choices for later refinement. But, with competitive programs and smaller BA class sizes, these students are met with the challenge of choosing their own path without a single curricular track. Because of these circumstances, I will focus on how BA degree paths in liberal arts schools across the US may help or hinder the process of learning the craft of theatre while balancing being a full-time student. By interviewing BA and BFA enrolled students and alumni from and outside of Chapman, I hope to explore the reasons why students seek out these specific degrees, how those reasons compare to the existing curricula in place, and what room exists to improve these programs. Using curricula and interviews, I will propose advancements to Chapman's BA curriculum that accounts for multi-hyphenate paths that support students' chosen emphases while encouraging exploration into other aspects of the field.

**2:15-2:30 pm**

**"The Unique Theatre of TTRPGs: Examining the Valuable Connection Between Pen-and-Paper Role-Playing Games and Performance Art Practices."**

**Presenter(s):** Joe Mojonier

**Advisor(s):** Dr. Jocelyn Buckner

Exploring, surviving in, creating, and personally growing from a make-believe world with its own set of rules is a profoundly unique experience, one which I also found working on theatrical endeavors. Dramatics aside, while reflecting on both my high school and college theatre career and my four years of avid participation in pen-and-paper role-playing games, games where players act, make choices, and improvise within a set of rules/guidelines and their own character's personification; I discovered an important connection, one which had a special distinction. In this paper, I examine the significance of system-based long/short-form table-top role-playing games[TTRPGs] as a medium that encourages self-

exploration, mimesis, and learning and applying various performance and social skills, akin to theatre/performance art, specifically in the case of (traditionally) non-performers. I argue for the validity of playing TTRPGs, using systems like “Dungeons and Dragons”[D&D] and “Call of Cthulhu”[COC], as it provides a platform that can emulate theatre, but with “lower stakes”(in the case of home-games), in the way that they are accessible to those who would not define themselves as “actors”/have no desire to act/do not have any experience in theatre as a performance, and as a narrative-writing and directing medium. When examining how TTRPGs’ rules and mechanics influence gameplay can be related to the pedagogy and lessons of theatre performance and the technical roles associated with creating and directing a play, by collecting perspectives on the creative processes and meanings game masters[GMs] impart in their games as well as how non-performer players respond to the medium as performance art, a distinct connection will be found between the two mediums. The value and validity of TTRPGs as a creative and performative medium will be defined far beyond the idea that “it’s just a game”.

**2:30-2:45 pm**

**The Theatrical Clown: A Bountiful History Overlooked in the 21st Century**

**Presenter(s):** Katie Palino

**Advisor(s):** Dr. Jocelyn Buckner

Jingling bells, painted faces, and colorful costumes—a multicultural practice spanning from its first recorded occurrence in 2270 B.C. Egypt, to a 21st-century slew of films, frights, and phobias; the lost art of traditional clowning has taken on a new evolutionary resurgence. As a theatrical form with its roots in the Court Jesters and Fools of the Middle Ages, clowning became popularized through an Italian method of street theater called “Commedia dell’Arte,” translated to “comedy of professional actors.” As the advancement of clowning expanded, a resurgence of the Commedia dell’Arte clowns, as a more modern and evolved form, began to emerge, extending to the Big Top, Opera, festivals, and the classic children’s birthday party. However, although clowning is a rich art form theatrically, as societies have changed, the meaning and work of clowns changed with it, evolving the once silly and outspoken character to one of popularity and real-life horror, accumulating into the depiction we have today. Whether it be Steven Kings Pennywise from It, John Wayne Gacy’s Pogo the Clown, Killer Klowns from Outerspace, Poltrigiest, or the 2016 clown sighting phenomenon, the modern evolution of clowns has become widespread, terrifying, and shows no signs of stopping.

In my work, I will be detailing the chronological timeline of the darker history, recognizing the hidden roots of the clowning profession and the modern hysteria, fascination, and repulsion of this occupation. I will utilize various resources to argue that this art form, while once holding a significant faction of the theatrical space, has turned into a new horror pop culture phenomenon.

2:45-3:00 pm

**The Art of Developing a Personalized Communication Styles as a Stage Manager**

**Presenter(s):** McKenna Bartoli

**Advisor(s):** Dr. Jocelyn Buckner

In the stage manager's repertoire of skills and tools, their understanding and ability to effectively communicate with all members of the production is key to creating a successful piece of theatre. As the apex role in a production, SMs are tasked with the job of establishing the environment and expectations of every production team member to promote a positive, efficacious workplace. It is up to each individual stage manager to compile specific tools of language throughout their experiences to customize their oral and written communications for each individual with whom they interact based on the personality types and roles of team members.

In this project, I claim that a stage manager's greatest asset lies in their ability to find the intricacies of language and to develop a personalized style of communication within the theatrical workplace. The significance in the wording of every conversation, email, piece of paperwork, or personal conversation must be developed based upon a prior professional encounter. It is the SM's professional responsibility to analyze the experiences and reactions of individuals in the workplace based on the tone, words, and phrases used. This factor is dependent on the positions and personalities of all involved, which a stage manager is also responsible for understanding in order to deliberate between everyone effectively. I will outline the artform of defining a stage manager's communication style through personal accounts of experienced SMs, documents emphasizing the types of language, and the personality type's responsiveness to these styles.

## **Art**

### **1. Desert X, Tourism, and Ecology of Joshua Tree**

**Presenter(s):** Kai Karafotis

**Advisor(s):** Micol Hebron

The Joshua Tree area has been a community full of artists for decades, inviting free spirits to take up residence in nearby towns, and to create beautiful public art. In the last ten years, however, tourism has increased by nearly 220%, from 1,396,237 visitors in 2011 to ~3,064,400 in 2021 (Park Statistics 2022). This stands in comparison to other popular towns like Los Angeles, whose tourism between 2009 and 2018 grew by 137% (Los Angeles 2018). Its reputation as both a beautiful landscape and a flourishing environment for art has made it widely known across the United States. But as visitors impact towns of less than 10,000 people and preserved landscapes, both the environment and community have been largely impacted. As AirBnBs displace lower income residents while visitors traipse over hidden ecological systems, the damage has been irreversible to people and nature alike. Exhibitions like Desert X contribute to tourism in the Coachella Valley, naturally bringing support and damage with it: while it brings in large amounts of revenue for the area and provokes discussions of local environmental and social issues, it simultaneously contributes to the housing issues, brings tourists to remote areas, and occasionally makes misguided environmental decisions with its artworks. This paper seeks to identify the key impacts of Desert X and to investigate the steps taken to ensure the preservation of the desert, as well as realms of insufficient policy. By determining the actions taken by Desert X, examining the ways in which tourism affects the Joshua Tree and Coachella Valley region, and establishing the impact of residents, we will gain a better understanding of how site-specific art changes the sites it's built upon.

## **Biochemistry and Molecular Biology**

### **2. Mapping Arginine Methylation within BAG3 via Mass Spectrometry**

**Presenter(s):** Arisbeth Mancilla-Burgos

**Advisor(s):** Dr. Cecilia Lopez

Like phosphorylation, protein arginine methylation is a post-translational modification that regulates proteins. In this project, we set out to identify the arginine residues that accept methyl groups in a protein called BAG3. BAG3 or B-cell lymphoma 2-associated athanogene, is a chaperone that helps other proteins fold properly. BAG3 consists of 575 amino acids and contains a lysine-phenylalanine-glutamic acid-arginine-glutamine (KFERQ)-like motif. This motif allows recognition of BAG3 by the chaperone mediated autophagy pathway (CMA pathway), a cellular process responsible for degrading proteins with this domain. We determined computationally that arginine methylation occurs within the KFERQ-like motif, potentially blocking recognition of BAG3 and preventing its proper degradation. To validate these results, we have performed in vitro methylation reactions with the enzyme protein arginine methyltransferase 1 (PRMT1). The methylated BAG3 product was then treated with performic acid, digested with trypsin and analyzed using Quadrupole Time-of-Flight (QTOF) Mass Spectrometry. Preliminary results show that we can detect peptide fragments corresponding to BAG3, however, methylation is yet to be determined. In



vitro methylation reactions are currently being optimized to ensure that methylation is above the limit of detection for MS instruments. Once arginine methylation within the KFERQ-like motif is confirmed, we will next determine if methylation interferes with the CMA pathway. Build up and improper function of BAG3 has been associated with cardiomyopathy. Thus, identifying where BAG3 is methylated will allow for a greater understanding of its function and will be useful for disease prevention.

**3. siRNA Delivery using Fatty Acylated Cell-Penetrating Peptides**

**Presenter(s):** Jonathan Vergonio

**Advisor(s):** Dr. Rakesh Tiwari

Small interference RNA (siRNA) has gained much attention from the scientific community due to its ability to specifically target the overly expressed proteins presumed to be linked to cancer proliferation and metastasis. Small interference RNA is ~20-24 nucleotides long and found in the non-coding regions of genetic material, as 98% of RNAs formed in human cells are non-coding; siRNA is highly specific so that it can bind and cleave mRNA that codes for faulty proteins within the cytoplasm. Cell-penetrating peptides (CPPs) containing histidine, arginine, lysine have been found suitable for siRNA delivery. However, they also suffer from toxicity and low efficiency. Based on available data and reports, there is a critical need to develop non-toxic and efficient siRNA delivery tools. Furthermore, Oleyl conjugates were also found efficient in siRNA delivery and silencing the gene of interest. According to the above rationale, we hypothesized that the cationic amino acids in CPPs will interact with the negatively charged siRNA and phospholipid of the cell membrane, and the fatty acyl chain will assist in the protection of siRNA from degradation and enhance cellular delivery of CPP-siRNA complexes. Throughout the research timeline, peptide (WHK)<sub>4</sub> was synthesized and characterized through MALDI-TOF mass spectrometry, analytical HPLC, and cytotoxicity assays. Research that aids in yielding these unique therapeutic agents have a significant application in the biological and pharmaceutical industries for cancer treatment.

## **Biological Sciences**

**4. Hagfish Respiration and Metabolic Rates**

**Presenter(s):** Sydney Carlson

**Advisor(s):** Dr. Douglas Fudge

Hagfish are burrowing fish that present many mysteries to those who study them. There are many aspects about Hagfish which may be better understood, one of these being Hagfish respiration. The goal of my research project is to determine the metabolic rate for Hagfish and to better understand Hagfish respiration. I am doing this by placing a Hagfish into a respirometer and monitoring the change in oxygen over time. From this data I am able to calculate a metabolic rate for the Hagfish. Additionally, I film the Hagfish for the duration of the data collection so that the data may be viewed in light of the Hagfish behavior. This provides the framework for a baseline metabolic rate, which can then be studied in light of changing environmental factors a hagfish might encounter. This will provide insight into how Hagfish might cope with certain known behaviors, or provide insight into their metabolic needs. There are numerous ways to go past my initial research point and to further explore, hence the importance of my

project. Once the baseline metabolic rate is gathered, it can then be compared amongst species, between different behaviors (for example burrowing vs at rest) or in different conditions (for example: warmer vs cooler water).

**5. Implications of Trace Amounts of CO on Alfalfa Plant Growth, Mutualistic Interactions, and Transcriptome**

**Presenter(s):** Kevin Nguyen

**Advisor(s):** Dr. Hagop Atamian, Dr. Cedric Owens

Nitrogen is a key element in living organisms as it is a building block for DNA and protein, but its most abundant form is atmospheric nitrogen (N<sub>2</sub>), which is unusable by most organisms. To make use of N<sub>2</sub>, plants known as legumes partake in a mutualistic interaction with bacteria known as rhizobia that convert N<sub>2</sub> into usable forms of nitrogen such as nitrate and ammonia in exchange for food and shelter from the plants within root nodules. This interaction is a possible sustainable alternative to the Haber-Bosch process, which utilizes immense amounts of energy to convert N<sub>2</sub>. Rhizobia's viability as a sustainable alternative is limited by the presence of carbon monoxide (CO). Within free-living soil bacteria, CO has been shown to inhibit the nitrogenase enzyme responsible for rhizobia's ability to convert N<sub>2</sub>. However, CO has also been shown to induce secondary roots, which are rhizobia's point of entry into the plant to start the mutualistic interaction. With both positive and negative effects for rhizobia, the implications of increasing CO in a legume's environment were studied, particularly if secondary root growth is induced and whether increased CO would affect rhizobia's ability to convert N<sub>2</sub>. For this project, two sets of legumes known as alfalfa were grown for one week before being placed in two separate airtight glass containers in which one received low concentrations of CO gas whereas the other received none as a control. After three days of exposure, plants were removed and observed for noticeable differences. The root length, height of each plant, and number of secondary roots was also recorded. The results showed that plants in 5 mL of CO performed better than the control as they had more secondary roots and more height. Future experiments will have plants in CO be inoculated with the rhizobia bacteria. Since the plants are expected to have increased secondary root growth, they are expected to have increased rhizobia productivity via increased root nodules. Additionally, transcriptome analysis of the plants will be conducted to find responsible genes.

## **Chemistry**

**6. Ester Hydroboration using a Carbodiphosphorane Catalyst**

**Presenter(s):** An Dang

**Advisor(s):** Dr. Allegra Liberman Martin

Carbodiphosphoranes are very electron rich because the central carbon contains two lone pairs. This project explores carbodiphosphoranes as catalysts for ester reduction reactions. Experiments were performed to identify catalysts for ester hydroboration, and a cyclic carbodiphosphorane was the most active. Ongoing work is being done to study the hydroboration of a range of ester substrates by this cyclic carbodiphosphorane catalyst.

**7. Effect of Sulfate Concentrations on the Adsorption of Heavy Metal Ions onto Goethite Surfaces**

**Presenter(s):** Sarah Connolly

**Advisor(s):** Dr. Christopher Kim

Due to increases in different industrial processes, heavy metal concentrations continue to grow throughout contaminated wastewater with the potential to affect human health and surrounding environments. A potential remediation to clean effected wastewater is to use nano materials for heavy metal ions to adsorb onto the particles' surfaces and then be removed from the water. In the following experiment, copper ions were tested for their adsorption onto the surface of goethite nanoparticles under different sulfate conditions. Sulfate enhanced copper adsorption to the nanoparticle surfaces, while the desorption of copper from goethite surfaces differed under different sulfate concentrations without an obvious trend. Further research is required to determine the optimal remediation technique to remove these harmful heavy metals from surrounding wastewater. Specifically, further data will be collected to obtain more reliable data and to test the potential of using sulfate and goethite to remove zinc ions from wastewater.

## **Communication Studies**

**8. Effects of Favorite Characters on Feelings of Loneliness**

**Presenter(s):** Alyssa Castanon, Lexi Ferlisi, Katherine Hanna, Natalie Hartman, Savahna Marks

**Advisor(s):** Dr. Rebecca Forster

This study investigates how identification of shared beliefs and traits with favorite characters can affect emotions and loneliness. We primed individuals with feelings of loneliness by having them reflect on a time when they felt lonely and isolated, to see how their feelings of loneliness are affected by levels of reflection on favorite characters. We hypothesize that college students who recall shared beliefs, behaviors, and traits with their favorite characters will show lower levels of social loneliness and higher levels of positive emotions. Conversely, those who are not asked to reflect on their favorite characters will exhibit higher levels of social loneliness and lower levels of positive emotions. We also hypothesize that college students who reflect on negative experiences without an additional reflection of their favorite character, and students who after reflecting on a negative experience reflect on a neutral topic (describe a classroom they have been in recently) will have higher levels of social loneliness and lower levels of positive emotions than those who reflect on favorite characters respectively. This research is significant in determining how parasocial relationships can influence everyday experiences and how individuals identify their sense of self, emotions, and state of being.

**9. Fanatic Fervor: How Idealized Depictions of Celebrity Couples in the Media Influence Romantic Expectations and Satisfaction.**

**Presenter(s):** Nicholas Richmond, Jimena Lara, Tiffany Chen, Nelson Kim, Samuel Edgar

**Advisor(s):** Dr. Rebecca Forster

The aim of this study is to examine how media depictions of celebrity couples can affect the satisfaction of individuals in their own romantic relationships. Celebrity couples are often sensationalized in news/gossip media, and if they are idealized, may inadvertently create unrealistic relationship expectations for those who consume such media. This study is building on social exchange theory, parasocial relationships, and a recent elaboration on the latter, paracouple relationships. Our hypotheses examine the effects on individuals who are exposed to media that we predict sets the romantic expectations of its consumers unrealistically high, so that their real romantic relationships are not as satisfying by comparison. Due to the consumption of such media, one may alter their own expectations of how much effort and expense their partner should devote to them. As a result, the amount of effort one's romantic partner dedicates may seem inadequate. To test these hypotheses, an online experiment is carried out in which participants are exposed to either a series of articles painting celebrity couples in a positive light, a series of articles painting the same celebrity couples in a negative light, or no articles at all. After this, participants are asked about their relationship satisfaction and their expected effort from a significant other.

## **Data Analytics**

**10. Length of Stay**

**Presenter(s):** Shree Murthy

**Advisor(s):** Dr. Yuxin Wen

Due to COVID-19, there have been countless reports of hospitals not having enough beds and incapable of providing care to all new inpatients (Landi). Most hospitals face the challenges of providing timely patient care while maintaining optimal resource utilization, especially during the COVID-19 pandemic. According to a survey conducted by the American Hospital Association, admitted patients spent more than \$1.16 trillion across all registered U.S. hospitals in 2019. In the U.S., every 1-hour transfer delay is associated with a 3% increase in the odds of inpatient mortality (Churpek et al.). Moreover, from the medical perspective, prolonged LOS increases the risk of adverse events, such as poor nutritional levels, hospital-acquired infections, adverse drug events and other complications (Siddique et al.). As a result, we could leverage machine learning (ML) methods to create a predictive model to help hospitals decide a patient's length of stay based on their medical data.

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## **Environmental Science and Policy**

### **11. Impacts of Wetting/Drying Cycles on Arsenic Bioaccessibility in Mine Wastes**

**Presenter(s):** Daniel Choi

**Advisor(s):** Dr. Christopher Kim

Heavy metal(loid) contamination remains a global concern as it continues to pollute the environment and impose negative consequences on a myriad of ecosystems and human residents. For example, arsenic (As) is a prevalent metalloid naturally found in Southern California mine wastes with toxic, carcinogenic qualities that pose a potential human health risk. While As concentrations and bioaccessibility can be readily measured from samples, the long-term effect of weathering in these materials is not well understood. Thus, it is equally important to understand natural factors that impact As bioaccessibility, which include rainfall, temperature, humidity, and aging. Samples were obtained from the Red Hill Mercury Mine in Tustin and sieved to  $\leq 250 \mu\text{m}$  particle diameter. Selected samples underwent a simulated rain event to rinse off external soluble As from the particle surfaces. Using an environmental chamber, samples were then exposed to simulated diurnal temperature and humidity cycles based on real weather data at a 12x accelerated rate, such that 2 hours of real-time equated to 1 day of simulated time. After sample exposure, samples underwent SGF extraction followed by ICP-OES analysis to determine final As bioaccessibility levels. Arsenic bioaccessibility was observed to decline in the early stages of exposure, but eventually increase back up to and beyond its initial levels after a few simulated months. This initial decline could be explained by the interactions between the samples and the humidity and temperature fluctuations in the chamber, causing the secondary formation of more stable As phases followed by the drawing of internally-bound As towards particle surfaces. While several samples did show this behavior, other samples with lower initial As bioaccessibility and concentration displayed a more consistent trend over time. These results suggest that initial As bioaccessibility and concentration levels can be utilized to predict changes in bioaccessibility over time, with lower levels inducing less change and higher levels producing more exaggerated trends.

## **Health Sciences and Kinesiology**

### **12. A Community-Based Approach to Advance Access to Healthy Food in South Los Angeles**

**Presenter(s):** Leilani Brown

**Advisor(s):** Dr. Jason Douglas

Black communities are affected by health disparities at disproportionately high rates in comparison to white communities. Diabetes, hypertension, and obesity are all examples of comorbidities that have a more drastic impact on Black and Brown communities living in low-income neighborhoods (Lincoln et al.,

2014). The location in which a person resides may negatively impact their long-term health based on the concentration of fast-food restaurants or lack of healthy food options (Ghosh-Dastidar et al., 2014; Kelli et al., 2017). Residents make decisions on where to get food based on numerous factors; therefore, understanding why people select certain locations is imperative to get a well-rounded idea of food access in the community. As of July 2022, 24.3% of L.A. County households were food insecure in the past year (USC, 2022). In 2015, according to the USDA, an estimated 12.7 percent of U.S. census tracts fit the category of low-income, low-access (USDA, 2022). Low access refers to a significant percentage of the population having limited access to a grocery store, meaning that they reside 1 or more miles from a grocery store in urban areas or more than 10 miles in rural areas (Rhone et al., n.d.). Low-income neighborhoods in South Los Angeles, California, had a greater proportion of fast-food restaurants than neighborhoods in wealthier areas such as West Los Angeles (Hilmers et al., 2012). Latinx and African-Americans had the highest rates of obesity at 29.4% and 29.2%, respectively, in Los Angeles, whereas Whites have an obesity rate of 17.6% (County of Los Angeles Public Health, 2011). Obesity increases the likelihood of other health problems, such as diabetes and hypertension, which can decrease lifespan. If race and ethnicity, as well as the presence of food deserts, can be determined as predictors of obesity, actions can be taken in order to provide aid for these communities.

**13. Accelerometers as an Effective Measure of Drop-Stick Reaction Time in Concussed Athletes**

**Presenter(s):** Jacob Hepp, Jordan Walton, Warner Rhodes, Michael Shiraishi

**Advisor(s):** Dr. Rahul Soangra, Dr. Brent Harper

Concussions are traumatic brain injuries that affect the function of the brain. One of the primary symptoms of a concussion is a lack of reaction time. The people that are most susceptible to concussions are athletes; Laker's (2011) study found that 135,000 patients that suffer concussions from playing sports are expected to be hospitalized each year, with football making up 75% of concussions at high school and college levels. Honda et al. (2018) suggested reaction time as an important biomarker of concussion. Laboratory camera-based motion capture data, while reliable, is not a realistic tool to use outside of a laboratory and requires hardware that makes it impractical in non-laboratory settings. Accelerometers measure linear triaxial accelerations are wireless miniature MEMS devices and can be easily affixed on the hand. If accelerometers were proven to be as accurate as motion capture systems in obtaining reaction time, accelerometer-dependent devices, such as a drop stick, could serve as a reliable and portable tool to diagnose a concussion quickly and easily. Our study, which aims to compare the accuracy of laboratory motion capture to accelerometer data, uses a drop stick test, in which participants had an accelerometer strapped to their wrist and infrared markers placed on three bony landmarks of the hand, as well as on an accelerometer situated on the base of the drop stick. In multiple series of tests, participants stood on both solid ground and a foam pad to measure differences in reaction time. Analysis of data will compare the accuracy of accelerometers to motion capture. If proven accurate, this method of measuring reaction time should yield data that is just as reliable as laboratory camera-based motion capture, while simultaneously being more convenient to use as sideline assessment during play.

## **History**

### **14. A Look Into San Jose's Japantown: Collective and Cultural Memories Within a Diminishing Community**

**Presenter(s):** Alissa Sakamoto

**Advisor(s):** Dr. Jamie Larkin

How will the memory community of Japantown, San Jose continue to display and respect Japanese heritage within a diminishing first generation population? I would like to explore the area of Japantown (Nihonmachi), which is a small historic neighborhood in the city of San Jose. It is also known as one of the last three authentic Japantown's in the United States. Though the population of Japanese inhabitants and the multitude of Japanese culture is not as prominent anymore, the community uses collective memory within bloodlines and communicative memory within historic temples and memorials to celebrate Japanese heritage. Japantown has been an extremely important neighborhood for my family. It is one of the only places in Northern California that commemorates my grandparents' experience in Japanese internment camps during World War 2. The Japanese American Museum of San Jose has reached out to my grandmother numerous times to recall her experience as a Japanese-American child around the time and connected her with a community of other Japanese-Americans who have been affected by the same oppressive events. My research fits into the broad idea of cultural memory studies. This field explores how and why communities and societies use memory to shape their future and commemorate the past. I will conduct this research about Japantown by having significant conversations with first-generation Japanese-Americans, consulting relevant and reliable books and articles, and examining memorabilia in the neighborhood. I can conduct this research online and in-person. By conducting this research, I hope to highlight the importance of retaining cultural memory in Japantown in order to sustain a diminishing culture. I also hope to gain a better understanding of my own culture as a 3rd generation Japanese-American.

## **Music**

### **15. Classes, Lessons, and Mentorship: The Ingredients of Successful Music Training**

**Presenter(s):** Sophie Qu

**Advisor(s):** Dr. Jessica Sternfeld

Effective training in music is a difficult goal to define, even for professional musicians. The key to have a successful training journey in music is to acknowledge the core elements and understand why they are essential. Besides the basic musical training that every music student has to go through, there are far more off-stage activities a musician has to experience before pursuing a professional career. The significance of starting to play young isn't a myth in classical musical training, but it isn't just the fact that musicianship takes time to develop, it is the result of the instructions received from private lessons. However, not every music student grows up with the opportunities to take private lessons. Music teachers from your local schools are probably the best chance students have for receiving any form of musical training, which in turn leads to another vital but rarely discussed point in music training – mentorship. A great mentor can guide their student's path to bigger and better platforms. However, finding the right



person to work and study with is already tough enough, so understanding how to find the appropriate mentor plus recognizing the skill sets those mentors could offer should be included in every student's musical training. This paper describes the more well-known paths to successful musicianship, then explores the role of mentorship in multiple training stages including high school and college. I argue that effective mentorship can offer students the clarity on applying schools, understand industry standards and future career options.

**16. Music Therapy's Representation in Media**

**Presenter(s):** Audrey Fish

**Advisor(s):** Dr. Jessica Sternfeld

Music Therapy's Representation in Media Music therapy (MT) is a fairly recent area of psychological study when compared to most others. Despite having a modest amount of research in the field so far, the benefits are becoming extremely clear. What is out there looks promising for the most part: existing studies show that music therapy is correlated with positive emotional and cognitive reactions from dementia patients; music can both help them feel more comfortable in therapeutic settings and trigger lost memories. Music therapy is represented as a beneficial practice in the media as well, which exposes the public to it and therefore gives good press to the field itself. This article will argue both that music therapy can serve as medicine for memory loss and that its rendering in media can help the field move forward by raising awareness about its existence. But what happens when the media presents inaccurate or incomplete perspectives on music therapy? Insights offered include the repercussions of 2014 documentary *Alive Inside* and its negative impact on the field of music therapy, the 2017 animated film *Coco* and the way in which it highlights the differences between music medicine and music therapy, and how the 2011 fictional film *The Music Never Stopped* emphasizes the need for more research on the field's impact on families. These three examples demonstrate that music therapy, while it can alter lives for the better, can have confusing or even dangerous impacts when misrepresented in the media.

## **Peace Studies**

**17. The Affects of Conflict on Gender Norms**

**Presenter(s):** Jordan Stinnett

**Advisor(s):** Dr. Lisa Leitz

In doing research about the ongoing conflict in Ukraine, I came across news that social norms for women were changing in the country. The traditional views that women belong in the home with their children were changing to include women in predominantly male jobs and in the military force. In seeing this news, I remembered other times in history when conflict lead to social changes for women to better their positions in society. I began to wonder if changing gender norms for women was correlated directly to conflict and why conflict was necessary for changing gender norms. To investigate these questions further, I conducted a literature review in which I examine the research question: How does conflict change gender norms for women in the Rwanda, Uganda, South Sudan, and Nepal conflicts? I chose these conflicts because they have been resolved and there is data and research to study them further. I will be using data



from the Human Development Reports' Gender Inequality Index (GII) to investigate the ties between conflict and changing gender norms. Based on the information collected from the literature, I expect that the Gender Inequality Index will show less inequality in Rwanda, Uganda, South Sudan, and Nepal five years after conflict. But, knowing that each conflict was motivated by different issues, the different aspects that make up the GII should be carefully examined in relation to the overall GII number in order to fully understand how conflict affects gender norms.

**18. Sexual Violence Against Women in Conflict Areas by Peacekeepers**

**Presenter(s):** Sophia Smith

**Advisor(s):** Dr. Lisa Leitz

The United Nations established peacekeeping operations in order to prevent conflict, reduce violence, protect civilians, and restore peace in war-torn countries. However, over the years, it has been revealed that peacekeepers can be the perpetrators of violence. Many peacekeepers have been accused of sexually abusing and exploiting women during peacekeeping operations. Women living in poor communities with significant power differences between peacekeepers and civilians are the most vulnerable to sexual abuse. Peacekeepers use non-lethal violence to influence peace and security, but some are not providing security for women in conflict and post-conflict areas. Peacekeepers raping and sexually exploiting women is a form of violence that intensifies conflict. A critical problem of peacekeeping missions is the continuous cycle of sexual abuse and exploitation of women in the areas where peacekeepers are deployed. In this article, I will examine the high sexual assault rates against women in areas lacking economic resources, political rights, and authority. I will specifically examine the cases that have accused peacekeepers of raping and sexually exploiting women during a peacekeeping mission in the Central African Republic and the Democratic Republic of Congo. Peacekeepers continue to be perpetrators of sexual violence against women during operations despite the United Nations' efforts to stop the abuse.

**19. Military Sexual Trauma (MST): The Effects on Female Service Members & Veterans**

**Presenter(s):** Kamryn Batiste

**Advisor(s):** Dr. Lisa Leitz

What is the root cause for scarce reported cases of Military Sexual Trauma among female service-members and veterans? Military Sexual Trauma (MST) is sexual assault or harassment that occurs within the military. From personal accounts to the U.S. Air Force Basic Training Scandal, it is evident that MST stands as a deep-rooted issue. Often qualifying as a form of PTSD that affects both men and women. However, one may argue that women experience varying risks related to the trauma. More so, women are exposed to the imposing threat of underlying factors through reporting sexual trauma. These factors include ostracism from their command, peers, and even perpetrators. Especially being immersed in male dominated spaces that aid in cultures of hyper masculinity and dominant identities. Although there are systems in place to report such trauma, perpetrators are often protected by military officials and peers. Particularly if the perpetrator remains of a high rank within the organization.

In this project, I plan to explore these issues through three objectives. First, I will evaluate the societal factors of gendered behaviors and how this permeates into military communities. Therefore, creating

environments that promote assault, harassment, and trauma among women. Second, I will examine the sexual misconduct associated with basic training and the vast differences that male and female soldiers experience. Lastly, I will study the reporting options and preventative resources offered to assist women. Ultimately, hoping to conclude that under-reported MST cases are a result of gender biased treatment within the military.

**20. Why Women? How the Exploitation of German and Japanese Women During World War Two Illustrates the Role of Women in War**

**Presenter(s):** Natalie Oliva

**Advisor(s):** Dr. Lisa Leitz

When individuals think of war, they tend to associate it with men, as it pertains to violence. This preconceived notion holds true to a certain extent, as there is a correlation between men and war. However, people often forget that women have a prominent role in times of war. In order to establish the roles of women during the war, a close examination of a specific war is necessary to help assist the essential yet complex question: Why women? Utilizing women's experiences during one of the most influential wars in history shows the severity of the conflict, which sheds light on the disenfranchisement of women. This paper will examine World War Two as a way to classify the different experiences of women based on their environment. The paper will use the cases of Germany and Japan, as they were notorious during the period due to their part in the Axis Powers. Exploring books and interviews from each country's perspective that tell the stories of sexual violence women faced during the war will outline actions and behaviors based on gender. This research aims to enhance understanding of how institutionalization enabled gender roles to allow a woman's body and livelihood to be exploited by a man, showing the significance of analyzing the role of women in war.

**21. Evolving or Devolving? Romanian Women and their Journey from Communism to Democracy**

**Presenter(s):** Brianna Schatt

**Advisor(s):** Dr. Lisa Leitz

Romania endured an oppressive communist regime from when it was formally constituted in 1948 to its downfall in 1989. During this time, the regime laid down the rules and norms that women had to follow – providing an expectation about gender roles in the home, workforce, government, and other settings. This research paper investigates the following question: how did gender roles and the way women were viewed in society (work-life balance, motherhood, other private aspects) manifest in Communist Romania and compared to democratic life after the 1989 Revolution? Employment expectations, political involvement, familial/domestic expectations and reproductive rights are some of the largest aspects explored. Data from the Library of Congress and academic sources were examined, shedding light on the late dictator Nicolae Ceausescu's ideologies, statistics from the time, and eyewitness accounts. In comparing women's roles between communist Romania and post-communist Romania, this paper will attempt to uncover if the revolution did in fact change women's norms and rights. Expected findings may show that while certain aspects of gender roles changed, much remained the same.

## **Physical Therapy**

### **22. A Novel Approach to Understanding Functional Gait and Variable Walking Strategies in an Asymptomatic Low Back Pain Population**

**Presenter(s):** Rachel Berns, Thomas Fountain

**Advisor(s):** Dr. Jo Armour Smith

Meaningful gait assessment in individuals with low back pain (LBP) should involve prolonged, dynamic walking conditions with directional changes that resemble functional gait. However, previous studies have investigated less ecologically valid, short, steady-state walking paradigms. The purpose of this study was to compare spatiotemporal variables during figure eight walking between asymptomatic young adults with a history of LBP and back-healthy (BH) individuals. Fifty-nine young adults participated (age  $22.4 \pm 0.5$  years, 36 with a history of LBP, asymptomatic at the time of data collection but reporting at least a one-year history of functionally limiting episodes of pain). Participants were instrumented with inertial sensors on the sternum, wrists, lumbar spine, and ankles. Participants walked at self-selected speed for five minutes in a ten-meter figure eight pattern. Spatiotemporal gait characteristics across stride cycles were calculated using Mobility Lab software (APDM Inc). Group comparisons were conducted with independent samples t-tests/Mann-Whitney U tests. Effect sizes were calculated using Cohen's d. Groups did not differ based on age, height, body mass index (BMI), and typical physical activity ( $p < 0.05$  for all comparisons). Walking speed for the LBP group was less than the BH group (LBP=1.13 m/s, BH=1.24 m/s,  $p < 0.001$ ,  $d=1.01$ ). LBP individuals exhibited reduced cadence (LBP=110.15, BH=113.94,  $p=0.026$ ,  $d=0.61$ ) and longer duration of gait cycle (LBP=1.10 s, BH=1.06 s,  $p=0.027$ ,  $d=0.62$ ) than BH individuals. Additionally, LBP participants spent a greater percentage of their gait cycle in stance phase (LBP=59.93%, BH=58.72%,  $p=0.003$ ,  $d=0.84$ ) and in double support (LBP=19.90%, BH=17.50%,  $p=0.002$ ,  $d=0.86$ ). Despite being asymptomatic at the time of data collection, young adults with a history of LBP displayed conservative spatiotemporal gait characteristics during prolonged figure-eight walking in comparison to BH individuals. Ongoing research will determine if this gait strategy is more favorable for limiting the progression of LBP over time.

### **23. Utilizing Teslasuit to Analyze Changes in Joint Angles and Heart Rate During Slips (A Stress-Inducing Task)**

**Presenter(s):** Caitlin Ha, Olivia Johnson, Audrey Arenal, Michael Shiraishi

**Advisor(s):** Dr. Rahul Soangra

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#### **24. Understanding Parkinson's Disease Through Gait Initiation and Centers of Pressure**

**Presenter(s):** Mira Ananthanarayanan, Kiara Salceda

**Advisor(s):** Dr. Rahul Soangra, Michael Shiraishi

Parkinson's disease is a neurological disorder that causes tremors and freezing of gait in diagnosed patients. Freezing of gait can be difficult to identify and intervene without laboratory based instruments data collection. Force plates have been proven to show viable results in identifying gait events such as heel contact and toe off. The complete gait cycle consists of a right-heel strike, right heel-to-toe shift, simultaneous right-toe off/left heel strike, left heel-to-toe shift, and a simultaneous left-toe off/right heel strike. This study will investigate center of pressure trajectories when initiating gait between healthy and Parkinson's participants. It is predicted that the strategy of shifting the center of pressure when taking the first step from a static position will vary from a healthy participant to a Parkinson's patient. Participants were prompted to initiate gait under single and dual-task conditions. Dual-task trials consisted of a STROOP task using a virtual reality environment that asked participants to identify the color of the words displayed on the screen while also initiating gait. Motion capture technology and a treadmill with measurable force plates were utilized to measure the first steps of a subject's gait cycle. Data from this study will help understand gait initiation strategies followed by Parkinson's disease participants and healthy individuals. We will collect data from 30 more participants to understand how the center of pressure varies between Parkinson's and healthy individuals.

## **Political Science**

### **25. The Implications of Public Health Crises on Attitudes Towards Economic Well-Being**

**Presenter(s):** Alexis Reekie

**Advisor(s):** Dr. Ann Gordon

Attitudes towards potential economic disasters that may occur as a result of unprecedented events are well worth investigating. Through direct disruption of the economic and social structures of the United States, individuals directly affected by the COVID-19 virus have experienced an overall shift in perspective and lifestyle, indicating a need to understand the effects of the COVID-19 virus on one's outlook regarding economic anxiety and fear of financial collapse. Throughout this research paper I worked to determine the correlation between fear of economic and financial crises and individuals who have been affected by the COVID-19 virus. Utilizing the Chapman Survey of American Fears questions pertaining to the economy and the existing implications of the virus, and the General Social Survey Panel Data 2020 questions to observe religiosity as a possible reaction to the pandemic and fear of financial implications, I have observed an increasing trend of fear surrounding financial downfall in those who have contracted COVID-19. Social and cultural norms prior to the virus have exacerbated existing disparity in employment, health, and ability to maintain lifestyles, all factors that directly pertain to finances and ability to maintain financial stability. Following global crises and attitude changes towards personal and national finances, one can see that the attitudes of individuals are greatly affected by health crises and their potential impacts on the economy. Gaining insight into the relationship between fear of financial collapse and health crises are crucial in order to understand what is truly valued in American society.

### **26. Public Opinion on Illegal Immigration in the United States**

**Presenter(s):** Alexandra Martinez

**Advisor(s):** Dr. Ann Gordon

Over the past 10 years, the topic of illegal immigration has divided Americans with the past three presidencies. This paper investigates the relationship between party ID, media exposure, education and religion with the views a person has on illegal immigration. Using the Chapman Survey of American Fears, I found a moderately strong relationship between an individual's party-identification and how much fear they show towards the topic of illegal immigration throughout the United States. I found that media exposure and a person's political identification correlates with their views on illegal immigration. Among the interesting findings, I can conclude that individuals with more media exposure will be more likely to fear immigration as well as individuals who identify as conservative. I also found that certain political parties are more afraid of illegal immigration, data has revealed that republicans have higher rates of fearing the topic of immigration. Although the United States has been built on the contributions of immigrants, there continues to be a sense of hostility towards them. The hostility built around the topic of immigration has called into question the integrity of the democratic character seen throughout the United States. Interestingly, the hostility in the United States has diminished depending on the president and their stance on immigration.

**27. Education as a Predictor of Voter Turnout in America**

**Presenter(s):** Jack Bunzel-Hardie

**Advisor(s):** Dr. Ann Gordon

National democratic elections, in any country and at any level, often struggle to garner participation from its citizens. This is nowhere more true than in American presidential elections. One of the most pertinent, influential, and effective democratic voting systems in the world often finds itself with a voter turnout problem. One item often cited in this research is America's failing education rates and the resulting effect it has on said voter turnout. This study will test several hypotheses about the relationship of these two variables. While considering these main two dependent and independent variables, this study will also consider other factors such as location, age, background, and other demographics. Although previous research has shown a strong association between a college education and the likelihood of turning out to vote, recent elections have seen a surge in non-college-educated voters, particularly among whites. For example, In 2020 voter turnout rose to 66.8%. It is extremely important to find the reason behind this surge in order to continue creating momentum in future elections. It is important to look at each presidential election within recent decades and compare one another and the general trend of American voting participation. It is important to consider fact that the COVID-19 pandemic has greatly affected not only general elections but also education rates and stability of the education system greatly. Voting participation is incredibly important to the success of this country. Despite recent increases in voter turnout, the United States still lags behind other democracies, closing that gap begins with examining the variables behind voters.

**28. The Fear of Economic Failure**

**Presenter(s):** Talar Kazanjian

**Advisor(s):** Dr. Ann Gordon

In the past, access to information on the national economy was limited to printed sources. This minimized the amount of people that were fearful, as only those within the field or interested in such topics would be informed of the current state of the economy. Nowadays, there is unlimited access to online outlets on the finances and economies of most states, resulting in a shift of perspectives. In my research, I will explore the reasons as to why the younger population of today has had a growing fear of economic and financial failure, compared to the generations of before. Relying on the Chapman Survey of American Fears, which is a representative national survey, I expect to find that an increase of exposure, through social media, news outlets, and higher education rates, has caused the people of the younger generations to be more fearful of the consequences of a potential collapse. Also, the 2008 recession, which has greatly impacted the economy of today, is dreaded to occur again in the following years. This potential collapse or recession will directly affect the younger populous to much greater levels, than it would those who have come to a place of financial stability by accumulated wealth throughout the years. Economic failure brings immense changes to the national and international worlds, often resulting in wars or famine. Such failure affects all individuals, however younger people are the ones required to deal with the consequences for the remainder of their lives.

**29. Singling Out the Contributing Factors of Extremism**

**Presenter(s):** Kerry Rimmer

**Advisor(s):** Dr. Ann Gordon

The presence of extremism on both sides of the political spectrum has become overwhelmingly popular and has contributed to mass divisiveness and instability in our political realm. It has clouded political discourse and muddled news media to the point that many drown it out and consider it a standard component of daily life. I intend to investigate the leading factors that contribute to fear, and alternatively, lack of fear, of right- and left-wing extremism. Utilizing the Chapman Survey of American Fears, a representative national survey of American adults conducted in January 2021, I will compare the relationships between the level of fear of both right- and left-wing extremism and various independent factors including religious denomination, type of media consumption, and education status. I expect to find that those of stronger belief in Christian denominations have a lower fear of right-wing extremism than those of non-Christian or lower Christian beliefs; conversely, I expect them to have a higher fear of left-wing extremism than the others. I also predict that there will be direct correlations between the kinds of news media consumed and the two sides of extremism, i.e., those that watch Fox News more frequently will fear left-wing extremism more than right-wing extremism, and those that watch CNN more frequently will fear right-wing more than left-wing. I expect to find that those who have received higher levels of education will fear right-wing extremism more than those with lower educations. Generally, I predict that there will be a greater overall fear of right-wing extremism than left-wing extremism. Hoping to eliminate all groups who don't fear extremism is naive and ignorant; however, being more able to decipher the factors that may lead to the lack of fear may help to combat the dangers of extremism being exacerbated in the future.

## **Psychology**

**30. The Mediating Role of Social Support In the Association Between Optimism and Physical Health Symptoms**

**Presenter(s):** Victoria Tang

**Advisor(s):** Dr. Brooke Jenkins, Dr. Julia Boehm

**Intro:** Multiple studies have found strong evidence that optimism is associated with fewer physical symptoms. However, what is less well understood are the mediating mechanisms between this association. This association may exist through the mediating mechanism of social support as social support has been shown to mediate the relation between optimism and mental health outcomes. Thus, the current study seeks to test whether social support may serve as a mediating mechanism between optimism and physical health symptoms.

**Methods:** A longitudinal survey was conducted from May through December 2020 (n = 292). To test whether social support mediates the link between optimism and physical symptoms, social support in September 2020 was tested as a mediator between optimism, assessed in May 2020, and physical symptoms, assessed in December 2020.



Results: There was a direct effect between optimism and physical symptoms,  $b = -5.79$ ,  $p = .005$ . However, there was no indirect effect of optimism on physical symptoms through the mediator of social support,  $b = -0.71$ , 95% CI(-2.07, 0.25).

Conclusion: While greater levels of optimism were associated with fewer physical symptoms, mediation analysis found no evidence that social support serves as a mediator between optimism and physical symptoms. This study may further contribute to understanding which mediating factors are involved in the association between optimism and physical health.

### **31. Decoding Action Selection from Preceding Neural Activity**

**Presenter(s):** Amy Whitmarsh, Lucas Jeay-Bizot

**Advisor(s):** Dr. Aaron Schurger, Dr. Uri Maoz

The readiness potential (RP) is a slow negative deflection in the electroencephalographic (EEG) brain activity prior to a voluntary motor movement. Previous research interpreted the RP as an indication that decisions are made without the participant's conscious awareness. This research project uses machine learning algorithms and EEG to investigate whether we can predict the outcome of a spontaneous decision from underlying brain activity. More specifically, we are examining whether the RP can give insight into the outcome of the decision, prior to the participant's awareness of the decision. During this experiment, participants perform a computer task where they watch a rotating clock on the screen and input their responses (left or right-hand) into a button box after each rotation. This task involves three conditions: an instructed condition, an early decision condition, and a spontaneous decision condition. These conditions allow us to create a proxy for the participant's awareness of the decision. Machine learning and EEG is then used to predict how early and how accurately we can decode the outcome of the decision. If cortical activity preceding awareness encodes the decision's outcome, then this would support the hypothesis that the brain is making decisions unconsciously. If the decision's outcome on late-decision trials cannot be predicted using preceding cortical activity, then this would not support the hypothesis that spontaneous decisions-to-move are made unconsciously in advance. Our current results suggest that decoding accuracy increases only after the participant is aware of their decision and has decided which button they will press.

### **32. Gendered Psychological Outcomes of War**

**Presenter(s):** Amarah Nehme

**Advisor(s):** Dr. Lisa Leitz

I will examine the gendered psychological outcomes of war among combatants in the United States. Veterans will be the main focus of providing statistical and analytical data to demonstrate the differences. "Affective Technologies of War: US Female Counterinsurgents and the Performance of Gendered Labor" by Elizabeth Mesok analyzes the gendered performances of American military women during the US-led occupations of Iraq and Afghanistan. The book *The Civilian Lives of U.S. Veterans: Issues and Identities* Chapter 17, titled *The Mental Health of Veterans* by Kristi Mueller and Jeffrey S. Yarvis, explores the stressors and threatening situations experienced by military personnel, which will lead to mental health disparities among this demographic. The film *Invisible War*, directed by Kirby Dick, is an investigative



examination of sexual assault within branches of the US military that dives into its topics with various levels of emotional involvement. This documentary also involves the epidemic of rape of soldiers within the US military, along with the resulting personal and social effects on the victims. One of the cases in the studies reviewed involved data from 7251 active duty soldiers (6697 men and 554 women) from their pre- and post-deployment screening from March 2006 to July 2009. I believe each of these resources will uncover the drastic differences in gendered outcomes due to social hierarchy and the patriarchal influence in today's world.

**33. Motivational Properties of Music in Exercise**

**Presenter(s):** Micah Gonchar

**Advisor(s):** Dr. Julia Boehm

According to the CDC, only one in four US adults meet the recommended amount of physical activity (CDC, 2019). Regular physical activity can reduce the risk of a plethora of chronic diseases, including type 2 diabetes, heart disease, and cancer. Physical inactivity may come from a lack of motivation to exercise (Thomas et al., 2008). Motivation towards physical activity could be improved by introducing music to exercise. Our study tested how music can change the overall experience of physical activity. Participants were asked to exercise for at least one hour two times per week during the 4 weeks of the study. To examine the effects of music, participants were randomly assigned to either the control group that exercised with no direct use of music or the experimental group where direct use of music was present in their workout. Their experience was measured through the Exercise-Induced Feeling Inventory (EIFI) questionnaire. The EIFI is a 12-item questionnaire that assesses feelings of revitalization, tranquility, positive engagement, and physical exhaustion. Our goal was to see if music could be used as a universal motivator for exercise. We expected that the presence of music would make the experience of physical activity more positive. The results showed increased feelings of tranquility and positive engagement and decreased feelings of physical exhaustion for the participants that listened to music. There was no difference in feelings of revitalization between the two groups.

## **Sociology**

**34. A History of the Changing Terrain of Post-Secondary Education in Prisons and How It Can Inform Programs Serving Formerly Incarcerated Individuals**

**Presenter(s):** Sam Shlafstein

**Advisor(s):** Dr. Jan Osborn, Greg Barraza

The history of post-secondary carceral education reform in the United States, like criminal justice reform at large, has been non-linear. Beginning in 1965 and up to the early nineties, great strides were made in expanding prison education programs until it was almost completely reversed during the tough-on-crime era. Since 2007, legislation has been introduced to improve the quality and accessibility of education for those currently and formerly incarcerated. A panoramic view of the history of carceral education allows for a deeper understanding of its achievements and, more importantly, its shortcomings—and how to improve upon them as we continue to develop the prison-to-university pipeline. This research uses

descriptive and critical analyses to assess gaps in carceral education and how Underground Panthers serves to fill them upon release.

## **World Languages and Cultures**

### **35. The Subjective Variation Among Mexican American Identity: A Comparative Analysis Between the Autobiographical Works of Richard Rodriguez and Reyna Grande**

**Presenter(s):** Victor Leon

**Advisor(s):** Dr. Laura Loustau

The population of people who identify as Mexican American has steadily grown parallel to the increase of Mexican immigration to the United States. Ever since the creation of the racial-social group known as Mexican Americans and their subsequent growth, a vast amount and variety of scholarship has been written on what it means to identify as Mexican American. This essay aims to focus on how childhood experiences and development directly impact one's subjective view of Mexican American identity. Understanding Mexican American identity as a clash of two different cultures, Mexican culture and conventional American culture, this essay will perform an analysis and comparison between the autobiographical works of two Mexican American authors, Richard Rodriguez's *Hunger for Memory* (1982) and Reyna Grande's *The Distance Between Us* (2012), using a specified array of theories that help define the blending of two different cultures, such as acculturation and transculturation. There will be a specified focus on two aspects of childhood development, education and personal family experiences. The objective of this essay is to demonstrate that Mexican American identity should not be viewed as a singular phenomenon or a type of "common struggle", but as a subjective personal belief that creates unique points of view of what it means to be Mexican American. One example of this phenomenon that this essay will cover is the differences in political and social opinions among the Mexican American community. A comparison of these two authors will demonstrate how their personal views of Mexican American identity caused them to develop contrasting political and social opinions.

## **Creative and Cultural Industries**

### **36. The Dream Machine\* as Confluence: Hallucination, Neuro-Diversity, and the Creative Industries**

**Presenter(s):** Marissa Thompson, Pamela Coelho, Rebecca Day, Cooper Scott, Daniella Benabou

**Advisor(s):** Dr. Patrick Fuery

Our research project focuses on how a social media campaign was designed and implemented to explore the ways in which people engaged with the ideas of dreams and hallucinations. Specifically, the class project involved working collectively, and in four dedicated groups, to build a dream machine. The four groups were: designers and creators, who constructed the dream machine; social media recorders, who developed a multi-platform media campaign for the project from inception to implementation, including documenting how the other groups worked and researched their areas; music composers who designed a soundtrack to accompany the machine; and multi-media poster designers, who researched the history and culture of the original dream machine to create a series of poster images. Each group required a

specific research focus as well as an interdisciplinary exchange across all the groups. Thus our project researched breaking down disciplinary barriers to explore new ways of thinking about complex issues and ideas. Our presentation will articulate three key aspects of the project: how by working across multiple disciplines (notably creativity studies, arts, and humanities, cognitive sciences, and communications) we came to understand better the confluence of ideas in practice; how various elements of social media can be utilized to explore wider philosophical and aesthetic issues; and how our program in Creative and Cultural Industries provided ways to connect across a wide and diverse audience to engage in the interdisciplinary nature of knowledge. In addition to the presentation, we would like to bring the dream machine to the conference so others might experience its hallucinatory effects and better appreciate the relationship between research and practice.\*The dream machine was originally designed by the artist Brion Gysin and has been used in research to explore the idea of neuro-diversity and perception diversity.

## Room A

Moderator: Dr. Julye Bidmead

### Peace Studies

4:30-4:45 pm

#### **Women and Peace**

**Presenter(s):** Gabrielle Guzy

**Advisor(s):** Dr. Lisa Leitz

The United Nations Security Council Resolution (UNSCR) 1325 on 'Women, Peace and Security' was adopted in the year 2000. This statute discussed how women play an important role in peacekeeping and peacebuilding as well as demanded there be an increase in women's participation in peace processes (Schneiker, 2021). Women's participation has been shown to increase the likelihood that a peace agreement is made and implemented (O'Reilly et al., 2015), yet women still consistently being left out of peace negotiations worldwide. In the years between 2015 and 2019, women only accounted for 14 percent of peace negotiators (Council on Foreign Relations [CFR], 2022). One reason could be that there are socially constructed gender roles in place that seem to prevent women from holding peacemaking leadership positions, despite the fact that these "feminine" characteristics would actually be traits we would logically want in our leaders (O'Reilly et al., 2015). These traditional gender roles reflect a hierarchy where masculinity is superior to femininity and this in turn perpetuates gender inequality (Greene et al., 2019). I will be analyzing data that confirms that women do, in fact, improve the peace process and the implementation of peace agreements as well as data that confirms that we are currently living in a climate still dealing with gender inequality.

4:45-5:00 pm

#### **Madar I Millat**

**Presenter(s):** Maha Ishaq

**Advisor(s):** Dr. Lisa Leitz

Many do not know that a Muslim woman, Fatima Jinnah, helped to develop the "two nation theory" that led to the 1947 partition of Pakistan and India, which also ended British colonialism there. Fatima Jinnah was a reputable and honorable individual in Pakistan, as seen through history and various sources. With extensive research, this paper reveals Jinnah's drive for gender equity, religious nationalism, and civil and democratic rights. Fatima Jinnah, also known as Mader-e Millat ("Mother of the Nation"), was a prominent figure in the founding of Pakistan; she was the younger sister and constant companion of Muhammad Ali Jinnah, who founded Pakistan and become the country's first Governor General. Fatima was a proponent for peace, secularism, and democracy. She remains a symbol of feminism and Pakistani nationalism. In this paper, I will explore the development of women's leadership in Pakistan during and after the 1947

partition from India. Fatima had graduated from the University of Calcutta with a dental degree in 1923, becoming India's (including Pakistan's) first female dentist. She was an outspoken opponent of the British Raj, and later became a key proponent of the two-nation idea and a leader in the All-India Muslim League. Fatima Jinnah was not only a public figure who demonstrated the abilities of women in public life, but she was also a peacebuilder who was instrumental in peace diplomacy. Jinnah also organized various feminist movement groups to that mobilized for change in early Pakistan after the 1947 partition.

## **Religious Studies**

**5:00-5:15pm**

**“I don’t really feel like it was a conscious choice:” The Experiences and Motivations of Young Female Religious Converts and Reverts**

**Presenter(s):** Amea Wadsworth

**Advisor(s):** Dr. Julie Bidmead

In a modern age where adolescents have access to a wealth of information through education and technology, young adults have much more freedom of choice when it comes to deciding on a religion to follow. Using a series of ethnographic interviews with five female converts and reverts aged 18-30 of various faiths, including Buddhism, Roman Catholicism, Eastern Orthodox Christianity, Judaism, and the International Society for Krishna Consciousness, I researched their motivations behind conversion, level of religious exposure and education, relationships with family, and experience converting as a woman. In my research, I found that all women had relatively sheltered family lives that restricted religious exposure to fall within their family's belief system, which was usually Christianity. While I hypothesized that converts would have used their access to online information to research various religions, each interviewee (aside from one) instead reported that they were introduced to their chosen faith through a peer or family member and all interviewees only researched their chosen faith after this introduction, rather than researching a variety. All interviewees also noted that they had difficulty with gender imbalances in either their original and/or chosen religion, but no issues of gender inequality were enough for them to entirely abandon their new chosen religion. Participants each reported a different level of healthy attachment to their parents growing up, but all did show some difficulty with parental and/or familial relationships, which corroborates research regarding parental attachment theory and religious conversion and apostasy.

5:15-5:30pm

**"Harry Potter: An Engagement Guide for the Critical, the Caring, and the Curious."**

**Presenter(s):** Emma Brandel

**Advisor(s):** Dr. Julye Bidmead

As a group final project for the experimental course REL 329: Deconstructing Hogwarts, this project was titled "A Harry Potter Engagement Guide: for the Critical, the Caring, and the Curious", and was created by students to address both the elements of the Harry Potter novels and the later additions from the author J.K. Rowling to her Wizarding World. This Engagement Guide for young readers attempts to address both the problematic elements of J.K. Rowling's writing (including her public Anti-Trans statements on social media) as well as the neutral and good elements of the books, movies, and other affiliated media. The intention behind this text is to serve as a tool to teach young readers how to critically analyze media and also the world around them, and uses the Harry Potter series as a metaphorical petri dish for these conversations.

This presentation will discuss how the contributors to this project were inspired by the course and class discussions to create the Engagement Guide, and cover the major topics discussed within, such as religious allegory, racism and colonialism, misogyny, consent, death, historical parallels, transphobia, homophobia, and ableism. Finally, the presentation will also explain why guides such as this one are so important, and the importance of teaching young readers critical thinking skills through topics and media they already know and love.

## Room B

Moderator: Dr. Nasim Estakhri

### Art

4:30-4:45 pm

#### **Desert X Case Study**

**Presenter(s):** Eugene Kim

**Advisor(s):** Lia Halloran

Art in a gallery - that's traditional. Art with no white walls, no ceiling, no building at all, in the middle of a desert, and in Palm Springs heat - that's Desert X, a biennial art exhibition held in the Coachella Valley since 2017. The decision to use the desert grounds for a place to present art isn't as simple as being where Desert X founder Susan Davis lives. But the Desert X lore deepens when diving into how the art interacts with the land, its audience, and the art culture of Palm Springs. Desert X's mission to show in every major desert in the world shows their intentionality with the space and the hyper-specific relationship that it creates with the art.

This case study will examine Desert X's decision to use the desert as a space to present art. It will explore the importance of deserts to the works included, such as Cara Romero's Jackrabbit, Cottontail & Spirits of the Desert and Zahrah Alghamdi's What Lies Behind the Walls and how these works conceptually belong in their respective land. This case study will also research how the desert alters a viewer's perception of objects around them, and the art itself like Alicja Kwade's In Blur. This study will be done through research on the artists and curators, going on site to hear from Susan Davis and other people who have contributed to this project, and finally, looking at other art practices from artists and curators outside of a gallery to see how the art interacts differently to space.

4:45-5:00 pm

#### **Desert X and the Indigenous Community**

**Presenter(s):** Hannah Emerson

**Advisor(s):** Lia Halloran

LANDBACK is a movement that has been present for multiple generations that has the goal of obtaining Indigenous land and returning it back to the Indigenous people. This movement hopes to establish Indigenous governments in areas that were once theirs and allow for them to have more control of the land that is theirs.

Desert X is a biennial art exhibition that takes place in the Coachella Valley where artists display pieces throughout the desert. The first iteration occurred in 2017 and takes place every two years.

For my paper, I will be exploring the relationship between the history of the LANDBACK movement and how this movement coincides with Desert X, as well as how the Indigenous community is involved in Desert X. There have been a couple pieces dealing with concepts of Indigenous rights, like Nicholas Galanin's Never Forget and Jeffrey Gibson's ALIVE!. New insight will be gained through research of Desert X, the history of LANDBACK, the Indigenous people of the Palm Springs area, and through interviews with members of the Desert X team. It is expected to find that there are Indigenous artists involved in the biennial and that there is more involvement beyond that, but there is also more room for involvement with featuring more Indigenous artists and including them in high positions. Also, it is expected to find that there has been previous support for LANDBACK and possible ways for them to collaborate in the future.

## **Film**

**5:00-5:15pm**

**Sociocultural Pressures Among Parents of Queer Children in Films with Non-Western Environments**

**Presenter(s):** Samay Bhasin

**Advisor(s):** Dr. Ian Barnard

The heteronormative and cisnormative nature of society has required queer individuals to undergo the phenomenon of "coming out" as their queer identity. This phenomenon has the potential to take great tolls on queer individuals especially when it comes to parents. Queer individuals with unaccepting parents are eight times more likely to attempt suicide, six times more likely to experience clinical depression, and three times more likely to suffer under substance abuse (Ryan et al., 2009; Ryan et al., 2010). However despite such concerning statistics, there is still a significant gap in scientific research on creating supportive environments within families for queer children (Caroline et al., 2018). The current study aims to investigate films that depict queer children's relationships with their parents using in-text, semiotic, and iconic analyses. Specifically, I aim to understand what existing explanations in film can serve as predictors for homophobic behavior among parents. Current research finds that ethnic minorities were more likely to exhibit signs of rejection of LGBT children and that "parental reactions to their child's sexual identity occurs within a sociocultural context" (Richter et al., 2017). Unfortunately, such findings are broad and uninvestigated, leaving the complex stories within queer films at an international scope as the next best option. Through the analyses of various queer films (The Wound, XXY, José, Pariah, and Moonlight), I hypothesize that heightened sociocultural pressures may accelerate homophobia because of a western presence rooted in colonialism and oppression. This could be because the existence of racism and oppression towards these ethnic and cultural minorities heightens the need for these individuals to uphold traditions and identities consistently. Conversely, this could also be because historic western intrusion into these cultural spheres injected less sympathetic perspectives of LGBTQ identities than what was previously present.



## **English**

5:15-5:30pm

**Gendered Performance of Queerness in Dance: Onstage and in the Studio**

**Presenter(s):** Lauren Bramlett

**Advisor(s):** Dr. Justine Van Meter

This project traces perceptions and performance of queerness in 21st century Western concert dance both on stages and in studio training settings. Examining texts including the archival video of performing bodies, books, articles, and ethnographic fieldwork, the project traces the trajectory of queerness in dance spaces and how queer identities are embodied on and off the stage. Additionally, the project considers sexual orientation relative to gender identity, with emphasis on the contrast in perception between cisgender LGBTQ+ men and cisgender LGBTQ+ women and a section on the mainstream dance industry's rejection of nonbinary identities and gender fluidity more broadly. In the context of this project, the word "queer" is used to encompass a range of sexual orientations, gender identities, and modes of expressing such identities. The discussion of difference in the perception of queerness based on gender identity, then, is in reference to a difference in how both sexual orientation and gender performance are perceived. The project emphasizes the tendency for acceptance and seeming expectation of queerness demonstrated by cisgender male dancers as opposed to the taboo that continues to surround cisgender female queerness, in terms of both sexual orientation and gender performance. This argument is, of course, problematized by its binary structure, and of notable mention are the wealth of nonbinary and or genderqueer dancers whose expression of queerness is often further marginalized than that of cisgender female dancers, as particularly emphasized in casting and costuming procedures. This project aims to trace how the dance industry has arrived at its current relationship to queerness, to note where disparities exist, and to offer a way forward.

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